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# IMPLEMENTING CIRCULARITY WITHIN THE APPAREL INDUSTRY IN THE EU

- Analyzing Barriers to Circularity and Investigating the Role Policies, Regulations, and Governments Play in Overcoming or Reinforcing them -

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## Abstract

This paper assesses the practicality and likelihood of implementing circularity within the European apparel market. When analyzing potential barriers to circularity, it becomes evident that there are three major forces paradoxically both de- and accelerating progress: The public sector, the private sector, and consumers. Upon critically assessing the roles these play in this transition towards circularity, it was found that despite there being many hurdles to overcome for each, the most significant one is likely to stem from the interconnectedness of the roles.[1]



**Keywords:** Circular Economy; Apparel Industry; Circular Fashion; Barriers of Circularity; Consumer Behavior; Apparel Brands; Governmental Interventions

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[1] Note: According to Nova SBE submission guidelines, this document contains all the collaborative parts of the Field Lab, as well as the individual research conducted by Nico Gemkow. For the individual research conducted by Carolina Costa and Costanza Suriano please consult the respective documents.

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## A) Introduction

- NOTE TO READER –

The following chapter will serve as an introduction to the paper. Commencing with the personal interest and motivation of the authors, followed by an overview of the Apparel Industry and an introduction to the current industry trend of sustainability, it concludes with an introduction of the concept of circularity.

### Interest and Motivation

Sustainability matters. In almost anything we do, produce or use, we rely on natural resources, and seeing as many of them are not infinite, preserving them is crucial. In 1987, sustainability was defined as "meeting the needs of the present without compromising the ability of future generations to meet their own" (United Nations 2021). We are said future generation(s), and it has become more evident than ever that human actions (and inactions) have dire consequences on the environment. Fortunately, there are theories, models, and initiatives offering potential solutions[2], that could theoretically dampen the much-feared global environmental crisis. Hence, the question arises why the speed and scale of implementation of these are still lacking. In September 2019, The UN Secretary-General António Guterres indicated we are losing "the race of the climate emergency" (United Nations 2021).

This emergency is self-evidently a vastly complex problem, entailing a plethora of interrelations, and therefore highly unlikely to be depicted and tackled adequately and in its entirety in a single paper.

Nonetheless, we recognized the urge for action and would like to contribute to a betterment of the current state of affairs. Not only by monitoring and improving our own individual consumption and behavior, but by having a small impact on a micro to meso level, as well.

[2] Discussed in more detail in the following chapters Shift towards Sustainability and Circularity and Linearity.

Consequently, we set out to uncover the reasons for the lack of sustainable or rather circular business practices within a specific industry and to find out what role different players (consumers, companies, and governments) play. The reasons why we decided to focus on the apparel industry are manifold:

Firstly, its size. Being one of the world's largest manufacturing industries (see The Apparel Industry for more information), means it is putting a great strain on the environment; hence achieving circularity here would create a significant positive impact.

Secondly, mostly due to changes in consumer behavior and demand, the apparel sector is one that adapts and develops rapidly; and, at least from an economic perspective, manages to do so relatively successfully (McKinsey and Company 2020).

Thirdly, first signals of intent can be observed, as selected brands are moving towards a more sustainable and environmentally conscious way of working, and more and more players are indicating their willingness to change to a more circular model for the industry.

Lastly, fashion fascinates many people, lets them express themselves, has the power to build up confidence and self-esteem, allows for self-realization, and provides an opportunity to apply creativity to ones every-day life. Yet, despite, or potentially even because of all the good it does, people often turn a blind eye to the environmental and social damage it causes.

By identifying common barriers that might discourage or prevent companies or other organizations from operating in a more environmentally friendly way, we hope to help those striving for more sustainable operations gauge under which circumstances chances for a successful implementation are at their highest, as well as to indicate what to consider when embarking on such a project. As this might speed up the development of circularity within the apparel industry, more and more consumers could enjoy the benefits of fashion without having to compromise the environment in the process – something, to which we would be glad to have contributed our part.

## The Apparel Industry

The global apparel industry was valued at approximately 527 billion USD in 2020 and is expected to reach a valuation of twice as much by 2030 (Business Wire 2021). According to the World Bank, it is considered the world's third-largest manufacturing industry (World Bank 2019).

It might therefore not come as a surprise that it also finds itself among the most pollutant industries in the world, emitting up to 10% of global carbon emissions (Ro 2020). For the purpose of illustration: Global aviation (including both, passenger and freight) 'only' account for 1.9% of greenhouse gas emissions (Ritchie 2020).

The apparel industry's grave environmental impact does not limit itself to carbon emissions, however: it uses up to 93 billion cubic meters of water per year (UNEP 2019) to produce textiles, of which nearly 85% end up on landfills (McFall-Johnsen 2020) and of which less than 1% is estimated to end up being recycled (World Bank 2019). Leftovers from the process of dyeing garments are often disposed of in nearby bodies of water resulting in the process being recognized as the world's second-largest polluter of water (UNEP 2021). Even on the consumers' side, apparel has dire consequences on the environment. 500.000 tons of microplastic are released into the ocean every year simply by washing one's clothes (McFall-Johnsen 2019), harming marine life and ultimately humans, as well (Royte 2018).

In conclusion, it is an industry that uses copious amounts of water, generates highly polluting microfibers, applies poor waste management, degrades soils, leaches chemicals into natural environments, and causes a lot of greenhouse gas emissions (Charpail 2017).

The environmental aspect is however not the only problematic one. Clothing is often produced in countries where human rights are occasionally disregarded and where working conditions are precarious (Corradini 2018). Furthermore, manufacturing facilities regularly move their

facilities, constantly in search of the cheapest labor costs, paying less than minimum salary, while forcing employees to work up to 14 to 16 hours a day, and omitting the need for healthy and safe working conditions (Charpail 2017). Child labor is also a very prominent occurrence within this industry (Ibid).

Beyond the damage caused to society and environment, from an economic point of view the linear production approach also jeopardizes the supply of materials. The increasingly fluctuating availability of raw materials makes it difficult for companies to create reliable price forecasts, putting them at a disadvantage when compared to competitors that are less dependent on those materials. (PGGM et al. 2018). Adding to this, the production processes of many products are dependent on sufficient levels of water and fuels, which is why the scarcity of one raw material will have a widespread effect on the price and availability of many other goods (European Commission 2020).

Yet presumably the worst aspect of all the aforementioned effects, is that they occur at an ever-increasing rate. From 2000 to 2014, clothing production increased by 100% and consumption by about 60% (Remy, Speelman and Swartz 2016). In 2000, the number of clothing collections per year was limited to two (based on an average of all European apparel companies at the time), while nowadays brands such as Zara launch up to two collections per month (Remy, Speelman and Swartz 2016). New players like the Chinese brand Shein even got rid of clothing lines completely and shifted to a constant stream of new designs, partly generated by algorithms scrambling social media for trends and potential consumer demands (CB Insights 2021). Fast Fashion, defined as the mass-production of cheap, trendy, and disposable clothing (Tan 2016), taken to extremes. Other examples of this ‘ultra-fast fashion’ are the American brand Fashion Nova and the UK-based company PrettyLittleThing, who, being able to launch between 500-2.000 pieces of clothing a day, have already started taking significant market share from (fast fashion) brands like Zara and H&M (Walk-Morris 2021, McKinnon 2021). The seemingly

infinite variety and up-to-dateness encourage people to buy large amounts of low-quality apparel that quickly become obsolete as fashion trends come and go (Mender 2020). These quicker manufacturing and shipping methods, consumers' increased purchasing power and their hunger for ultra-up-to-date products have made shopping for clothing a common form of entertainment nowadays (Hayes 2021), translating into a serious threat to sustainability.

## Shift towards Sustainability

Fortunately, the awareness of the impact the fashion industry has on environment and society, is growing among stakeholders – predominantly investors and consumers. Consequently, companies are under increasing pressure to improve their policies and adapt their business models (PGGM et al. 2018).

Environmental, social, and governance (ESG) criteria are a set of operational requirements used by socially concerned investors to analyze possible investments (Investopedia 2021). Even though these criteria have been of secondary importance to investors in the past, a recent study found that they are at the top of mind of numerous investment leaders globally when assessing the impact of their portfolios nowadays (Eccles and Klimenko 2019). This way investors can avoid companies whose business practices bear significant financial risks. To adapt to this shift, companies need to present integrated financial and ESG reporting to investors. From an organization's perspective, disclosing this type of information represents a competitive advantage since it shows that managers are monitoring their businesses' risks, ultimately becoming more attractive to investors (Pritsch, Stegemann and Freeman 2008).

Furthermore, there has been an increase in government legislation to ensure that the impacts of fashion brands on society are reduced, and not complying with current and future regulation poses a legal risk for companies (PGGM et al. 2018). Initiatives like the Task Force on Climate-related Financial Disclosures offer a variety of regulatory and market incentives to help

corporations become more aware of their impacts and incorporate this knowledge into their business or investment decisions (PGGM et al. 2018). Nevertheless, in many regions these regulations still lack legal consequences if organizations fail to meet the guidelines (Huckle 2021). Even though there have been some positive developments at the industry level towards sustainability, some fashion retailers are culpable of greenwashing their brands as a way of attracting more conscious consumers without actually changing any of their production methods (Ho 2021).

On the consumer side, and in agreement with a survey carried out by McKinsey and Company (2020), the commitment to sustainability has deepened during the COVID-19 crisis, as Europeans demand that fashion companies act more responsibly and consider the social impact and environmental aspects of their businesses (Granskog et al. 2020). Younger generations are the ones leading this movement, with Generation Z embracing sustainable fashion much faster than other age groups (Elan 2020). Accordingly, there has been a significant shift on customers' consumption patterns which is reflected in the ongoing expansion of the second-hand clothing market. This market is currently worth 36 billion USD worldwide and is estimated to reach a valuation of 77 billion USD in 2025 (Shahbandeh 2021).

The second-hand apparel market comprises activities such as exchanging, renting, and reselling clothes, which are all methods of owning pre-existing products rather than purchasing new ones (MacGilp 2021). Besides buying and selling second-hand clothing through physical stores or online platforms, another business model is on the rise: fashion subscription boxes (Colon 2020). Some fashion enterprises have started to provide monthly memberships that allow customers to borrow clothes rather than buy them. For example, Rent the Runway, a leading subscription fashion service that allows clients to rent designer style clothing, has introduced the 'Unlimited' plan, which allows customers to borrow as many pieces as they like each month via a rolling subscription (Pike 2016).

In addition, there are many start-ups helping fashion brands to create their own resale programs online, reducing the mass production of new pieces. Thanks to this, clients have the possibility to resell and extend the lives of fashion garments in their wardrobes. For instance, the London start-up Reflaunt is assisting the NET-A-PORTER's pilot launch of their online space where customers will be able to use the wide resale offer to send their used and well-preserved pieces to a new owner (Farra 2021).

The increasing employment of new concepts is one indicator that industry players are starting to take the previously mentioned shifts and external forces more seriously. Other sustainable initiatives are beginning to spread, as well. Italian technology company Vegea created a fully recyclable, vegan leather alternative by using waste products of a different industry – wine (Kohlbacher 2021). Boston start-up Galy manages to grow cotton in a lab, from cells instead of plants, and with a process that is 10 times faster than traditional farming (Kart 2020). Converse, Adidas, Nike, and many more have started offering vegan shoes made out of recycled plastic (Stanton 2021), Patagonia sells jackets made out of old fishing nets (Martinko 2021), and H&M, together with TextileGenesis, are experimenting on weaving blockchain enabled traceable threads into garments to guarantee a more transparent supply chain (Krebbers 2021).[3]

Besides new products used in the fashion industry to make it more environmentally sustainable, there are also many new processes being developed with the same goal. One example is Looop, a new in-store recycling system, where water, materials and dyes are not wasted as much as it

[3] For objectivity, it should be mentioned that some of these innovations might be used for greenwashing purposes and must be taken with a pinch of salt. It also holds true, however, that merely because a generated impact is relatively small, or one could do more, it does not necessarily qualify as greenwashing. Since it is a matter with high potential for subjectivity, the authors refrain from taking a stand here as to whether mentioned examples might be cases of greenwashing.

efficiently shreds old pieces in fibers which are subsequently used to sew new ones (H&M Magazine 2020).

Another recent process is the creation of 3D digital models for the fashion world, where water, carbon dioxide emissions and textiles can be saved since it is done completely virtual (Davenport 2021). This innovation enables fashion designers to adapt their prototypes based on customer demand, as the digital model can be produced and modified in a few hours (Ibid). An increasing number of companies is aiming to virtualize design processes with the help of artificial intelligence to reduce overall pollution related to new clothing lines (Ibid). Stitch Fix, a British personal styling service, for instance, created a new clothing line based on algorithms suggesting new styles and trends (Ibid).

Furthermore, when discussing innovative discoveries to reduce dye usage for the creation of a new item, the British start-up Colorifix is a good example. It produces bacterial colonies capable of generating color pigments, which are later used to create new items (Taas 2020). The process used by Colorifix starts with the identification of a bacteria capable of producing a certain pigment, after which the gene responsible for the color is extracted and inserted into the DNA of a bacterial culture specially produced to optimize pigment production (Ibid).

Nonetheless, while all these examples are important steps towards a greener apparel industry, it is still not making a big enough difference to change the tide. As the UNECE puts it, it is "imperative [to] embrac[e] circularity" (UNECE 2021).

## Circularity and Linearity

In a circular economy, the value of products and materials is maintained for as long as possible, waste production is reduced to a minimum, and when products reach the end of their useful life, they are kept in the economy to be reused or recycled to generate value once again (European Commission 2015). The Ellen MacArthur Foundation, a UK-based charity promoting and further developing the circular concept, concretizes it as "a systemic approach to economic development designed to benefit businesses, society, and the environment" (Ellen MacArthur Foundation 2020). All the positive environmental aspects aside, circularity is expected to present a multi-trillion-dollar economic opportunity, too – for those willing to embrace it (Ellen MacArthur Foundation 2020). Consisting of three fundamental principles, being 'designing out waste', 'keeping products in use', and 'regenerating natural systems', the circular model aims to reduce the discharge of carbon dioxide and other polluting gases, to ensure that materials are produced with the aim of being used more than once, and to promote and enhance renewable resources (Ellen MacArthur Foundation 2020). Furthermore, circularity plays a key role in the achievement of several social, economic, and environmental goals of the 17 SDGs (Sustainable Development Goals) outlined by the United Nations (2021) - particularly SDG 12, which promotes sustainable consumption and production. Circular activities can also support other SDGs such as SDG 3 ('ensure healthy lives and promote well-being for all at all ages') through the reduction of waste and pollution, SDG 11 ('make cities and human settlements inclusive, safe, resilient and sustainable'), and SDG 13 ('take urgent action to combat climate change and its impacts') (Ibid). In addition, there are symbiotic relationships between some of the SDGs and the concept of circularity, as some of the goals provide opportunities for the Circular Economy to thrive. For instance, SDG 9 (industry, innovation, and infrastructure) offers an opportunity for organizations to develop circular technologies, improve their processes, and become more resource efficient.

As opposed to the described circular approach, a linear economy follows a "take, make, dispose" model (Taylor 2020), meaning that raw materials are extracted from nature, transformed into products and services, and finally discarded as waste (Rood 2017). This business model assumes that there are infinite available resources on earth, and its economic value is generated from selling as many products as possible (Heeseung 2021). Since the Industrial Revolution our economy has been dominated by a linear model (Rauturier 2021) which has long been associated with environmental, social, and economic problems. Companies that operate under a linear economic approach are more likely to employ non-renewable materials that will eventually become scarce for their operations, fail to cooperate by keeping strict control over knowledge, and fail to innovate or adapt to changing market conditions (PGGM et al. 2018). All these effects of linear business practices will negatively impact an organization's ability to thrive in the long run. The fashion industry is not an exception.

The incentives to move from a linear to a circular economy can differ, ranging from creating a more competitive economy, to meeting the needs of the world's population growth, or simply to complying with climate strategies and targets (Isles 2021). The European Commission took the lead on this transition with the early adoption of the first circular economy action plan in 2015. The deriving Circular Economy Package entailed 54 specific plans, many of which have been executed already, the remaining being in the process of implementation (European Commission 2020). Joss Blériot, the head of public affairs at the Ellen MacArthur Foundation, claims that there is a combination of negative circumstances in Europe – stagnated economy, lack of resources, and waste management problems – that has prompted these regions' institutions to embrace circularity as a new way to foster sustainable economic growth (Isles 2021).

# B) State of the Art and Literature Review

- NOTE TO READER –

Concluding the previous chapter, it seems clear that embracing circularity is the only way forward. As an attempt of figuring out why the needed transition is not happening faster, the following chapter focuses on different types of barriers to a circular economy, analyzing peer-reviewed, academic literature and industry reports.

## Cultural

A study by Deloitte and the Copernicus Institute of Sustainable Development (CISD) of the Utrecht University identified cultural, technological, market and regulatory barriers as common inhibitors to the implementation of a circular economy in Europe (Kirchherr et al. 2017, 6).

While a reference to a correlation of said barriers and a deriving threat of chain reactions is made (Ibid, 6), the cultural aspect was regarded as the most prominent and most difficult to overcome.

### *Organizational*

On an organizational level, change-reluctant company culture paired with conservative linear supply chains often only allow for minor improvements, whereas a more holistic approach would be needed to achieve circularity (Kirchherr et al. 2017, 7). Alana M. James, Lizette Reitsma and Mersha Aftab came to a similar conclusion in a recent publication, claiming that the integrated “positioning of circular strategies in the product lifecycle” (James, Reitsma and Aftab 2019, 904) is key for a successful circular implementation. According to them, however, the problem lies less within the reluctancy towards the incorporation of sustainable practices

(2019, 903) and rather within the "isolated focus to circularity" and the lack of a "systems thinking approach" (2019, 909).[4]

Revealing another potential barrier, James, Reitsma and Aftab claim that this might at least partly derive from companies' shortfalls when it comes to a proper understanding of the principles of circularity (2019, 911): Two of the five brands participating in their study had implemented a take-back scheme in their stores, promoting an extension of their garments' product-lives. Customers were rewarded for their participation with discounts for future purchases, incentivizing an increased consumption (James, Reitsma and Aftab 2019, 909). If not done on purpose to greenwash their brand image, it does indeed suggest a knowledge barrier.

To circumvent greenwashing, ease the monitoring of progress towards a more circular economy, and ensure the effectiveness of related national, as well as EU-wide interventions, the European Commission has deemed it important to have "a set of reliable indicators" (European Commission 2015, 20). Companies seem to share this sentiment, realizing the importance of adequate metrics to quantify the effects their sustainable approaches have (Walker et al. 2018, 13). Yet, there seems to be a lack of standardized key performance indicators related to circular activities (Jia et al. 2020, 6). Despite some companies already measuring how much value is being created by their (supposedly) circular practices, said valuation is sometimes difficult to compare cross-industry, as it is linked to individual definitions of circularity (WBCSD 2018, 6). According to an analysis on circular metrics, performed by the World Business Council for Sustainable Development at 39 selected companies, 74% of the respondents claimed that their organizations have their own frameworks

[4] It is worth noting, however, that this conclusion is based on observations conducted within a Research Development and Innovation Department of a single organization that is not mentioned by name and therefore does not allow for statistical sound inferences.

to measure circularity (2018, 6). This can be justified by the complexity and subjectivity of defining indicators that measure reduction, reusage, and recycling of waste on different industries (Potting et al. 2017, 11). As an aggravating factor, some brands outsource their production processes and are therefore not able to fully monitor the complete supply chain in terms of sustainability (Shen and Chen 2019, 757).

*Consumer*

Apparently not exclusively organizational, the earlier mentioned knowledge gap seems to exist on the consumers' side, as well. Deloitte and the CISD report a lack of interest and awareness in consumers and establish that current consumer behavior does not reflect the concept of circularity, as they are uninterested in purchasing durable products (Kirchherr et al. 2017, 7). Many consumers prefer style over sustainability (Brydges 2021, 4), which can be partially explained by the correlation between materialism and happiness. According to a report on how consumer engagement can drive circularity, around 22% of participants affirmed that they are happier if they own more material possessions (GlobeScan and GreenBiz 2019, 5).

James, Reitsma and Aftab are convinced that consumers are crucial in the shift towards a circular economy (2019, 911), and explain the mentioned lack of interest with consumers missing the feeling of meaning or value towards a given clothing article nowadays – especially if it is second-hand. This leads to carelessness, an increased readiness to dispose of the garment, or, in the case of second-hand apparel, even to a resistance towards buying it in the first place (2019, 904).

When analyzing the willingness to buy second-hand clothing items "all of the time" and "most of the time" in different age groups of consumers, Generation Z (25 %) and Millennials (21%) are more open to purchase previously owned pieces than the older generations Generation X (15%) and Baby Boomers (12%) (GlobeScan and GreenBiz 2019, 6). However, even though

younger generations are more prone to acquire second-hand clothing, older generations are often content with less items (GlobeScan and GreenBiz 2019, 6).

According to a report published by the Green Economy Observatory of the Bocconi University, the recovery of secondary raw materials, and with it the market of recycled goods, is often held back by the difficulty of getting end consumers to accept products with lower performance (Iraldo and Bruschi 2015, 11), indicating that some consumers associate recycled and second-hand items with inferior quality.

Additionally, consumers do not repair their garments like they did a few decades ago, claiming that nowadays it is cheaper to buy a new item rather than fixing it (European Commission 2018, 85). This is partly owed to the fact that today's consumers do not possess the necessary skill to repair the items themselves, which holds true especially among the younger generations (ING 2020, 6).

While this impeding behavior might reflect that of the majority of consumers, a recent report by the ING allows for a more positive outlook, revealing that 83% of the 15.000 respondents (5.000 of which from Europe), believe their own behavior and personal choices can make a difference on tackling global environmental challenges (ING 2020, 4).[5] The research also found a widespread acceptance of recycling initiatives on the consumers' side, as well as a steady shift from fast to slow(er) fashion in the consumers' mentality. This movement seems to be most pronounced in Europe with 54% of the respondents claiming to regularly recycle their clothes (compared to respondents from North America (49%) and APAC (37%)). Furthermore, 38% of Europeans claim to regularly repair their clothes and 20% indicated they buy used clothes. Moreover, a majority of the 25.000 people asked world-wide, affirm they

[5] It should be noted that in this type of research (structured interviews, surveys) there is a risk of response biases, such as the social desirability bias. Nonetheless, even if it should have occurred it still indicates a positive shift in consumer behavior.

would be willing to pay a higher price for products and services that are better for the society and the environment (51%) or are produced in a socially or ecologically conscious way (50%) (GlobeScan and GreenBiz 2019, 8). In addition, nearly half of the interviewees (49%) say they support brands who speak openly about social and environmental matters and inspire others to be more environmentally aware (GlobeScan and GreenBiz 2019, 8).

## Market

Deloitte and the CISD found that industry players perceive the low price of new supplies and primary materials and costly upfront investment expenses to be the main market constraints (Kirchherr et al. 2017, 7). The low price of new supplies allows for cheaper and, therefore, more competitive pricing of the final garments, whereas circular enterprises that replace fossil-fuel based plastics with bio-based plastics are often forced to sell at higher prices and have to re-position themselves accordingly. The costly upfront investment expenses are assumed to derive from an "unperceived market potential" of a circular economy (Kirchherr et al. 2017, 7). Claiming that "the first one that will invest in learning [about implementing a circular economy] will probably lose money and only the second mover will earn a fortune." (Kirchherr et al. 2017, 7), many organizations are waiting for others to take the first step instead of trying to benefit from first mover advantages.

Understandably, not all barriers seem to exist for all sizes of businesses to a similar extent. For instance, the investment needed to analyse and quantify carbon emissions per garment, to assess life cycles and to ensure traceability of supply chains represent a more significant hurdle to smaller businesses, as they have less (financial) resources, time, and capacities as their bigger counterparts (Brydges 2021, 3).

## Regulatory

According to research by Deloitte and the CISD, policymakers do not seem to present a significant barrier to circular economies, as companies and governments ranked it as the 5th most relevant barrier out of five (Kirchherr et al. 2017, 8).[6] This does not imply that governmental barriers do not present any threat at all to the implementation of circularity. In fact, the European Commission itself published a report in 2016, analyzing regulatory issues that hinder circular progress (European Commission 2016). As one of the most prominent hindrances, the report mentions the insufficiently regularized collection and pre-treatment of waste streams (European Commission 2016). This, leading to mixed waste, makes recycling more difficult and therefore more cost-intensive for those willing to include recycled materials in their production processes.

Another obstacle stems from legislation mandating specific quality requirements for recycled materials to protect consumers (European Commission 2016). While well-intended, aiming to protect consumers' wellbeing, it does occasionally complicate circular approaches imposing too many restrictions on companies willing to use recycled goods (European Commission 2016). What makes matters worse, is that said legislation might differ from one EU member state to the other (European Commission 2016) making it even more arduous to abide by for internationally operating companies.

In a whitepaper on barriers and enablers to circular business models, Allard Pheifer mentions trade agreements as institutional barriers to circularity (Pheifer 2017, 15). Seeing as many were originally developed to purely stimulate economic progress and did not include minimal requirements for sustainability, they now allow "highly competitive linear products to enter the market" (Ibid), against which the often less competitive circular products do not stand a chance.

[6] Seeing as government officials have participated in this data collection, it should be noted that this might have led to a partially subjective result.

## Technological

When questioned about the five most relevant barriers, governments and businesses did not consider technological barriers as a significant obstacle related to circular implementation (Kirchherr et al. 2017, 7). According to the authors, this represents an optimistic finding since technical advancements can be extremely slow, and it would take significantly more time to implement a circular economy would specific technologies first have to be developed (Kirchherr et al. 2017, 7). In independent research, conducted a year later, "not a single technological barrier [was] ranked among the most pressing circular economy barriers" (Kirchherr et al. 2018, 264), confirming the minor role technological inhibitors play in the circular transition. In fact, several technologies from the 4$^{th}$ Industrial Revolution have, intentionally and unintentionally, contributed to circular practices (Bianchini, Rossi and Pellegrini 2019, 3). For instance, the replacement of physical products with virtual services such as e-books and digital music platforms allowed a significant reduction of waste. However, when it comes to recycling clothes there is still a lack of effective technologies available on the market (Koszewska 2018, 8; McCarthy 2016), as well as a lack of technological capabilities that would be required to develop recycling initiatives in-house (Brydges 2021). The complex combination of materials used during the production of clothes, which in turn makes the separation process very difficult (Beall 2020), can lead smaller brands to shy away from trying as they feel simply overwhelmed (Brydges 2021, 6). Additionally, when recycling, most of the clothing is sorted manually, which has many disadvantages such as the inability to classify and separate materials, leading to high costs and slow, as well as non-standardized operations (Nørup et al. 2018, 12). These factors contribute to merely 1% of waste being transformed back into garments, 12% being recycled into low-value goods like wipes, insulation materials and mattress filling, and the remaining majority ending up on landfills or being burnt (Remy, Speelman and Swartz 2016, 5).

## Infrastructural

In a 2015 technical report on guiding principles and case studies related to circular economies, infrastructural characteristics are mentioned as a barrier to circularity (Iraldo and Bruschi 2015, 11). The large distances, extended geographical boundaries, and complex world-wide shipping logistics, caused by ever increasing globalization, make the implementation of the so-called reverse logistics a strenuous task (Ibid). Reverse logistics describe the process of products flowing upstream from consumers to then re- or upcycle or re-use them (Paras and Pal 2020, 1). What hinders the growth of implementation specifically within the apparel industry, as compared to other consumer goods, is the availability of fashion products at extremely low costs (Ibid).

## COVID-19

COVID-19 caused the European apparel industry's turnover to decrease by 20% and global industry profits by more than 90% (European Commission 2021, 3), pushing brands to prioritize short-term actions fostering immediate financial upturn over long-term circular initiatives.

The Ellen MacArthur Foundation, however, is convinced that it is now more relevant than ever to embrace circularity and that a circular transition could effectively help reboot economies (Ellen MacArthur Foundation 2021, 7).

Next to the negative economic consequences, the COVID-19 pandemic had significant social repercussions, as well. While certainly not pleasant occurrences, the fact that the "lack of respect and ethics" (European Commission 2021, 3) in some production facilities and the increasing imbalance of power among different players within supply chains have become more visible to the wider public, has a positive side to it, too. As social justice is becoming

more relevant for consumers, there is an industry-wide notion that a more sustainable and circular way of working is urgently needed (European Commission 2021, 1).

## Need for Further Research

Upon analyzing previously discussed findings, it was decided to propose a different structure on the matter to avoid risking potentially overlapping analysis. Instead of further researching the implementation of circularity considering cultural, market, regulatory, technological, and infrastructural barriers, the project was divided into three perspectives: a consumer's, company's, and governmental point of view:

- Cultural barriers seemed to differ significantly depending on whether one would look at it from a consumer perspective or an organization's, which is why it was already split accordingly in this paper's literature review.
- Market related characteristics, too, could be divided into those stemming from companies' actions and those from consumers.
- Regulatory specifics represented the third perspective - the public sector, later referred to as 'policies, regulations, and governments'.
- Technological and infrastructural barriers were primarily business related.
- COVID was seen as an exceptional type, which had impacted almost all the above to some extent.

To see whether consumers, the private sector and the public sector represent more of a barrier or more of an enabler to the implementation of circularity within the apparel industry, each author investigated one of the three newly defined areas.[7]

[7] Note: As per Nova SBE submission requirements for Field Labs, this document only entails the area of the public sector written by Nico Gemkow, whereas the other areas can be found in the individual submissions of Carolina Costa and Costanza Suriano.

## C) The Role of Policies, Regulations, and Governments (Gemkow)

### Methodology

The following chapter investigates the role policies, regulations and, with it, policy makers and governments are playing in the transition towards a circular economy within the apparel industry. Whether it is a supporting or an inhibiting force, progress, as well as progress pace, are perceived as adequate, and interventions as successful and of sufficient scale, is discovered through research combining both primary and secondary sources. A first understanding of related contemporary and planned policies, regulations, frameworks, and case studies is achieved through desk research. Particularly in the case of policies and regulations, reading them as compared to asking policymakers about it, is expected to allow for a more objective understanding. While legislations are laws and policies are but proposed courses of action, both are considered as governmental interventions. Primary research, more specifically, qualitative semi-structured interviews subsequently serve as source for more critical analysis of previous findings.

For a clear structure of the chapter, the differentiation of several administrative levels, outlined by the Ellen MacArthur Foundation, is adapted. Accordingly, the chapter distinguishes between the roles of: International Institutions, States and National Governments, and Cities and Municipalities (Ellen MacArthur Foundation 2021, 18), whereas, given the focus of this paper, the former is limited to the European Union. For each administrative level, examples will serve to illustrate the current role, which is then critically questioned by the author of this chapter and the interviewed key stakeholders involved in the respective matter.

Written conversations are copied into transcripts directly, whereas oral interviews are transcribed using edited transcription (Summa Linguae 2021). Key messages that are either paraphrased or cited are highlighted in **bold** and *italic*.

Each administrative level's role is summarized in a figure at the end of the corresponding sub-chapter, whereas a more holistic conclusion, also considering findings of the other research parts of this paper (written by Costa and Suriano), can be found under D) Conclusion.

The sub-chapter figures consist of an upper level recapitulating the role briefly and a lower level including an analysis of the role conducted by the author of this chapter.

*Limitations Affecting Methodology*

While it was originally planned to conduct all interviews orally, adaptations had to be made, resulting in the conducting of written interviews via E-mail and LinkedIn. Due to the 26th UN Climate Change Conference of the Parties (COP26) in Glasgow from the 31st of October until the 12th of November 2021, the willingness to talk of many potential interviewees was reduced to a minimum, as they were busy preparing for, as well as participating in the event. (The COP26 summit aims to accelerate action towards the goals of the Paris Agreement as well as the UN Framework Convention on Climate Change (UK Government, 2021)). Due to this limited availability for calls, it was offered to conduct the interviews in writing, thereby allowing interviewees to choose the time to answer, as well as the extent of detail in their answers, themselves. The disadvantage of this method turned out to be that interviewees were more likely to ignore the questions. Many interviewees did not respond at all, and in two instances, the interviews stopped in the middle of the conversation, as questions were not answered anymore. Consequently, the number of questions was reduced to the most relevant ones and all questions were sent together with the initial request to participate, although this did not result in a significantly greater response rate. (For a full list of potential and actual interviewees, see Appendix D) Potential Interviewees for the Role of Policies, Regulations, and Governments.)

## European Union / European Commission

The EU itself considers its role primarily as one of support, claiming to be "committed to a circular economy transition" during a G20 Workshop in June 2021 (European Commission 2021). Its textile related strategy in particular aims to be "support[ing] a more sustainable, resilient and competitive model for the textile ecosystem" (European Commission 2021). Finalized in September 2021, said strategy, called EURATEX Vision, sets out to facilitate the orientation of future legislative pieces but is not legally binding itself (European Commission 2021). It mentions that sustainability in textiles should become a competitive advantage for the EU, but then goes on to warn that many of the (planned) environmental laws and policies could "significantly harm" global competitiveness (European Commission 2021, 2).

Eline Blot, Policy Analyst at the Institute for European Environmental Policy, voiced a similar concern during an interview, mentioning that policy coherence is crucial and that there is an array of EU policies that are great as such, yet oftentimes not coordinated with other areas of EU policy (Blot 2021). For policies to achieve the greatest possible impact, she suggests making sure environmental policies are not interfering with existing development cooperation policies and trade policies, as "no one wants to see trade significantly hindered in the long run" (Ibid).

In addition, the European Commission questions whether laws such as the Waste Framework Directive or REACH, or policies like the Consumer Agenda or the Sustainable Products Initiative, are fully achieving the intended goals, claiming there is no evidence to underpin it (European Commission 2021, 2). As Eline Blot puts it: "You can't just come up with a policy package and then expect it to do what you want it to do." (Blot 2021). It is not only the enforceability that is an issue, i.e., who is monitoring it or what mechanisms are in place to hold countries accountable, it is also the process itself (Ibid). Policies such as the European Green Deal start promising, but as specific measures are coming through, they become less

impactful as originally planned (Ibid). “Declaring ambition and implementation are too very different things”, agrees Helena O’Rourke-Potocki, Circular Economy Policy Insight Officer at the Ellen MacArthur Foundation during an interview (O’Rourke-Potocki 2021), mentioning another issue with the EU Green Deal: the fact that, just like the EURATEX vision, even the specific measures that came through in the end are not legally binding.

For the Ellen MacArthur Foundation, policies, and with it policymakers, generally play a role of utmost importance in the circular transition, nonetheless, believing that industry leaders alone will not achieve a sufficient scale of circularity (Ellen MacArthur Foundation 2021, 7). While Blot partially agrees saying SME’s implementing their own circular production methods is but a fraction of the whole picture, she also indicates that the reason for why industry leaders will not achieve the needed scale might not only be related to capability but willingness, too (Blot 2021). As Blot puts it: “business unions and business interests are so loud in this space[8] that it’s kind of hard to get a word in edgewise” (Ibid), indicating that private sector interests can be a barrier to circularity.

Recognizing that “[in the last five years] there has been a noticeable increase in the development of circular economy policy strategies and initiatives across all tiers of government” (2021, 18), the Ellen MacArthur Foundation is convinced policymakers have not yet exhausted their potential.

A United Nations Sustainable Development Goals report revealed that only 10% of policies officially contributing to SDG 12 (Responsible Consumption and Production) were economic or financial, as most of them deal with waste management within the current linear model (Ibid, 25). While this is delaying circular development in itself, as it takes time and effort of MEPs

[8] Note: While this quotation was related to the carbon border adjustment mechanism debate, and Blot mentioned that there is less resistance regarding circular economy initiatives, it was decided to include it as indication for a potential barrier, nonetheless.

(Members of the European Parliament) away from developing circular policies, it also generates additional barriers to circularity. As Allard Pheifer mentioned in his whitepaper on barriers and enablers on circular business models, the administrative burden to get materials that were defined as waste labelled as resource for reuse again, discourages players to recycle, as "costs are higher than the reward" (Pheifer 2017, 15).

The Ellen MacArthur Foundation suggests several levers policy makers could pull to create a "new level playing field in which circular economy decisions are the norm" (Ibid, 24), ranging from product policies focusing on high quality design for durable goods and packaging, over penalties for planned obsolescence, to the stimulation of innovation (Ibid, 8).

To ensure "comprehensive policy frameworks, which embed the Circular Economy model across industries" (Ibid, 7), the Ellen MacArthur Foundation developed 'Policy Goals' that aim to tackle root causes of the current linear economy (Ibid, 26):

| Goal 1 | Goal 2 | Goal 3 | Goal 4 | Goal 5 |
|---|---|---|---|---|
| Stimulate Design for the Circular Economy | Manage Resources to Preserve Values | Make the Economics Work[9] | Invest in Innovation, Infrastructure, and Skills | Collaborate for System Change[10] |

*Figure 1 Ellen MacArthur Foundation's Policy Goals*

While Blot does not believe a self-sufficient circular EU economy could – or should - be pulled off, she mentions that, seen through a global lens, the EU is a front runner in the matter of circularity (Blot 2021). Potentially the most prominent examples proving this (next to the governmental actions, discussed in detail under States and National Governments), are the

[9] For clarification: Goal 3 deals with the alignment of taxation, state aid, subsidies, governmental funds, competition, labour and trade policies, procurement, disclosure, and accounting requirements.
[10] For clarification: Goal 5 deals with the alignment of all four previous goals, given the interconnectedness of policy measures. "No single goal can create a systemic fix" (Ellen MacArthur Foundation 2021, 26).

Circular Economy Action Plan (CEAP) (European Commission 2021) and the European Climate Law, both part of the earlier mentioned European Green Deal. (European Union 2021).

Adopted in March 2020, the new[11] CEAP is a package of 35 legislative and non-legislative initiatives and actions aiming to further promote the circular transition towards carbon neutrality (planned to be achieved by 2050) and resource efficiency, while remaining economically competitive (European Commission 2021). Sustainable products becoming the norm, ensuring less waste, and "making circularity work for people, regions and cities" are just some of the objectives[12] of the new CEAP (Ibid).

The European Climate Law is the piece of legislation that made the aforementioned target of net zero greenhouse gas emissions by 2050 legally binding (European Union 2021). It includes an intermediate target of reducing net greenhouse gas emissions by at least 55%[13] by 2030 and binds member states to take "the necessary measures" at both EU and national level to meet said targets (Ibid).

Aiming to become the first climate neutral continent, the EU is understandably determined to play an enabling role in the circular transition. As an attempt to summarize and simplify the versatility of this role, the following figure was created:

[11] In 2015, the European Commission adopted the first CEAP. By 2019, its 54 actions had been delivered (even though some are not fully completed yet) and had paved the way for the new CEAP (European Commission 2021).
[12] See Appendix for the Implementation Tracking Table showing the new CEAP's complete action list.
[13] Compared to 1990 levels.

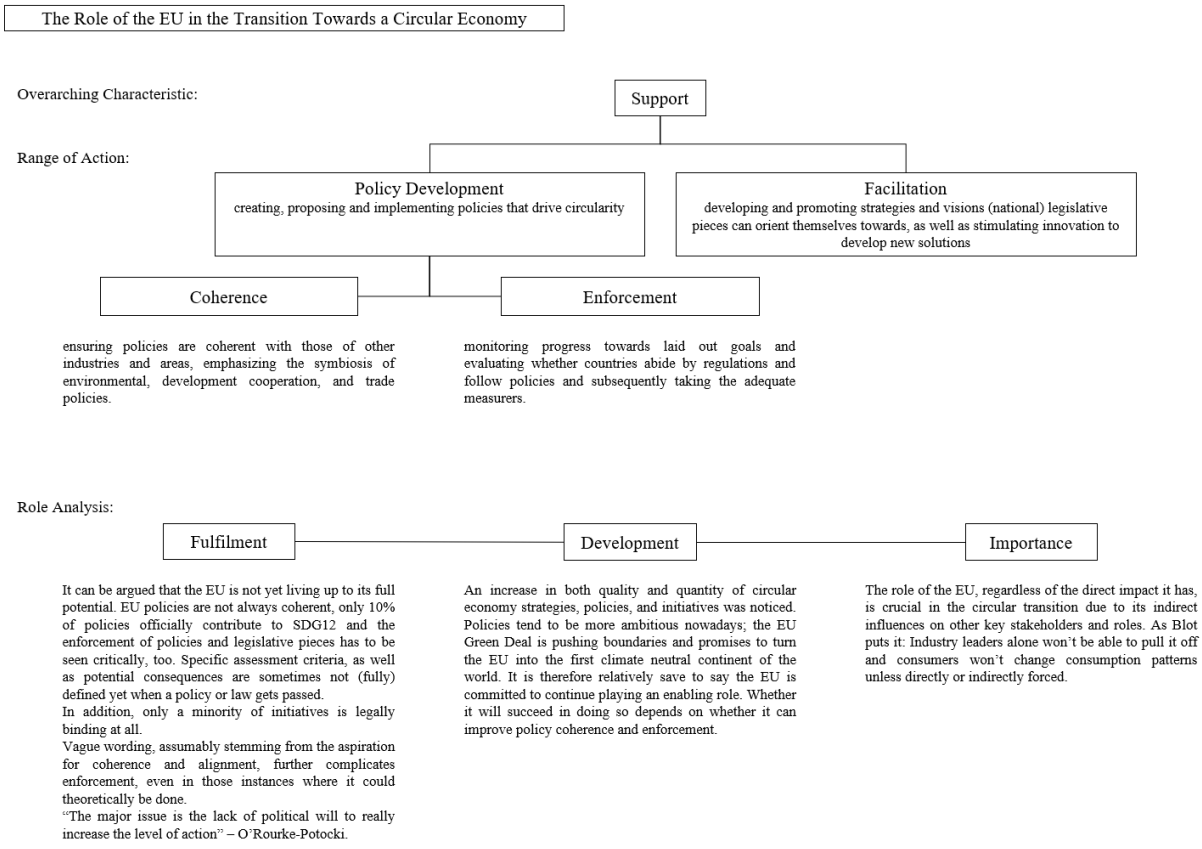


*Figure 2 Overview of the Role of the EU in the Transition Towards a Circular Economy (Gemkow 2021)*

The range of action has been split into a facilitating and a policy developing side. The facilitating side deals with attempts to motivate, incentivize, and support member states to develop and implement their own legislative pieces that should contribute to the union's common goals. The policy developing side represents everything surrounding EU policies, including implementation, monitoring and enforcement. The bottom part of the figure deals with a concluding analysis of the role, thereby touching upon three evaluation areas: To what extent the EU has fulfilled its role's potential, how the role is developing, and how important it is for the achievement of circularity.

## States and National Governments

States and national governments have a wide array of interventions at their disposal to drive circularity forward. Due to the versatility and interrelated nature of measures, however they can also end up preventing progress.

While all European member states are officially obliged to take the necessary measures (as described under European Union / European Commission), one can observe that some are taking up more of a leading role than others.

Whereas in 2013, a common opinion was that environmental laws were always compromises of conflicting interests (DW 2013), Susanne Dröge and Felix Schenuit offered a more amicable perspective in 2018, claiming that climate protection can be both, undermined but also supported through foreign trade (Dröge and Schenuit 2018). As positive example they mention climate-friendly technologies and products, where foreign trade could ensure a quicker dissemination and might potentially cause more related innovations, therefore increasing the chance of national climate targets being implemented worldwide (Ibid, 1).

France's Anti-waste Law is a piece of legislation, that is part of the country's own action plan towards circularity, the Plan Gouvernemental Économie Circulaire (Ministère de la Transition Écologique 2020). The law adopted in 2020 entails up to 50 measures and lays out in detail how to eliminate waste at the stages of design, production, distribution, and consumption (Ibid) and is being regarded as a model example by policy expert O'Rourke-Potocki (2021). Compared to EU policies and legislations discussed earlier it differs in that it includes concrete actions to ensure its enforceability, too. These range from national level, by implementing bonus/malus-type incentive systems for companies, to regional level by providing Mayors with greater power to prevent littering and illegal dump sites (Ministère de la Transition Écologique 2020). Companies are now no longer allowed to landfill or incinerate unsold non-food products

and are obliged to reuse, donate, or recycle them (Ibid). The French government seems convinced that this law "will fundamentally change" production methods and its citizens' consumption patterns (Ibid).

Not in all European member states does the development of sustainable national legislation go as quick and smooth as in France, however. Dröge and Schenuit also warn that if legislations that are perceived as too ambitious are getting passed, it might lead to companies relocating (parts of) their supply chain or production facilities (Dröge and Schenuit 2018). Since this only moves the problem to somewhere else and does not solve it, this should naturally be avoided.

Nonetheless, this is rarely the case as usually too ambitious legislations do not manage to get passed in the first place. Germany, after being told by the Federal Constitutional Court, that its climate protection law is being considered insufficient (Neufeldt 2021), decided to toughen it drastically. Aiming to achieve climate neutrality by 2045 and reducing emissions by 65% until 2030[14] (German Government 2021), its ambition could be seen as matching that of France. What is missing, however, are precise measures and concrete savings targets for the different industries (Hofmann 2021), thereby raising doubts whether it can be enforced at all. Some voiced the concern that the quick passing of the law had more to do with the national electoral campaign at the time than with the aspiration of improving sustainability, and that it will most likely be the responsibility of the next administration to fix it (Ibid).

Just as it has been established on a European level in the previous chapter, policies national governments develop can end up being implemented slightly divergent and having less positive impact than desired.

Blot offers an optimistic view, however, mentioning that even if policies don't get implemented exactly how they were originally envisioned, they can still "enable some change or at least

[14] Compared to 1990 levels.

enable a debate with other countries to make progress on that field" (Blot 2021). To put it exaggeratedly, even unsuccessful governmental interventions can successfully kickstart progress.

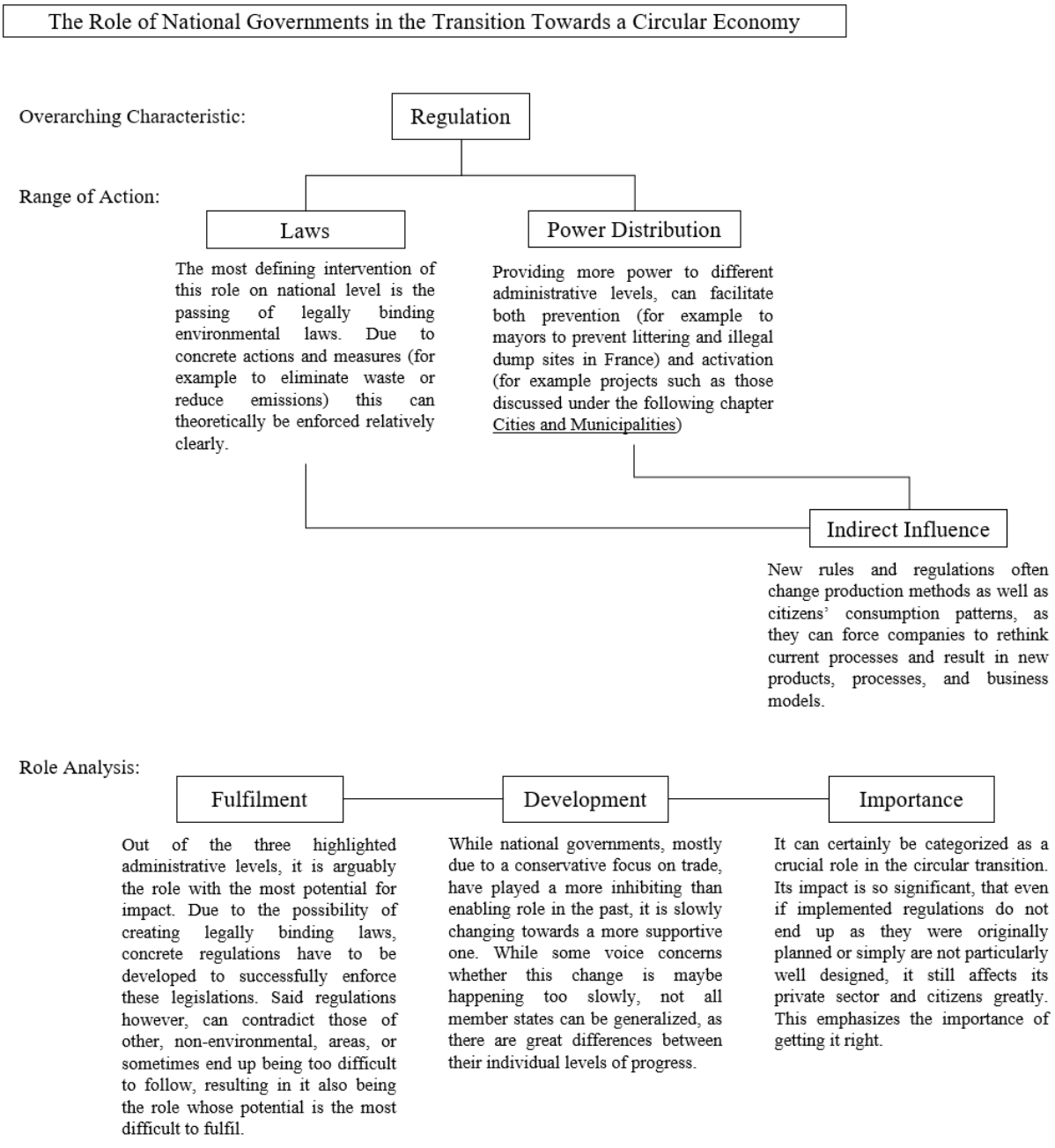


*Figure 3 Overview of the Role of National Governments in the Transition Towards a Circular Economy (Gemkow 2021)*

## Cities and Municipalities

The smaller the scale the easier the implementation, it seems, which might explain why most of the contemporary circular governmental projects are occurring on city or municipality level.

“Engaging the private sector and making the most of the existing infrastructure is key” says O’Rourke-Potocki, referencing New York’s #WearNext campaign (O’Rourke-Potocki 2021). #WearNext was a joint effort of the New York City Department of Sanitation (DSNY), the New York City Economic Development Corporation (NYCEDC), the Ellen MacArthur Foundation, fashion brands, collectors, recyclers, and resale companies in 2019 to set the circular fashion transition in motion (Ellen MacArthur Foundation 2021). The DSNY developed an online interactive map indicating over 1.000 collection points, allowing consumers to return clothes they no longer have use for (DSNY 2021).

Governments can also promote purchasing circular fashion, as the example of Paris Good Fashion, an association comprising more than fifty companies, designers, NGOs, and institutions, shows (Paris Good Fashion 2021). Paris Good Fashion, together with Mapstr, created an online map of second-hand clothing stores, clothing repair shops and other sustainable textile companies located in Paris (Paris Good Fashion 2021).

O’Rourke-Potocki also alludes to the possibility of governments taking up the role of an active connector facilitating industrial symbiosis (O’Rourke-Potocki). Industrial symbiosis can create cross-industrial material and resource flows and reveal new business opportunities (Ellen MacArthur Foundation 2021, 1). The WISP (Western Cape Industrial Symbiosis Programme) is Cape Town’s attempt at connecting companies in such a way. In theory, exchanges of under-utilized resources should bare the potential of generating new revenue streams and reducing operational cost. In practice, the city of Cape Town managed to divert over 100.000 tons of

waste from landfills, while generating over 8.5 million USD in additional revenues, cost savings, and private investments (Ellen MacArthur Foundation 2021, 1).

While all previous examples deal with governmental interventions promoting, facilitating, or supporting circular actions in the private sector, Blot suggests that the public sector could also aim to become circular on its own by renovating government buildings, using more sustainable transport methods, or enabling green public procurement (Blot 2021). O'Rourke-Potocki refers to the Municipality of Herning in Denmark as an example of where the latter was tried (O'Rourke-Potocki 2021). Given the municipality's population of around fifty thousand people (Statistics Denmark 2021), it was a rather small-scale pilot project, but a seemingly successful one. Herning introduced circular principles to its contractor of uniforms and purchased the clothes through a service-based model, which according to O'Rourke-Potocki, led to savings of 6.700 EUR and roughly 1.000 tons of CO2 as a result after four years (O'Rourke-Potocki).

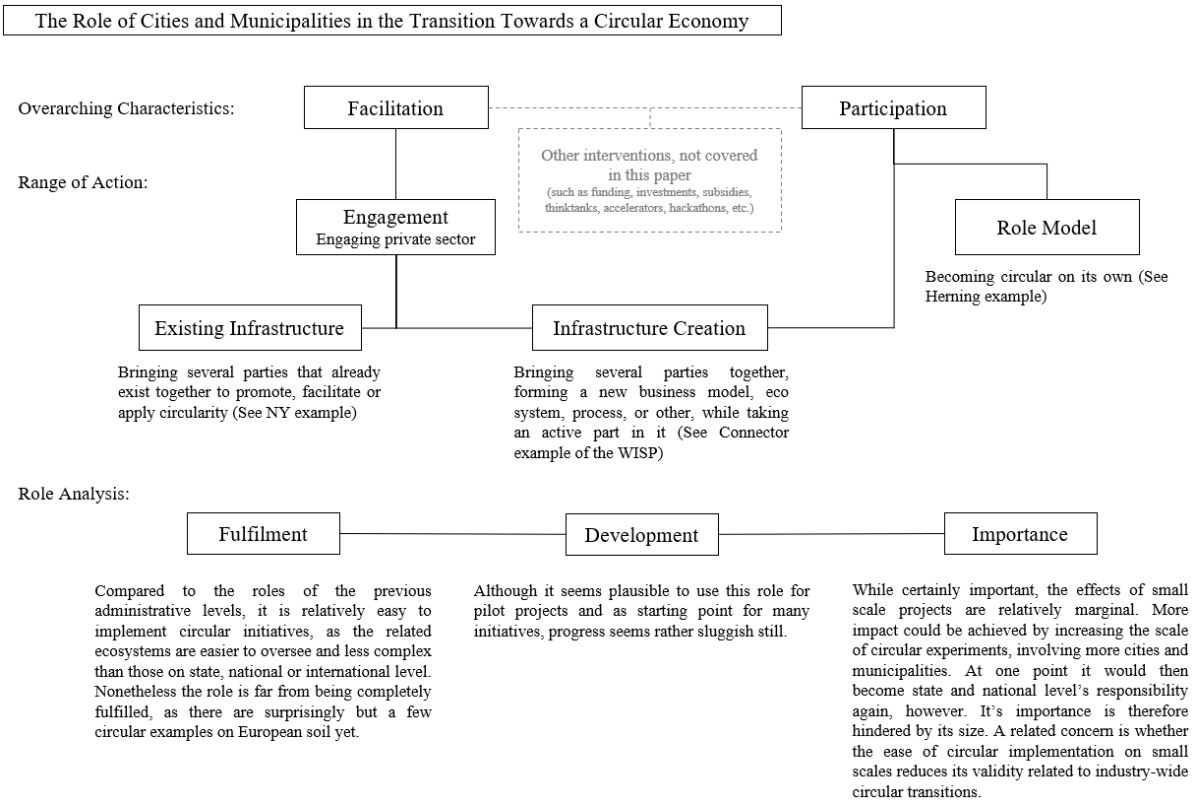


*Figure 4 Overview of the Role of Cities and Municipalities in the Transition Towards a Circular Economy (Gemkow 2021)*

- NOTE TO READER –

While some of the discussed examples are of non-European cities, they have been included nonetheless, as no compelling reasons for why they could not be implemented within the EU, too, could be found. Seeing as this chapter deals with both the current and potential role of governments in the circular transition, they therefore have their raison d'être.

## D) Conclusion

- NOTE TO READER –

While this (concluding) chapter is required to be a joint effort of the authors, the three roles of 'Consumers', 'Apparel Companies', and 'Policies, Regulations, and Governments' were investigated individually. For better readability, it was therefore decided to first conclude the individual parts in a separate manner before subsequently connecting the findings under Interconnectedness of the Roles.

### Conclusions regarding the Role of Consumers

To conclude, there is a clear attitude-behavior gap between consumers' willingness to engage in circular practices and their actual engagement. When asked in the second section[15] about their contribution as individuals and readiness to engage in circular practices in their daily lives, most respondents showed willingness to embrace both. However, their answers from the third section[16] show the opposite. When interrogated about circular practices such as buying second-hand clothing items, using clothing rental services, or upcycling their clothes, more than half of the participants replied they have not done it or that it is not a viable option for them. In fact, of all the circular practices presented in the survey, only 'repair' seems to be put into practice by most participants. Moreover, fast fashion brands are still the respondents' preferred type of brand, and their main purchasing driver 'price' does not reflect social or environmental concerns, nor the application of the Circular Economy concept. Even the period most respondents keep a piece of clothing in their closets – 5 years or less – is below the average of 5.4 years. Furthermore, the feelings of happiness that most respondents try to find in new clothes lead to unplanned purchases that often translate into people buying items they do not

[15] Note: Due to Nova SBE submission requirements this link refers to content in other documents and will therefore not function as intended.
[16] Note: Due to Nova SBE submission requirements this link refers to content in other documents and will therefore not function as intended.

really need. Nevertheless, the frequency with which most respondents buy new clothes – seasonally or only when they need to – and their main motivation to do it – needs – show a more positive view. Finally, the survey confirmed that women and younger generations, in particular Generation Z, seem to be the main enablers of the Circular Economy. Overall, the Circular Economy still has a long way ahead until it will be widely accepted and implemented by consumers. However, the fact that younger generations will represent a larger part of the population in the future may be an optimistic sign for the future of the Circular Economy assuming that the identified attitude-behavior gap does not further deteriorate.

## Conclusions regarding the Role of Apparel Companies

Potentially the most relevant finding is the differing perception of barriers when considering different types and sizes of businesses. Start-ups generally face higher financial barriers related to funding (as in the case of Orange Fiber) or manufacturing or advertisement costs (as in the case of Thalie Paris), whereas bigger companies face fewer financial uncertainties but can find themselves undecided whether to implement circular strategies or focus on business as usual. SMEs and Start-ups in turn, are less prone to such cultural difficulties, as sustainability or even circularity are often engrained in their core. They can seem to take their role more seriously, tracking circular KPIs or at least planning to do so in the near future, whereas some bigger companies – particularly fast fashion brands – seem to perceive sustainability more as a compulsion to satisfy a general public and occasionally fall prey to implementing only partially circular projects or sustainable initiatives with adverse effects such as essentially promoting further consumption.

Other relevant barriers that were able to be validated are regulatory issues[17] slowing down sustainable process and costumer behavior.

## Conclusions regarding the Role of Policies, Regulations, and Governments

All three of the discussed administrative levels allocate a significant share of their efforts towards enabling, facilitating, supporting, and promoting circular initiatives. Due to a perceived correlation of reduced complexity and successful implementation, it is primarily cities and municipalities that also participate directly in circular efforts. National and international bodies rather deal with ensuring that the right framework conditions are in place by developing and passing policies and regulations. Their active participation is often limited to a networking and connecting role, as city-level interventions are not as easily adapted on national or international level.

While all levels aim to be an enabling force for circularity, the risk of inadvertently taking on an inhibiting role is highest on national level. The smaller the scale of application, the easier it is to gauge potential adverse consequences. On an international (EU) level these adverse consequences can be damped easier than on a national level, as EU policies are not legally binding and laws that are (e.g. European Climate Law) leave enough grey areas to provide for some leeway in avoiding them.

## Interconnectedness of the Roles

While the three roles discussed in this paper have been investigated separately, in reality they are very much interlinked. They can influence each other into acting in a more inhibiting or

[17] The interviewee did not provide more detailed information as to what kind of issues specifically the SME was facing.

supporting manner and it is safe to say that one alone will not be able to bring about the much-needed change. To illustrate this interconnectedness, the following figure was created:

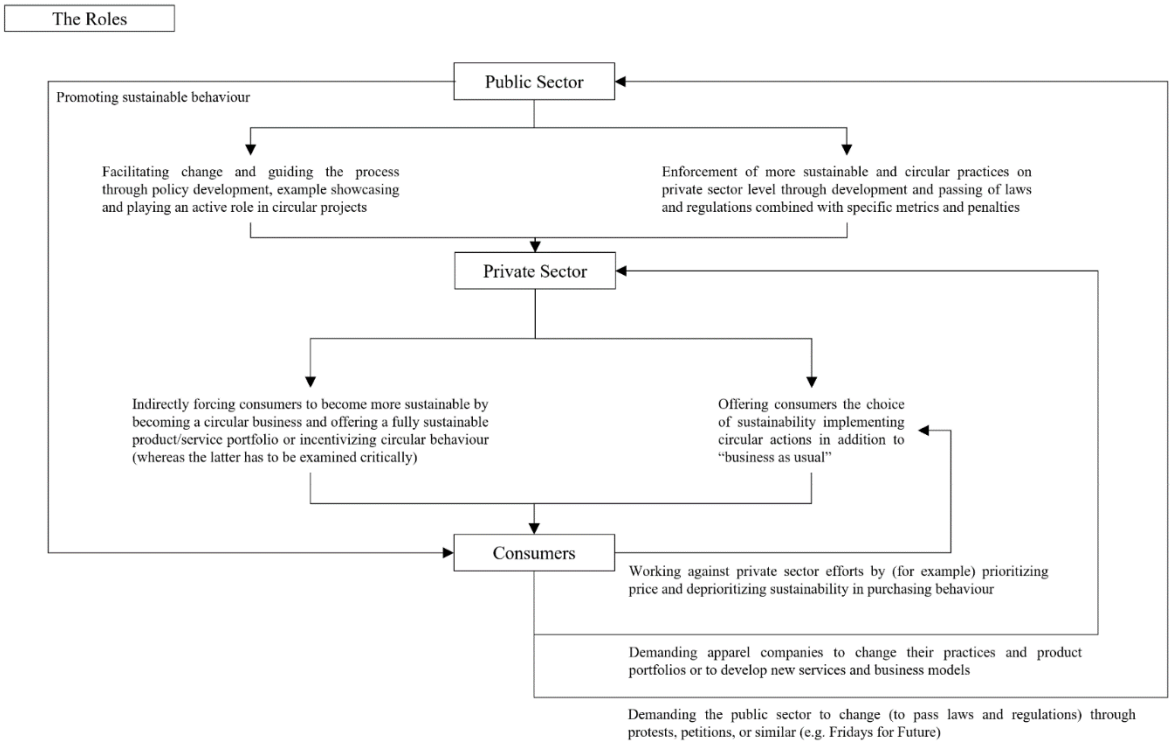


*Figure 5 Interconnectedness of the Roles (Gemkow, Costa and Suriano 2021)*

If they can achieve a certain level of alignment and support each other by taking on responsibility and by playing an active part in the transition, a more sustainable and potentially even circular fashion industry could, at least theoretically, be pulled off. However, reasons suggesting it to be rather unlikely to occur in the near future are manifold.

A European circular apparel industry is impossible as long as supply chains span across several continents and even if de-globalizing European fashion could be done, it could not happen without significantly harming trade along the way. To achieve true circularity in the industry one would therefore have to attempt it on a global level. Yet, not only are the interrelations of the plethora of entities in the various (partially untransparent) supply chains significantly too complex to be successfully redesigned at once, political motivations from outside the EU are also playing an inhibiting role.

Potentially one of the most crucial aspects however is the roles passing the responsibility to one another: On public sector level exists the notion that consumers (, whose behaviors, even within the more developed countries in the EU, can be described as far from sustainable) will not change their consumption patterns unless they are forced to. From a consumer's point of view, it is being argued, that as long as apparel brands put profit over social and environmental concerns and continue to produce cheap clothes, it is unlikely that consumers will feel encouraged to change their patterns. Apparel brands on the other side have voiced concerns as to whether consumers even fully understand circularity and doubt their willingness to put sustainability first when considering a purchase. Both assumptions could be confirmed via the conducted consumer survey. Consumers have a limited understanding of the range of circular activities, still prioritize price over every other factor, and regard the potential impact of their individual actions as too insignificant compared to that of the other two roles.

While this is by no means the only 'doom loop', it is the view of the authors that implementing circular practices or attempting small scale circular 'economies' should definitely be continued, as an increasing number of sustainable initiatives will slowly but inevitably lead to a more sustainable apparel industry.

## E) Limitations and Future Work

### Limitations

The size of the research team can be seen as a general limitation, as more researchers per role or sub-topic would have allowed for more extensive research. More interviewees and survey participants could have been found, resulting in more statistically valid inferences, for instance. Most of the limitations however are role-specific:

*Related to the Role of Consumers*

Related to the survey conducted, which served as one of the primary sources for part C)[18], the main methodological limitations are the sampling bias and the statistical relevance of the sample size. Due to an uneven distribution of genders, age groups, countries, and levels of education, results cannot be generalized for the entire European population. Regarding gender, the sample is biased towards women. Generation-wise it is biased towards Generation Z and Millennials, lacking representation of Generation X and Baby Boomers. In terms of current country of residence and level of education, the sample is biased towards Portugal and bachelor's degrees, respectively. Nonetheless, the regression analyses indicated that the last variable does not account for much of the variation of the dependent variables in each regression model. In other words, there is no correlation between the level of education and the answers to the 3 chosen questions.

Furthermore, the survey itself presents some constraints such as possible subjective interpretations of the questions and respondents potentially not being completely honest when answering.

[18] Note: This refers to part C) in the document submitted by Costa.

*Related to the Role of Apparel Companies*

A limited number of companies and circularity strategies have been analyzed. It is therefore not possible yet to fully understand the entirety of barriers involved in the implementation of a circular business model and their potentially varying relevance for different types of businesses.

*Related to the Role of Policies, Regulations, and Governments*

The presented examples of governmental intervention, regulations and policies by no means aim to provide an all-encompassing overview of possible actions governmental institutions could take. There are more examples of governmental interventions (governmental funded organizations, start-up accelerator programs, initiatives and more) but the ones discussed were found to be among the most relevant to showcase the different roles governments can play in the circular transition.

Some of the highlighted examples are not specifically related to fashion due to a limited number of circular governmental examples on each administrative level and the fact that many policies and regulations deal with circularity (as well as circularity related issues such as waste management and recycling) on a cross-industry base.

With regards to the conducted interviews a quantitative comparative analysis of the findings was not possible as different questions were asked per interview. Nonetheless, this was done deliberately, as it was perceived as more relevant given the nature of the chapter and its research methodology.

The limited number of interviewees might decrease the objectivity of the findings, although the chapter aims to present a predominantly fact-based view and uses the interviewees opinions merely to emphasize a point.

## Future Work

Possible future research areas include but are not limited to:

- Researching how to overcome the discussed barriers to circularity.

*Related to the Role of Consumers*

- Researching in other countries with more people from different age groups to potentially discover other consumer habits and behaviors.
- Researching how to raise awareness about the Circular Economy among consumers through a standardized definition that applies globally.
- Researching how to make each consumer believe that their individual actions make a difference and can have a positive impact.
- Researching how to motivate and/or incentivize consumers to integrate more circular practices into their daily lives.

*Related to the Role of Apparel Companies*

- Researching other private sector players than apparel companies, such as recycling or logistic companies or investors.
- Researching barriers in different countries to identify more general ones applicable to every kind of environment and separate them from relatively specific ones.
- Researching the role of suppliers, their point of view, and how potential barriers inhibit their practices.
- Researching laws related to circularity that companies must comply with in terms of relevance and ease of abidance.
- Researching the evolution of circular initiatives to better understand what companies are likely to face when developing and implementing them.

*Related to the Role of Policies, Regulations, and Governments*

- Researching each EU member states' trade and environmental legislations to identify potential bottle necks.
- Researching each member state to find out where within the EU it would be easiest to implement a circular economy.
- Researching specific member states to identify ideal environments and characteristics for circular projects on a city and municipality level.
- Researching the roles of other international and national institutions, including non-European ones to provide a comparative analysis.

## References


Beall, Abigail. “Why Clothes Are So Hard to Recycle” bbc.com. https://www.bbc.com/future/article/20200710-why-clothes-are-so-hard-to-recycle (accessed October 8, 2021).

Bianchini, Augusto, Jessica Rossi, and Marco Pellegrini. "Overcoming the Main Barriers of Circular Economy Implementation through a New Visualization Tool for Circular Business Models" *Sustainability* 11, 23, (2019) 1-33. https://doi.org/10.3390/su11236614 (accessed October 14, 2021).

Brydges, Taylor. “Closing the Loop on Take, Make, Waste: Investigating Circular Economy Practices in the Swedish Fashion Industry” *Journal of Cleaner Production* 293, (2021) 1-8 https://doi.org/10.1016/j.jclepro.2021.126245 (accessed October 30, 2021).

Business Wire. “Global Apparel Market (2020 to 2030) -Key Opportunities and Strategies-” businesswire.com. https://www.businesswire.com/news/home/20210406005828/en/Global-Apparel-Market-2020-to-2030---Key-Opportunities-and-Strategies---ResearchAndMarkets.com (accessed September 24, 2021).

CB Insights. “The Future of Fashion: From Design to Merchandising, How Tech Is Reshaping the Industry” cbinsights.com. https://www.cbinsights.com/research/fashion-tech-future-trends/ (accessed September 24, 2021).

Charpail, Mathilde. “What’s Wrong with the Fashion Industry?” sustainyourstyle.org. https://www.sustainyourstyle.org/old-environmental-impacts (accessed September 18, 2021).

Colon, Scarlett. “The Rise of Fashion Rental” theguardian.com. https://www.theguardian.com/fashion/2020/sep/20/the-rise-of-fashion-rental-scarlett-conlon (accessed October 1, 2021).

Corradini, Julia. “The Clothing Industry and Human Rights Violations: Consumption, Individuals and the Role of Big Players” repository.gchumanrights.org. https://repository.gchumanrights.org/bitstream/handle/20.500.11825/819/Corradini.pdf?sequence=1&isAllowed=y (accessed December 13, 2021).

Davenport, Tom. “The Future of Work Now: AI-Assisted Clothing Stylists at Stitch Fix” forbes.com. https://www.forbes.com/sites/tomdavenport/2021/03/12/the-future-of-work-now-ai-assisted-clothing-stylists-at-stitch-fix/?sh=76823b2f3590 (accessed October 4, 2021).

Dröge, Susanne and Felix Schenuit. “Handels- und Klimapolitik der EU Strategisch Zusammenführen. Potenziale in Zeiten der Neuorientierung“ swp-berlin.org. https://www.swp-berlin.org/publications/products/aktuell/2018A20_dge_sux.pdf (accessed November 15, 2021).

DSNY. “Clothing and Textile Drop-Off” nyc.gov. https://www1.nyc.gov/assets/dsny/site/services/donate-goods/textiles (accessed November 14, 2021).

DW. “Bundesregierung verhindert Klimagesetz“ dw.com. https://www.dw.com/de/bundesregierung-verhindert-klimagesetz/a-17157512 (accessed November 15, 2021).

Eccles, Robert and Svetlana Klimenko. “The Investor Revolution“ hbr.org. https://hbr.org/2019/05/the-investor-revolution (accessed September 29, 2021).

Elan, Priya. “Shopping Habits of Generation Z Could Spell End of Fast Fashion” theguardian.com/international. https://www.theguardian.com/fashion/2020/may/25/shopping-habits-of-generation-z-could-spell-end-of-fast fashion (accessed September 29, 2021).

Ellen MacArthur Foundation. “Cape Town – Africa’s First Industrial Symbiosis Programme – Generating Multiple Benefits for the Manufacturing Industry” emf.thirdlight.com. https://emf.thirdlight.com/link/y7ux8ghqu8wh-ygnwig/@/preview/1 (accessed November 14, 2021).

Ellen MacArthur Foundation. “Financing the Circular Economy” emf.thirdlight.com. https://emf.thirdlight.com/link/17z1dk7idbty-lrrp3s/@/preview/1?o (accessed October 4, 2021).

Ellen MacArthur Foundation. “The #WearNext Campaign: New York City” ellenmacarthurfoundation.org. https://ellenmacarthurfoundation.org/circular-examples/the-wearnext-campaign-new-york-city (accessed November 14, 2021).

Ellen MacArthur Foundation. “The Circular Economy in Detail” archive.ellenmacarthurfoundation.org. https://archive.ellenmacarthurfoundation.org/explore/the-circular-economy-in-detail?gclid=CjwKCAjw7fuJBhBdEiwA2lLMYaMZ4H9aaiaxVXVdESsA060QJiSpKtj8J89jROv0sxvsrl1OyPDNKhoCZTsQAvD_BwE (accessed September 18, 2021).

Ellen MacArthur Foundation. “Universal Circular Economy Policy Goals – Enabling the Transition to Scale“ emf.thirdlight.com. https://emf.thirdlight.com/link/5bli4i8yq0dv-1ovkaa/@/#id=0 (accessed November 14, 2021).

European Commission. “A New EU Strategy for Textiles & Clothing – EURATEX Vision“ euratex.eu. https://euratex.eu/wp-content/uploads/EURATEX-Vision-on-EU-Textile-Strategy-fin.pdf (accessed November 14, 2021).

European Commission. “Behavioural Study on Consumers’ Engagement in the Circular Economy” ec.europa.eu. https://ec.europa.eu/info/sites/default/files/ec_circular_economy_final_report_0.pdf (accessed October 16, 2021).

European Commission. “Circular Economy Action Plan” ec.europa.eu. https://ec.europa.eu/environment/strategy/circular-economy-action-plan_en (accessed November 14, 2021).

European Commission. “Circular Economy Package: Questions & Answers” ec.europa.eu. https://ec.europa.eu/commission/presscorner/detail/en/MEMO_15_6204 (accessed September 18, 2021).

European Commission. “Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions” eea.europa.eu. https://www.eea.europa.eu/policy-documents/communication-from-the-commission-to-1 (accessed October 15, 2021).

European Commission. “EU Strategy for Sustainable Textiles” ec.europa.eu. https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12822-EU-strategy-for-sustainable-textiles (accessed November 14, 2021).

European Commission. “First Circular Economy Action Plan” ec.europa.eu. https://ec.europa.eu/environment/topics/circular-economy/first-circular-economy-action-plan_en (accessed November 14, 2021).

European Commission. “G20 Online Workshop on Circular Fashion” ec.europa.eu. https://ec.europa.eu/environment/international_issues/relations_g20_events_en.htm (accessed November 14, 2021).

European Commission. “Regulatory Barriers for the Circular Economy: Lessons From Ten Case Studies” ec.europa.eu. https://ec.europa.eu/growth/content/regulatory-barriers-circular-economy-lessons-ten-case-studies_en (accessed October 22, 2021).

European Commission. “Study on the EU's List of Critical Raw Materials” op.europa.eu. https://op.europa.eu/en/publication-detail/-/publication/c0d5292a-ee54-11ea-991b-01aa75ed71a1/language-en/format-PDF/source-search (accessed September 18, 2021).

European Union. “Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 Establishing the Framework for Achieving Climate Neutrality and Amending Regulations (EC) No 401/2009 and (EU) 2018/1999 (‘European Climate Law’)” eur-lex.europa.eu. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021R1119 (accessed November 14, 2021).

Farra, Emily. “Net-a-Porter Is Launching a Resale Pilot Program with Reflaunt” vogue.com. https://www.vogue.com/article/net-a-porter-reflaunt-new-resale-platform (accessed October 4, 2021).

German Government. “Klimaschutzgesetz 2021: Generationenvertrag für das Klima“ bundesregierung.de.

https://www.bundesregierung.de/breg-de/themen/klimaschutz/klimaschutzgesetz-2021-1913672 (accessed November 15, 2021).

GlobeScan and GreenBiz. “How Consumer Engagement Can Drive Circularity” globescan.com. https://globescan.com/2020/02/11/how-consumer-engagement-can-drive-circularity-report/ (accessed October 23, 2021).

Granskog, Anna, Libbi Lee, Karl-Hendrik Magnus, and Corinne Sawers. “Survey: Consumer Sentiment on Sustainability in Fashion” mckinsey.com. https://www.mckinsey.com/industries/retail/our-insights/survey-consumer-sentiment-on-sustainability-in-fashion (accessed September 29, 2021).

H&M Magazine. “From Old to New with Looop” hm.com. https://www2.hm.com/en_gb/life/culture/inside-h-m/meet-the-machine-turning-old-into-new.html (accessed October 4, 2021).

Hayes, Adam. “Fast Fashion” investopedia.com. https://www.investopedia.com/terms/f/fast fashion.asp (accessed September 18, 2021).

Heeseung, Kim. “What Is a Circular Economy and How Does it Work?” nbs.net. https://www.nbs.net/articles/what-is-a-circular-economy-and-how-does-it-work (accessed September 18, 2021).

Ho, Sally. “Nearly 60% Of Sustainable Fashion Claims Are Greenwashing, Report Finds” greenqueen.com.hk. https://www.greenqueen.com.hk/fashion-brands-sustainability-claims-greenwashing/ (accessed September 18, 2021).

Hofmann, Kristina. “Neues Klimaschutzgesetz: Viel Eigenlob, doch Kritik bleibt“ zdf.de. https://www.zdf.de/nachrichten/politik/klimaschutzgesetz-kabinett-fridays-for-future-100.html (accessed November 15, 2021).

Huckle, Manon. “When It Comes To Cleaning Up Its Act, Fast Fashion Is No Fast Fix” thefashionlaw.com. https://www.thefashionlaw.com/when-it-comes-to-cleaning-up-its-act-fast fashion-is-no-fast-fix/ (accessed September 18, 2021).

ING. “Learning from consumers: How shifting demands are shaping companies’ circular economy transition” mondovisione.com https://mondovisione.com/_assets/files/Learning-from-Consumers---ING-Report-04.02.2020.pdf (accessed October 17, 2021)

Iraldo, Fabio and Irene Bruschi. “Economia Circolare: Principi Guida e Casi Studio” *Green Economy Observatory, Bocconi University*, (2015) 1-29. https://www.researchgate.net/publication/289822795_Economia_Circolare_principi_guida_e_casi_studio (accessed October 27, 2021).

Isles, Joe. “Which country is leading the circular economy shift?” ellenmacarthurfoundation.org. https://ellenmacarthurfoundation.org/articles/which-country-is-leading-the-circular-economy-shift (accessed October 17, 2021).

James, Alana M., Lizette Reitsma and Mersha Aftab. “Bridging the Double-Gap in Circularity. Addressing the Intention-Behavior Disparity in Fashion” *The Design Journal* 22, 1 (2019) 901-914. doi:10.1080/14606925.2019.1595407

Jia, Fu, PhD, Shiyuan Yin, Lujie Chen, and Xiaowei Chen. “The Circular Economy in the Textile and Apparel Industry: A Systematic Literature Review” *Journal of Cleaner*

*Production* 259, (2020) 1-20. https://doi.org/10.1016/j.jclepro.2020.120728 (accessed October 24, 2021).

Kart, Jeff. "Galy Grows Greener Cotton in a Lab, 10 Times Faster Than the Farm Variety" forbes.com. https://www.forbes.com/sites/jeffkart/2020/04/14/galy-grows-greener-cotton-in-a-lab-10-times-faster-than-the-farm-variety/ (accessed October 4, 2021).

Kirchherr, Julian, Denise Reike, and Marko Hekkert. "Conceptualizing the Circular Economy: An Analysis of 114 Definitions" *Resources, Conservation, and Recycling* 127, (2017) 221-232. https://doi.org/10.1016/j.resconrec.2017.09.005 (accessed November 9, 2021).

Kirchherr, Julian, Laura Piscicelli, Ruben Bour, Erica Kostense-Smit, Jennifer Muller, Anne Huibrechtse-Truijens and Marko Hekkert. "Barriers to the Circular Economy: Evidence from the European Union" *Ecological Economics* 150, 8 (2018) 264-272. https://doi.org/10.1016/j.ecolecon.2018.04.028 (accessed October 26, 2021).

Kirchherr, Julian, Marko Hekkert, Ruben Bour, Anne Huijbrechtse-Truijens, Erica Kostense-Smit, and Jennifer Muller. "Breaking the Barriers to the Circular Economy" circulareconomy.europa.eu. https://circulareconomy.europa.eu/platform/sites/default/files/171106_white_paper_breaking_the_barriers_to_the_circular_economy_white_paper_vweb-14021.pdf (accessed October 2, 2021).

Kohlbacher, Clemens. "Grape Leather – The Vegan Wine Fabric from Vegea" danandmez.com. https://danandmez.com/blog/grape-leather/ (accessed October 4, 2021).

Koszewska, Malgorzata. “Circular Economy – Challenges for the Textile and Clothing Industry” Autex Research Journal 20, (2018) 337-347. https://doi.org/10.1515/aut-2018-0023 (accessed October 31, 2021).

Krebbers, Merel. “Tracing the Story, One Thread at a Time” hmgroup.com. https://hmgroup.com/our-stories/tracing-the-story-one-thread-at-a-time/ (accessed October 4, 2021).

MacGilp, Ruth. “What the Fashion Sharing Economy Is, and How to Do It Right” ecocult.com. https://ecocult.com/fashion-sharing-economy-swap-resale/ (accessed October 1, 2021).

Martinko, Katherine. “Patagonia and Bureo Are Making Jackets Out of Old Fishing Nets” treehugger.com. https://www.treehugger.com/patagonia-bureo-making-jackets-old-fishing-nets-5180198 (accessed October 5, 2021)

McCarthy, Joe. “Does Recycling Your Clothes Actually Make a Difference?” globalcitizen.org/en/. https://www.globalcitizen.org/en/content/does-recycling-your-clothes-actually-make-a-differ/ (accessed October 8, 2021).

McFall-Johnsen, Morgan. “Is Fashion Bad for the Environment?” weforum.org. https://www.weforum.org/agenda/2020/01/fashion-industry-carbon-unsustainable-environment-pollution/ (accessed September 24, 2021).

McFall-Johnsen, Morgan. “The Fashion Industry Emits More Carbon Than International Flights and Shipping Combined. Here Are the Biggest Ways It Impacts the Planet” businessinsider.com. https://www.businessinsider.com/fast fashion-environmental-impact-pollution-emissions-

waste-water-2019-10#washing-clothes-meanwhile-releases-500000-tons-of-microfibers-into-the-ocean-each-year-the-equivalent-of-50-billion-plastic-bottles-7 (accessed September 24, 2021).

McKinnon, Tricia. “How Ultra-Fast Fashion Retailers Are Taking Share from Zara & H&M” indigo9digital.com. https://www.indigo9digital.com/blog/ultrafastfashiongrowth (accessed October 28, 2021).

McKinsey and Company. “The Fashion Industry in 2020: Ten Top Themes From the State of Fashion” mckinsey.com. https://www.mckinsey.com/industries/retail/our-insights/the-fashion-industry-in-2020-ten-top-themes-from-the-state-of-fashion (accessed September 18, 2021).

McKinsey and Company. “The Future of Fashion: Sustainable Brands and 'Circular' Business Models” mckinsey.com. https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/The%20Next%20Normal/The-Next-Normal-The-future-of-fashion (accessed December 8, 2021).

Mender, Site. “Fast Fashion – A Growing Phenomena?” allenaustin.com. https://allenaustin.com/blog/fast fashion-a-growing-phenomena/ (accessed September 27, 2021).

Ministère de la Transition Écologique. “The Anti Waste Law in the Daily Lives of the French People – What Does That Mean in Practice?” ecologie.gouv.fr. https://www.ecologie.gouv.fr/sites/default/files/en_DP%20PJL.pdf (accessed November 14, 2021).

Neufeldt, Günther. “Bundesverfassungsgericht fordert mehr Klimaschutz“ zdf.de. https://www.zdf.de/nachrichten/heute-sendungen/bundesverfassungsgericht-klimaschutz-video-100.html (accessed November 15, 2021).

Nørup, Nynne, Kaj Pihl, Anders Damgaard, and Charlotte Scheutz. “Development and Testing of a Sorting and Quality Assessment Method for Textile Waste” *Waste Management* 79, (2018) 8-21. https://doi.org/10.1016/j.wasman.2018.07.008 (accessed October 24, 2021).

Paras, Manoj Kumar and Rudrajeet Pal. “Reverse Logistics in the Sustainable Fashion Supply Chain” in *Supply Chain Management and Logistics in the Global Fashion Sector*, ed. Rajkishore Nayak, 1-17. Oxfordshire, England: Taylor Francis, 2020. https://www.taylorfrancis.com/chapters/edit/10.4324/9781003089063-12/reverse-logistics-sustainable-fashion-supply-chain-manoj-kumar-paras-rudrajeet-pal (accessed November 16, 2021).

Paris Good Fashion. “About Us” parisgoodfashion.fr. https://parisgoodfashion.fr/en/about-us/ (accessed November 14, 2021).

Paris Good Fashion. “Paris Good Fashion’s Map“ web.mapstr.com. https://web.mapstr.com/?mapId=My665OqPPl&theme.foreground=%23ffbb33&theme.background=%23fcf2e7&controls=1 (accessed November 14, 2021).

PGGM, KPMG, EBRD, and WBCSD. “Linear Risks” circle-economy.com. https://www.circle-economy.com/resources/linear-risks-how-business-as-usual-is-a-threat-to-companies-and-investors (accessed September 18, 2021).

Pheifer, Allard. “Barriers & Enablers to Circular Business Models“ circulairondernemen.nl. https://www.circulairondernemen.nl/uploads/4f4995c266e00bee8fdb8fb34fbc5c15.pdf (accessed November 15, 2021).

Pike, Helena. “Will Subscription Services Work for Fashion?” businessoffashion.com. https://www.businessoffashion.com/articles/news-analysis/can-subscription-services-work-for-fashion (accessed October 1, 2021).

Potting, José, M.P. Hekkert, Ernst Worrell, and Aldert Hanemaaijer. “Circular Economy: Measuring Innovation in the Product Chain” researchgate.net. https://www.researchgate.net/publication/319314335_Circular_Economy_Measuring_innovation_in_the_product_chain (accessed October 21, 2021).

Pritsch, Gunnar, Uwe Stegemann, and Andrew Freeman. “Turning Risk Management Into a True Competitive Advantage” mckinsey.com. https://www.mckinsey.com/business-functions/risk-and-resilience/our-insights/turning-risk-management-into-a-true-competitive-advantage (accessed September 18, 2021).

Rauturier, Solene. “What Is Fast Fashion?” goodonyou.eco. https://goodonyou.eco/what-is-fast fashion/ (accessed September 18, 2021).

Remy, Nathalie, Eveline Speelman, and Steven Swartz. “Style That’s Sustainable: A New Fast Fashion Formula.” mckinsey.com. https://www.mckinsey.com/business-functions/sustainability/our-insights/style-thats-sustainable-a-new-fast fashion-formula (accessed September 24, 2021).

Ritchie, Hannah. “Climate Change and Flying: What Share of Global CO2 Emissions Come from Aviation?” ourworldindata.org. https://ourworldindata.org/co2-emissions-from-aviation (accessed September 24, 2021).

Ro, Christine. “Can Fashion Ever Be Sustainable?” bbc.com. https://www.bbc.com/future/article/20200310-sustainable-fashion-how-to-buy-clothes-good-for-the-climate (accessed September 24, 2021).

Rood, Trudy. "Opportunities for a Circular Economy.” themasites.pbl.nl. https://themasites.pbl.nl/o/circular-economy/ (accessed September 18, 2021).

Royte, Elizabeth. “We Know Plastic Is Harming Marine Life. What About Us?” nationalgeographic.com. https://www.nationalgeographic.com/magazine/article/plastic-planet-health-pollution-waste-microplastics (accessed September 24, 2021).

Shahbandeh, M. “Secondhand Apparel Market Value Worldwide from 2012 To 2025” statista.com. https://www-statista-com.eu1.proxy.openathens.net/statistics/826162/apparel-resale-market-value-worldwide/ (accessed October 1, 2021).

Shen, Bin, and Caixia Chen. “Quality Management in Outsourced Global Fashion Supply Chains: An Exploratory Case Study” *Production Planning & Control* 31, 9 (2019) 757-769. https://doi.org/10.1080/09537287.2019.1683774 (accessed October 30, 2021).

Stanton, Kristen. “16 Recycled Shoes: Eco-Friendly Styles from the Best Brands” uniguide.com. https://www.uniguide.com/recycled-shoes-brands/ (accessed October 4, 2021).

Statistics Denmark. “Population 1. January” m.statbank.dk. https://m.statbank.dk/TableInfo/BY3?lang=en (accessed November 14, 2021).

Summa Linguae. “Types of Transcription Explained: Verbatim vs. Intelligent vs. Edited Transcription” summalinguae.com. https://summalinguae.com/data/verbatim-vs-intelligent-vs-edited-transcription/ (accessed November 14, 2021).

Taas. “5 Things About 3D Digital Sampling for Fashion You May Not Have Known” taas.nyc. https://www.taas.nyc/blog/5-things-about-3d-digital-sampling-for-fashion-you-may-not-have-known (accessed October 1, 2021).

Tan, Zhai Yun. “What Happens When Fashion Becomes Fast, Disposable and Cheap?” npr.org. https://www.npr.org/2016/04/08/473513620/what-happens-when-fashion-becomes-fast-disposable-and-cheap?t=1633431211138 (accessed September 24, 2021).

Taylor, Liam. “What Is the Linear Economy and Why Do We Need to Go Circular?” planetark.org. https://planetark.org/newsroom/news/what-is-the-linear-economy-and-why-do-we-need-to-go-circular (accessed October 9, 2021).

UK Government. “Uniting the World to Tackle Climate Change” ukcop26.org. https://ukcop26.org/ (accessed November 14, 2021).

UNECE. “Embracing Circularity Is Not an Option but an Urgent Imperative” unece.org. https://unece.org/circular-economy/news/embracing-circularity-not-option-urgent-imperative (accessed October 5, 2021)

UNEP. “Putting the Brakes on Fast Fashion.” unep.org. https://www.unep.org/news-and-stories/story/putting-brakes-fast fashion (accessed September 24, 2021).

UNEP. “UN Launches Drive to Highlight Environmental Cost of Staying Fashionable.” news.un.org. https://news.un.org/en/story/2019/03/1035161 (accessed September 24, 2021).

United Nations. “Academic Impact – Sustainability” un.org. https://www.un.org/en/academic-impact/sustainability (accessed October 2, 2021).

United Nations. “Remarks at 2019 Climate Action Summit” un.org. https://www.un.org/sg/en/content/sg/speeches/2019-09-23/remarks-2019-climate-action-summit (accessed October 2, 2021).

United Nations. “The 17 Goals” un.org. https://sdgs.un.org/goals (accessed October 21, 2021).

Walker, Stuart, Nick Coleman, Peter Hodgson, Nicola Collins, and Louis Brimacombe. “Evaluating the Environmental Dimension of Material Efficiency Strategies Relating to the Circular Economy” *Sustainability* 10, 3, (2018) 1-14. https://doi.org/10.3390/su10030666 (accessed October 14, 2021).

Walk-Morris, Tatiana. “Shein Surpasses H&M, Zara in US Fast Fashion Sales” retaildive.com. https://www.retaildive.com/news/shein-surpasses-hm-zara-in-us-fast fashion-sales/603160/ (accessed October 28, 2021).

WBCSD. “Circular Metrics – Landscape Analysis” wbcsd.org. https://www.wbcsd.org/Programs/Circular-Economy/Factor-10/Metrics-Measurement/Resources/Landscape-analysis (accessed October 24, 2021).

World Bank. “How Much Do Our Wardrobes Cost to the Environment?” worldbank.org. https://www.worldbank.org/en/news/feature/2019/09/23/costo-moda-medio-ambiente (accessed September 24, 2021).

## Interviews[19]

Blot, Eline. Interview by Nico Gemkow. Semi-structured, oral. Lisbon, November 4, 2021.

O'Rourke-Potocki, Helena. Interview by Nico Gemkow. Semi-structured, written. Lisbon October 25, - November 3, 2021.

## Hyperlinks

- Consumer Agenda: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_2069
- REACH: https://ec.europa.eu/environment/chemicals/reach/reach_en.htm
- Sustainable Products Initiative: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12567-Sustainable-products-initiative_en
- Waste Framework Directive: https://ec.europa.eu/environment/topics/waste-and-recycling/waste-framework-directive_en

[19] Interviews and conversations of which no information was paraphrased or cited in this work have not been transcribed and are therefore not included in the bibliography nor the appendix.

# Appendix

## Appendix A) Transcript of Interview w/ Helena O'Rourke-Potocki – Circular Economy Policy Insight Officer at Ellen MacArthur Foundation

Nico Gemkow = NG

Helena O'Rourke-Potocki = HO

**NG**: Hi Helena! I'm currently writing my Master's thesis on the implementation of circularity within the fashion industry – particularly focusing on the role policies and regulations play in this transition - and was wondering if you'd be willing to share some insights with me? All the best, Nico

**HO**: Hi Nico, Great to contact. And what a great topic for a dissertation. Have you checked out our reports on fashion?

[ https://ellenmacarthurfoundation.org/topics/fashion/projects-and-publications ]

and our case studies:

[ https://ellenmacarthurfoundation.org/topics/fashion/examples ]

**NG**: Hi Helena! Thx for connecting! Of course ;) Already made it into the literature review

**HO**: and what about our universal policy goals:

[ https://emf.thirdlight.com/link/5bli4i8yq0dv-1ovkaa/@/#id=0 ]

**NG**: No not yet, but thank you, I'll check it out!

**HO**: that's our policy framework for international institutions and national governments. I think that goal 1 on product design and goal 2 about keeping materials in use are the most relevant goals for textiles policies.

**NG**: That's great, exactly the type of information I'm looking for!

**HO**: You want to encourage better product design, so that textiles are designed to be made to be remade. You can then implement an EPR (extended producer responsibility) for textiles

France has implemented several measures on textiles:

[ https://emf.thirdlight.com/link/e9kl4x8ts2er-2za9sx/@/preview/1 ]

**NG**: Ok, I'll read through it tonight. :) Would you mind if I'd reach out again afterwards, in case I'll have some questions?

**HO**: no worries :) France has good policies on textiles:

[ https://www.ecologie.gouv.fr/sites/default/files/en_DP%20PJL.pdf ]

***Engaging the private sector and making the most of the existing infrastructure is key***, like this NY example shows:

[ https://ellenmacarthurfoundation.org/circular-examples/the-wearnext-campaign-new-york-city ]

and ***industrial symbiosis can help to keep textiles in use***, like this Cape Town example shows:

[ https://emf.thirdlight.com/link/y7ux8ghqu8wh-ygnwig/@/preview/1 ]

And then ***public procurement is a tool that policymakers can use to encourage the circularity of textiles***. Here are a few examples of that: The Municipality of Herning aimed to expand the lifespan of uniforms procured for their operations department. With the TEKO Design School, it explored opportunities to increase the reuse and recycling of working clothes. The Municipality developed detailed guidance on the criteria for the reuse, repair and disposal of working clothes. Circular principles were introduced to the contractor from whom the clothes were leased through a service-based model. It was estimated that savings of EUR 6,700 and 1,011 tonnes of CO2 were achieved over a four-year period in Herning's technical operations department.

[ https://ec.europa.eu/environment/gpp/pdf/news_alert/Issue65_Case_Study_131_Herning.pdf ]

In an effort to reduce the amount of discarded carpets being sent to landfill, San Francisco's city government adopted a new regulation requiring that all future publicly procured carpet fits are cradle-to-cradle silver certified, with no polyurethane used, and with 45% recycled content. This new "green carpet" requirement applies to carpets installed in municipal buildings and construction projects. An online platform, available to city departments, shows a list of suppliers of compliant products.

[ https://www.ellenmacarthurfoundation.org/case-studies/cradle-to-cradle-carpets-for-city-buildings ]

***Governments can also provide maps of where citizens can buy circular fashion.*** Ex: Paris Good Fashion developed a map of second-hand clothing stores, clothing repair shops, and other sustainable fashion & textile companies in Paris.

[ https://web.mapstr.com/?mapId=My665OqPPl&theme.foreground=%23ffbb33&theme.background=%23fcf2e7&controls=1 ]

and you also have EU policies

[ https://archive.ellenmacarthurfoundation.org/assets/downloads/EU-Case-Study-june2020-EN.pdf ]

So if you look at Product policies, EPR, public procurement, collection systems, industrial symbiosis and recycling: you will start to have a bigger picture of how policymakers can implement textile policies.

Have a look at the reading list I shared with you

And come back to me if you have specific questions

**NG**: Thank you so much Helena, this helps a lot! :)

-

**NG**: Hi Helena, Hope you're doing fine :) Super insightful stuff you sent me, thanks again for that! So far, most of what I read seems to portray governments and policymakers as enablers in the transition towards circularity. While this makes perfect sense, I was wondering if you knew of examples where governmental interventions didn't go as planned, or even had the opposite of the desired effect? (could be on city-, national- or international level.) Most of the "issues" I could find so far revolve around the (complete or partial) lack of regulation, national regulations being badly aligned with those of other countries, or trade policies that make sustainable practices more difficult to implement.

**HO**: That's a great question. So, ***we are seeing a proliferation of circular economy roadmaps and visions***. But ***declaring ambition and implementation are too very different things and the devil is in the detail.***

***One example is the EU Green Deal. It sets high ambitions for the EU's climate targets and includes a CE aspect (the second Circular Economy Action Plan) but the EU Green Deal isn't legally binding.***

One another example is with collection and recycling targets - you can increase collection, but a major problem is that most companies don't see secondary raw materials as the same quality as primary materials. So you can recycle as much as you want, it doesn't make a difference if you don't actually reuse those materials at scale.

So collection and recycling rates can be misleading.

A lot of the issues come from the design stage. For instance, if you mix cotton and synthetic materials in textiles you cannot recycle them. it is better to have pure cotton or pure synthetic, but it is hard to incentivise companies to adopt these practices.

Another example is the pandemic. You had a big movement to ban single-use items. And you saw the emergence of reusable alternatives. Then covid hit and for sanitary reasons single-use masks, cutlery, tests, wipes were encouraged. So it has highlighted how governments have to weigh competing priorities.

And the simple and brutal reality: We are so far from solving our climate, biodiversity loss, and waste issues. ***Yes, we are seeing good examples of policies, like the ones I showed you, but they still don't go far enough.***

I think ***the major issue is the lack of political will to really increase the level of action.***

**NG**: Thanks a lot!  Do you feel chances to make the EU Green Deal binding would have been higher if it had been less ambitious? I also wonder if whether something is legally binding would really make a difference, as long as consequences for neglecting the law haven't been defined and agreed on.

If I understood correctly, the overall goal of the EU Green Deal is now written into law through the European Climate Law. However, I could imagine member states might not be held accountable if they don't reach the goal, as long as they can argue it well. Which should not be too difficult, taken into consideration your Covid example. I'm relatively sure it won't be the only pandemic we'll have seen until 2050 and there might be many other occurrences that justify a deviation.

While the law mentions that the exact assessment criteria will still have to be developed (article 5, 5) it only mentions that "the necessary measures in accordance with the Treaties" (article 7, 3) will have to be taken should measures be inconsistent with the climate-neutrality objective.

[ https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021R1119 ]

Do the member states have a veto right if they don't agree with the assessment criteria/guidelines in 2023?

Also, do you mind if I quote you on your answers in my thesis? (I can also do it anonymously, if you prefer, it's not going to be published)

NOTE: Interview was not finished in time, see Limitations Affecting Methodology for more information on this.

## Appendix B) Transcript of Interview w/ Eline Blot – Policy Analyst at IEEP

Nico Gemkow = NG

Eline Blot = EB

**NG**: So maybe I just tell you a little bit again about what I'm doing. I'm writing my Master's thesis here in Lisbon at the Nova School of Business and Economics. I come from a business background. We're doing the thesis in a team of three students and while my team members are focusing more on the private sector side, so from the perspective of a company and also from the perspective of consumers, I try to cover the regulations, and governmental aspects of implementing circularity within fashion.

Just so that I also understand it correctly; if you could tell me a bit more about your role specifically, and what you're doing? I think you mentioned that trade policies should work together with development schemes [in our conversation on LinkedIn earlier] and that you're kind of an expert on that.

**EB**: Yes, I guess I could just jump in on that, so first of all, IEEP is where I work, we are a nonprofit apolitical think tank so we just do our research and then we'll provide recommendations on the EU's environmental policy and so that kind of includes different areas. So we have our agriculture team our biodiversity team, a carbon circular economy team and then there's also the global team or the global challenges and SDGS team, which I am a part of. And my team specifically looks at "OK what internal environment and climate policies is the EU looking to implement or has it implemented and how does that impact other countries". So, what are the external impacts of internal policies. So, that's where this whole kind of nexus of environmental policy, development corporation policies, and trade policy interplay with each other, because they're actually quite connected.

So, specifically in the context of a circular economy, when we see that the EU is coming out with its circular economy action plan, which is this huge package of policy initiatives including you know sustainable product policy, policies on the right to repair electronics and sustainable textiles. With those new policies we're gonna see new standards for goods being sold on the EU market and then obviously the thing with standards is we are going to see that, obviously, because we're gonna have more durable goods, but countries that we're trading with are not gonna have the same standards to start with. So particularly relevant for less developed countries, that are also big exporters of textiles to the EU, they are going to be met with higher standards for textiles for example, and then they're going to have to…, their own private sectors and their own governments, are going to have to match those standards as to not then excessively hinder trade with the EU.

So, it's kind of a clear cut example of the kind of things that we look at. Obviously circular economy is one aspect of what I look at. We also look at carbon border adjustment mechanism or the EU also plans to implement a policy for deforestation free supply chains, so targeting goods that have embedded deforestation. So yeah, I think that's kind of it in a nutshell, I can expand on things but maybe I throw it back to you for a second.

**NG**: I read online on the page of the institute that the role also depends on the project specifically, what you're doing. Is your job mostly research, so looking at how is it affecting

countries or what's the impact of what has been done, or is it more consulting like "Hey guys, you should maybe consider this when you set up the development scheme or the trade policy"?

**EB**: It's definitely both. Part of what we do at IEEP is definitely keeping it evidence based but you know we aren't the activists, so we're not going out there – obviously we do promote our findings and our messagings but there is a difference between advocacy and activism so there's that and then we also obviously want to have our research have impact. So that's where we are consulting with MEP's and other influential people in EU institutions, keeping up with other think tanks to promote a coherent messaging on certain subjects, because otherwise it's not really picked up. Because honestly, ***business unions and business interests are so loud in this space that it's kind of hard to get a word in edgewise*** as a sustainability thinktank. One of the few I feel are out there. So yeah, definitely a mix, so sometimes there's just project work that we have that we're doing full research. Sometimes we done the project work and then proposals are coming out and then we know OK on this basis we can make these key recommendations for the Commission and then start pushing that.

**NG**: I wrote a question down before, that literally says "what is the biggest challenge that you are facing" but maybe, while that's a perfectly fine question if you want to answer that, I could also phrase it like "what's the most annoying thing that you recognize in your daily work?

**EB**: I think for me personally I don't know if it's just general existentialism, but sometimes you just kind of have these days where it's like "Am I even going to make a difference?" That's kind of the most annoying thing. Because obviously I'm in this work because I want to be fulfilled and I want to be able to contribute to something that I believe in, and like I said like ***business interests are so heavy in this space that it's sometimes you're just like am I doing a thing, is what we're doing enough to have an impact at all***? And you know there are moments where you do see impact of your work and then there's other moments where you're just like.. an example is with the carbon border adjustment mechanism. That's a measure that takes so much political attention for an environmental policy. So many MEP's are looking at it, so many countries have something to say about it and then we're just there like "OK we realize this isn't even like the best", we're not even per se pro carbon border adjustment but we know, we understand that it's gonna come. So, then we're like OK how do we orient ourselves where, or take it on while also trying to skew it in a way that we think would be best for the environment. And so with the carbon border adjustment, there is just this whole thing of it has to be WTO compatible but then you can't have that and also have free allowances under the emissions trading schemes. I'm so sorry if this is like too much information

**NG**: No, there is no such thing, all good.

**EB**: This is like this whole thing, so the MEP's want it to be compatible at the WTO, and then the MEP's also voted to keep free allowances which would make it WTO incompatible, so there's just like this no one knows what they're doing. No, people know what they're doing but it's like this is the basis and they still screw it up.

**NG**: In general, would you agree that legislations or policies can be or usually are enablers for sustainable transition or circular transition?

**EB**: ***Yeah***

**NG**: Could you maybe give me a percentage of where you're like "OK this is holding it back" and "this is really pushing it forward"?

**EB**: That's maybe a bit of a harder question to ask. I actually also have a background in economics and when you study business or economics or whatever you kind of either leave being very pro-government regulation or not. When I stepped out of my studies I was rather pro-government regulation, thinking it's a task of government to push through policies for change, because ***if you leave it to the free market, you're just gonna have status quo forever*** and they won't get changed so that's how I've always seen this and so I've always been very pro EU Green deal as a policy package that is going to push through these new measures that needs to come in order to have any impact on saving the climate or the environment. But the thing is, it's ***a weird process so you'll see the Green Deal and it looks good and then once these specific policy measures are coming through like the carbon border adjustment then you're like "OK well this isn't exactly what we want at least it's something"*** that's kind of where we're at***. At least it's something that will push through and enable some change or even enable to debate with other countries to start making progress on that field.*** So yeah it's definitely necessary to keep pushing, but you should still be critical of what's being put in front of you.

**NG**: I was researching a bit and I sometimes found that legislations or policies take too long to be implemented and then on other occasions I felt as if they're implemented too soon, like for example this Europe climate law that was passed this summer. As far as I understood there's no agreement upon the metrics or the assessment criteria yet and also the consequences like if a member state doesn't abide by it, it just says the "necessary measures" will be taken?

**EB**: No, for sure ***you can't just come up with a policy package and then expect it to do what you want it to do***. So, it definitely is something that comes back in my trade work, where we look at specific trade agreements and in these trade agreements are chapters on trade and sustainable development and then in these chapters is written "OK EU and partner countries commit to these environmental agreements, that we commit to protecting the environment" and you're like "OK that's ***good but who's monitoring environmental degradation and if there is environmental degradation caused by the trade agreement what mechanism is there in place to hold a country accountable to do something about that and that's where we find, that it's lacking***. So it doesn't surprise me that ***enforceability is an issue*** across other areas of EU policy

**NG**: Maybe let's talk about the sustainable development of non-EU countries specifically related to circularity. I think there are two alternating extreme ways that you could either say "OK we should make sure that the countries where the production of many consumer goods is in now they should develop, we should help them develop further and do that in a sustainable way so like the transportation and logistics and all that can stay the same", or you could also say "maybe we should just take the production and do it within the EU and then focus on everything internally, being responsible for yourself and then have the supply chain within the EU." And I don't think either of them are super realistic but what are your thoughts on it?

**EB**: No, I'd agree with that. I think especially during the pandemic there was this wave of "oh we should relocalize this supply chain because we need these critical resources and I mean in some cases it makes sense to relocalize but you can't do that with ***everything it's just totally unrealistic to think that the EU could be self-sufficient***. So there is that. ***I would never say that a circular EU economy could – or should - be pulled off.***

You know the history of colonization? I personally (so it's not like in the name of the institution) feel like it's kind of a responsibility of Western countries who benefited from less developed countries' natural resources to get a kick start, to now also keep investing in those countries so that they can actually have sustainable development. Because when you look at China who's investing in in Africa now, it's obvious that those aren't sustainable investments they're just injections of capital infrastructure, that aren't going to help African countries in the long run.
Specifically with our circular economy work, we aim to identify like "OK what trade do we have for example with Nigeria and you know what sectors are relevant in Nigeria and could those sectors be relevant in a circular economy context. how could that be transformed, also looking at what's there and what could be there to kind of see like what could be developed because obviously circular economy – it's not supposed to only be EU, we're supposed to all get there. To reduce waste production, so that's also just like "OK how does the EU get there but then also take everyone else with them at the same time". So, it's a lot to look at to be honest – me thinking of my project work - but it is super interesting and super important to always have that developing countries perspective in there as well.

**NG**: Since I told you we are three people and we all focus on a different thing, which of the three (consumers, companies and governments), if you had to choose one, do you think can have the greatest impact in this transition towards sustainability or specifically circularity?

**EB**: I think honestly the ideal scenario would be that all three of those actors would be like "hell yeah let's go!" , but I don't know maybe it's just from my own perspective but I do think that certain knots have to be cut through or you just have to ***implement the right policies to get things going***, even though ***there are SME's that have implemented their own circular production methods or whatever - I mean that's all good, but that's going to be a small fraction of what's out there so it is obviously important to get the private sector on board***. Even ***the public sector can play a big role bv just becoming circular on its own***, ***by enabling green public procurement, renovating government buildings, promoting more sustainable transport methods,*** etc.., but to actually get there I do think you need to have that kickstart moment and kind of a come to God realization of OK how do we actually pull this off, because if no one takes the reins than everyone is just gonna.. I mean ***consumers are not really going to change their consumption patterns, unless you really force it upon them*** (for a lack of a better word).

**NG**: I think that's also a difficulty; if you look at it through a global lens, I think especially in countries where people have more wealth to consume, like more purchasing power within the EU, there is a tendency of people spending extra money to buy from a brand that positions themselves as sustainable. But then, in fashion particularly now, there's also this movement of towards ultrafast fashion with like Chinese companies like SHEIN who don't even have seasons anymore or clothing lines they just produce as soon as an algorithm spots a new trend. So like how can you really fight against that you know as an EU that now agrees "OK we want to do it circular", but then you have like these other tendencies coming in from abroad, making it very difficult as well

**EB**: Yeah no, for sure, the ultra-fast super cheap fashion is definitely something I don't like to think about, but I mean if you look at the circular economy package and what they have to say about sustainable textiles - I haven't yet – I'm just saying it might be interesting to take a look

at because ***EU is a front runner in this area***, so if you want to produce some recommendations in your thesis about "what could governments be doing or looking at" that might be a good place to start. So, specifically this sustainable textiles initiative should include some criteria or standards on "OK what is a durable textile and what should be done with second-hand goods and this and that" so there should be something to address that fast fashion trend that we're seeing.

**NG**: Maybe as a last question/topic, what would be your action plan, if you could decide, in order to drive sustainability (or circularity ideally, but if you want to focus on sustainability that's also fine) - what would you do?

**EB**: The thing with that is I can't say just one thing, but the interesting thing about what I work on as a global team member, we see this ***different array of policy initiatives which are good, but they're not necessarily really coordinated with other areas of EU policy*** so that's where we kind of also come in with saying "OK EU, you might be doing a good job with this but have you actually thought of the ***policy coherence that the Circular Economy Plan has with your trade policy and what that then also has with your Development Cooperation policy?" So, it's really actually just an area that not a lot of people are looking at the three***. They're looking at these things separately, but not together so I think to get the biggest bang for your buck in terms of environmental sustainability, sustainable development, and also not necessarily hindering trade as is, because ***no one wants to see trade significantly hindered in the long run due to all these policies***. You have to start looking at these things together. I guess that's what I would say. Policy coherence is like a big thing that should be looked at so we always say "***policy coherence is necessary***"

**NG**: Cool, I think that's the most pressing questions I had, answered. Thank you so much for your time and have a good day!

# Appendix C) CEAP Implementation Tracking Table

## Quick Reference on CEAP Implementation

| A SUSTAINABLE PRODUCT POLICY FRAMEWORK | |
|---|---|
| Legislative proposal for **a sustainable product policy initiative** | 2021 |
| Legislative proposal **empowering consumers in the green transition** | **2021** |
| Legislative and non-legislative measures establishing a new "**right to repair**" | 2021 |
| Legislative proposal on substantiating **green claims** | **2021** |
| **Mandatory Green Public Procurement criteria and targets** in sectoral legislation and phasing-in **mandatory reporting on GPP** | as of 2021 |
| Review of the **Industrial Emissions Directive**, including the integration of circular economy practices in upcoming BREFs | as of 2021 |
| Launch of an **industry-led industrial symbiosis reporting and certification system** | 2022 |

| KEY PRODUCT VALUE CHAINS | |
|---|---|
| **Circular Electronics Initiative**, **common charger solution,** and **reward systems to return old devices** | **2021**/ 2021 |
| Review of the Directive on the **restriction of the use of certain hazardous substances in electrical and electronic equipment** and guidance to clarify its links with REACH and Ecodesign requirements | 2021 |
| Proposal for a new regulatory framework for batteries | **2020** |
| Review of the rules on **end-of-life vehicles** | 2021 |
| Review of the rules on proper treatment of **waste oils** | 2022 |
| Review to reinforce the **essential requirements for packaging** and **reduce (over)packaging and packaging waste** | 2021 |
| Mandatory requirements on **recycled plastic content** and **plastic waste reduction measures** for key products such as packaging, construction materials and vehicles | 2021/ 2022 |
| Restriction of **intentionally added microplastics** and measures on **unintentional release of microplastics** | 2021 |
| Policy framework for **bio-based plastics and biodegradable or compostable plastics** | 2021 |
| **EU Strategy for Textiles** | 2021 |
| **Strategy for a Sustainable Built Environment** | 2021 |
| Initiative to **substitute single-use packaging, tableware and cutlery by reusable products in food services** | 2021 |

| LESS WASTE, MORE VALUE | |
|---|---|
| **Waste reduction targets for specific streams** and other measures on **waste prevention** | 2022 |
| EU-wide **harmonised model for separate collection of waste and labelling** to facilitate separate collection | 2022 |
| **Methodologies to track and minimise the presence of substances of concern** in recycled materials and articles made thereof | 2021 |
| **Harmonised information systems** for the presence of substances of concern | 2021 |
| Scoping the development of further **EU-wide end-of-waste and by-product criteria** | 2021 |
| Revision of the rules on **waste shipments** | 2021 |

| MAKING THE CIRCULAR ECONOMY WORK FOR PEOPLE, REGIONS AND CITIES | |
|---|---|
| Supporting the circular economy transition through the **Skills Agenda**, the forthcoming **Action Plan for Social Economy**, **the Pact for Skills** and the **European Social Fund Plus.** | as of **2020** |
| Supporting the circular economy transition through **Cohesion policy funds, the Just Transition Mechanism** and **urban initiatives** | as of **2020** |

| CROSSCUTTING ACTIONS | |
|---|---|
| Improving measurement, modelling and policy tools to capture **synergies between the circular economy and climate change mitigation and adaptation** at EU and national level | as of 2020 |
| Regulatory framework for the **certification of carbon removals** | 2023 |
| Reflecting circular economy objectives in the revision of the guidelines on **state aid in the field of environment and energy** | 2021 |
| Mainstreaming circular economy objectives in the context of the rules on **non-financial reporting**, and initiatives on **sustainable corporate governance** and on **environmental accounting** | **2021**/ 2021 |

| LEADING EFFORTS AT GLOBAL LEVEL | |
|---|---|
| Leading efforts towards reaching a **global agreement on plastics** | as of 2020 |
| Proposing a **Global Circular Economy Alliance,** and initiating discussions on an **international agreement on the management of natural resources** | as of 2021 |
| Mainstreaming circular economy objectives in **free trade agreements**, in **bilateral, regional and multilateral** processes and agreements, and in **EU external policy funding instruments** | as of **2020** |

| MONITORING THE PROGRESS | |
|---|---|
| Updating the **Circular Economy Monitoring Framework** to reflect new policy priorities and develop further **indicators on resource use**, including **consumption and material footprints** | 2021 |

Retrieved from:
https://ec.europa.eu/environment/pdf/circular-economy/implementation_tracking_table.pdf

# Appendix D) Potential Interviewees for the Role of Policies, Regulations, and Governments

The following list is sorted alphabetically by ‘Organization’ first, then by ‘Priority’, then by ‘Name’.

Priority explanation: Potential interviewees were prioritized according to (1) how relevant I perceived their jobs to be to the research (sub)topics, and (2) how likely they were available for an interview. For instance, Eline Blot from the Institute for European Environmental Policy was given priority ‘A’, whereas Antoine Oger was categorized as ‘B’ despite holding a more senior position in the same organization.

| Organization | Name | Title | Priority |
|---|---|---|---|
| Ellen MacArthur Foundation | Amelia Kuch, Ph.D | Circular Economy Policy Manager | A |
| Ellen MacArthur Foundation | Helena O'Rourke-Potocki | Circular Economy Policy Insight Officer | A |
| Ellen MacArthur Foundation | Juliet Lennon | Programme Manager Make Fashion Circular | A |
| Ellen MacArthur Foundation | Laura Balmond | Lead of Make Fashion Circular | A |
| European Commission - Environment | Claudia Fusco | Environmental Knowledge, Eco-Innovation & SMEs | A |
| European Commission - Environment | Emmanuelle Maire | Sustainable Production, Products & Consumption | A |
| European Commission - Environment | Mattia Pellegrini | Waste Management & Secondary Materials | A |
| European Commission - Environment | Aneta Willems | Industrial Emissions & Safety | B |
| European Commission - Environment | Gilles Gantelet | Policy, Coordination, LIFE Governance and Resources | B |
| European Commission - Environment | Ion Codescu | Environmental Enforcement | B |
| European Commission - Environment | Kestutis Sadauskas | Director for Circular Economy and Green Growth, Directorate General for Environment | B |
| European Commission - Environment | Robert Konrad | Advisor to Gantelet | C |
| European Commission - Environment | William Neal | Advisor to Sadauskas | C |
| European Environmental Bureau | Emily Macintosh | Policy Officer for Textiles | A |
| European Environmental Bureau | Stéphane Arditi | Director of Policy Integration and Circular Economy | A |
| European Environmental Bureau | Aliki Kriekouki | Senior Policy Officer for Industrial Production | B |
| European Environmental Bureau | Christian Schaible | Policy for Industrial Production | B |
| European Environmental Bureau | Davide Sabbadin | Senior Policy Officer for Climate and Circular Economy | B |
| European Environmental Bureau | Jai Krishna | Senior Policy Officer for Industrial Production | B |
| European Environmental Bureau | Jean-Luc Wietor | Deputy Policy Manager for Chemicals/Sustainable Production and Best Available Techniques | B |

| | | | |
|---|---|---|---|
| European Environmental Bureau | Jean-Pierre Schweitzer | Senior Policy Officer for Circular Economy and Product Policy | B |
| European Environmental Bureau | Piotr Barczak | Senior Policy Officer for Waste | B |
| European Environmental Bureau | Mary Hallaert | Circular Economy Intern | C |
| European Environmental Bureau | Sara Johansson | Policy and Researcher for Industrial Production | C |
| European Parliament (France) | Benoît Biteau | Member of the European Parliament / Group of the Greens / European Free Alliance | A |
| European Parliament (Germany) | Rasmus Andresen | Member of the European Parliament / Group of the Greens / European Free Alliance | A |
| Fundacao Calouste Gulbenkian | Luis de Melo Jerónimo | Director Sustainable Development Programme | A |
| Global Fashion Agenda | Frederica Marchionni | CEO | A |
| Institute for European Environmental Policy | Eline Blot | Policy Analyst Global Challenges and SDGs | A |
| Institute for European Environmental Policy | Jesus Urios | Policy Analyst Low Carbon and Circular Economy | A |
| Institute for European Environmental Policy | Thorfinn Steinforth | Policy Analyst Low Carbon and Circular Economy | A |
| Institute for European Environmental Policy | Antoine Oger | Head of Global Challenges and SDGs programme | B |
| Institute for European Environmental Policy | Emma Watkins | Senior Policy Analyst Low Carbon and Circular Economy | B |
| Institute for European Environmental Policy | Pierre Leturcq | Senior Policy Analyst Global Challenges and SDGs | B |
| Institute for European Environmental Policy | Tim Gore | Head of the Low Carbon and Circular Economy Programme | C |
| Ministry of Ecological Transition, Italy | Laura D'Aprile | Head of Department for the Ecological Transition and Green Investments | C |
| United Nations Environment Programme Economy Division | Elisa Tonda | Head of Consumption and Production | C |