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Jones, Peter ORCID: 0000-0002-9566-9393 and Comfort, Daphne (2019) The circular economy and natural capital: a case study of European clothing and fashion retailers. International Journal of Management Cases, 21 (1). pp. 36-50.

Official URL: http://ijmc.org/IJMC/Vol_21.1_files/21.1%20pages.pdf

EPrint URI: <https://eprints.glos.ac.uk/id/eprint/6365>

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**The circular economy and natural capital:
a case study of European clothing and fashion retailers**

Peter Jones and Daphne Comfort

Abstract

Clothing and fashion industry retailing faces a number of challenges, including inventory management and omni-channel retailing, but many commentators suggest that sustainability has become an increasingly pressing challenge. The concepts of the circular economy and natural capital are increasingly common features of the sustainability narratives of a growing number of companies, and this case study explores the ways leading European based clothing and fashion retailers are addressing the circular economy and natural capital. The case study reveals that the leading European clothing and fashion retailers have employed the concept of the circular economy in a variety of ways, but the concept of natural capital has received much less attention. More generally, the authors argue that both concepts raise a number of issues, relating to different and contesting meanings, measurement and accounting, relationships to sustainability and business imperatives and economic growth.

Keywords: Circular Economy, Natural Capital, European Clothing and Fashion Retailers, Sustainability

Introduction

The fashion and clothing industry *'is an international and globalised industry, with clothing often designed in one country, manufactured in another, and sold in a third'* (Strahle and Muller 2017) and this is reflected in investments, revenue, and employment, worldwide. Fashion industry statistics (Fashion United 2016) reveal that within the European Union, for example, which is the world's largest market for clothing and textile products, the textile and clothing industry had an annual turnover of 171 billion Euros, it generated annual investment of 4.8 billion Euros and some 1.7 million people worked within the industry. The textile and fashion industry encompasses the production of raw materials principally fibres and textiles, the production of clothes by designers and manufacturers, retailers who sell clothes to consumers and the advertising industry which promotes a range of fashion brands. For the majority of the population, retailing is the public face of the industry and *'large fashion retailers can play a key role in promoting sustainability, because they are the intermediaries between producers and manufacturers on the one hand and customers on the other hand'* (Strahle and Muller 2017). While clothing and fashion retailers face a number of major challenges including omni-channel retailing, inventory management in the face of rapidly changing consumer demand, the creation of a unique experience for customers and sustainability, many trade and academic commentators suggest that sustainability has become an increasingly pressing challenge.

Rebecca Thomson (2018), for example, writing under the banner of *Drapers*, the business to business magazine and website covering the retail fashion industry, claimed *'sustainability is no longer optional for fashion retail'* and Strahle and Muller (2017)

emphasised *'the rising importance of sustainability in fashion retail.'* In many ways, sustainability is both an umbrella and a contested term, which has taken on many meanings and interpretations, but the concepts of the circular economy and natural capital are increasingly common features of the sustainability narratives of a growing number of companies and organisations. Both concepts might be seen to be particularly applicable to clothing and fashion retailing in that its supply chains rely in large measure on natural materials and for many consumers, clothes, particularly at the fashion end of the market, have a short lifespan prior to being discarded. With these thoughts in mind, this case study explores the ways leading European based clothing and fashion retailers are addressing the circular economy and natural capital. The case study outlines the concepts of the circular economy and natural capital, reviews if, and how, the ten leading European fashion and clothing retailers are publicly addressing both concepts and offers some reflections on the circular economy and natural capital in promoting sustainability within the fashion and clothing sector of the retail economy.

The Concepts of the Circular Economy and Natural Capital

While Murray et al. (2015) suggested that the term circular economy has *'been linked with a number of meanings and associations by different authors'* they argued that in its most basic form *'a circular economy can be loosely defined as one which balances economic development with environmental and resource protection.'* The Ellen McArthur Foundation, which was established in 2010 with the aim of accelerating the transition to a circular economy, argued that *'a circular economy is restorative and regenerative by design, and aims to keep products, components, and materials at their highest utility and value at all times'* (Ellen McArthur Foundation 2015). The concept of the circular economy is certainly gaining increasing momentum in both political and corporate thinking about the transition to a more sustainable future. The European Commission (2015), for example, argued that *'the transition to a more circular economy, where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste is minimised, is an essential contribution to the European Union's efforts to develop a sustainable, low carbon, resource efficient and competitive economy.'*

The circular economy embraces all stages of the product life cycle from both the product design and the production process, through marketing and consumption to waste management, recycling and re-use. Accenture Strategy (2015), for example, suggested *'transitioning to the circular economy may be the biggest revolution and opportunity for how we organize production and consumption in our global economy'* and that *'at its essence, the circular economy represents a new way of looking at the relationships between markets, customers and natural resources.'* In a similar vein, PricewaterhouseCoopers (2017) argued *'ultimately the circular economy is about rethinking everything, including business models themselves, so we can reduce consumption.'* Consumers will certainly have a vital role to play in any transition to a more circular economy and here the focus will need to be on looking to provide consumers with clearer information on the environmental impacts of their buying behaviour and on promoting more responsible environmental attitudes to consumption.

The concept of natural capital, namely *'the elements of the natural environment, that provide valuable goods and services to people'* (Natural Capital Committee 2015), is attracting increasing attention from both environmental and economic policy makers. Foster and Gough (2005) suggested that the economist David Pearce first introduced the concept of natural capital in 1988 as a way of interpreting sustainable development. More recently natural capital has essentially been seen as one, arguably *'the most fundamental'* (European Environment Agency 2015), of the forms of capital which also includes financial capital, social capital, instructional capital and human capital. At a general level there is a consensus about the general meaning of the term natural capital but a variety of definitions can be identified. The World Forum on Natural Capital (2015), for example, defined natural capital as *'the world's stocks of natural assets which includes geology, soil, air, water and all living things.'* The National Capital Committee(2015) offer a more expansive definition namely *'the elements of nature that directly and indirectly produce value or benefits to people, including ecosystems, species, freshwater, land, minerals, the air and oceans as well as natural processes and functions.'*

Voora and Venema (2008) suggested that natural capital can be *'described as renewable or non-renewable.'* More specially *'renewable or active natural capital is self-maintaining due to its ability to harness solar energy'* while the non-renewable capital assets *'are formed over long geological time periods and are passive'* (Voora and Venema 2018). The European Environment Agency (2015) suggested that natural capital comprises two components namely *'abiotic natural capital'* and *'biotic natural capital'* with the former comprising *'subsoil assets (e.g. fossil fuels, minerals) and abiotic flows (e.g. wind and solar energy)'* while the latter *'consists of ecosystems, which deliver a wide range of valuable services which are essential for human well-being.'* A number of frameworks have been put forward to define and measure and account for natural capital though such tasks are fraught with difficulties. Tani (2014) outlined attempts to develop international frameworks and standards by the World Bank and the United Nations Environment Programme but she argued that *'there is no simple assessment that can be made about the depreciation of natural capital'* and that *'until this is addressed our national accounts will provide erroneous signals about future economic prospects.'*

The role of both concepts within the fashion and clothing industry has attracted attention from academics and trade sources. Business of Fashion (2018), for example, in reporting on a debate entitled *'How Can Fashion Embrace the Circular Economy'*, held at its *'Annual Gathering'* in December 2017 identified a number of key points that emerged during a discussion held under Chatham House Rules. These points included the belief that the industry cannot take a lead from customers or wait for them to change their purchasing habits; the suggestion that it may be necessary to reframe the way people participate in the fashion system, which might see a growing rental market and the development of a tiered system of borrowing; expressions of concerns about a loss of jobs within the industry; and the need to find new ways of cross industry cooperation and collaboration.

The National Capital Coalition (2016) produced a *'Natural Capital Protocol'* for the *'Apparel Sector'*, designed *'to help businesses identify, measure, and value their impacts and dependences on natural capital.'* The focus is on *'the natural capital impacts and dependencies of businesses operating across the apparel value chain including the consumer*

use and end-of-use stages, as well as input companies throughout the value chain' (Natural Capital Coalition 2016). Further the Natural Capital Coalition 2016) recommended that *'recycling, reuse, and other end-of-life options are considered within every stage of the value chain and can be a critical mechanism for reducing impacts and dependencies.'*

On the academic side Koszewska (2018) identified a number of challenges the textile and fashion industry had to face in moving towards a more circular model and she suggested *'a transition towards a circular economy should start with waste prevention and the minimization of landfilled waste.'* More specifically Koszewska (2018) suggested *'this process has three phases that are crucial for the circular economy model: product design and development, waste collection and sorting; and effective recycling. Each of them comes with barriers and difficulties, but also offers ample opportunities.'* Here the major barriers were seen to revolve around *'consumer behavior and education', 'disposal practices, collection and sorting infrastructure and processes and 'recycling technologies'* (Koszewska 2018). Bianchi and Birtwistle (2010) examined the antecedents of three forms of clothing disposal methods, namely selling, giving to family members or friends, and donation to charities, in Scotland and Australia, and concluded that *'general recycling behaviour was found to be the strongest predictor for donating to charities.'*

Joy and Pena (2017) examined sustainability in the fashion industry and argued for *'increasing consumers' awareness of the natural world, with the goal of broadening their perspectives to include not only personal gratification but also the pressing need to combat processes harmful to nature.'* Further they argued that *'by applying traceability—the ability to trace an item through every stage of production—to the realm of fashion supply chains, consumers can make informed purchase decisions based on what appeals to them on a personal level and also on a given item's environmental and social impact'* (Joy and Pena 2017).

Frame of Reference and Method of Enquiry

In an attempt to undertake an exploratory review of if, and how, Europe's clothing and fashion retailers are addressing the circular economy and natural capital, the top ten leading fashion retailers in Europe (Selecta 2018), as measured by the number of stores, were chosen for study. The retailers are Inditex, Arcadia, H&M, Calzedonia, C&A, Marks and Spencer, New Look, Next, J D Sports and Primark. As large players within the retail clothing and fashion retailing the selected companies might be seen to reflect cutting edge thinking in their approach to the circular economy and natural capital as important elements in their sustainability strategies. Many of the selected clothing fashion retailers trade in a number of countries and all have global supply chains and as such should be addressing international, as well as domestic, agendas in their sustainability strategies.

Inditex, established in 1963 and headquartered in Spain, is one of the world's largest fashion retailers and has eight major retail brands, including Zara, Mossimo Dutti and Bershka, and over 7,000 stores across all five continents. Arcadia also trades from a number of brands, including Dorothy Perkins, Topshop and Topman, has over 3,500 stores in 38 countries and ships to over 100 countries through its online websites. H&M is a Swedish multinational fashion retailer with over 4,500 stores in 62 countries. Calzedonia is an Italian

fashion company and trades from 1, 750 stores worldwide. C&A, originally founded in 1841 as a Dutch textile company and now headquartered in Belgium and Germany, has over 1,500 stores in 19 European countries and serves a number of major markets in Asia, North America and South America, where it has a total of 450 stores. Marks and Spencer is a UK based multinational retailer, whose product range includes home products and food as well as clothes, and has over 1,000 stores in the UK as well as 428 stores in 56 other countries. New Look is a British global fashion retailer, established in 1969, and has over 1,100 stores in 19 countries. Next is a multinational fashion and footwear retailer with over 500 stores in the UK and a further 200 in Europe, Asia and the Middle East. J D Sports is a UK based sports fashion retailer founded in 1981, while Primark is an Irish based fast fashion retailer with stores in a number of European countries and the US.

Retailers have employed a range of methods to report on their sustainability commitments and achievements, but publication on corporate websites has become the most popular and the most accessible reporting mechanism (Morhardt 2009). With this in mind, the authors conducted an Internet search for information, using the two key phrases 'circular economy' and 'natural capital' and the name of each of the selected European based clothing and fashion retailers. This search was conducted in November 2018, using Google as the search engine. The information obtained from this search process provided the empirical information for this paper. The specific examples and selected quotations drawn from the corporate websites are used for illustrative purposes, with the principal aim being to review the ways in which the selected clothing and fashion retailers employ the concepts of the circular economy and natural capital. Unless specifically cited all quotations are drawn from the selected retailers' corporate websites. The case study is based on information that is in the public domain and the authors took the considered view that they did not need to contact the selected retailers to obtain formal permission to use this information prior to conducting their research.

Findings

There are marked variations in how the selected clothing and fashion retailers addressed the concepts of the circular economy and natural capital as part of their sustainability strategies, though in a minority of cases the two concepts were linked. The concept of the circular economy received more attention than that of natural capital, but the retailers' interpretation of the circular economy and the extent of their public commitments to the concept varied considerably. Under the banner '*Circular Fashion*' C&A, for example, claimed '*we believe in circular fashion*', and that '*our vision is one of a restorative circular economy, where nothing is wasted in the creation or disposal of our clothing.*' More generally, the company emphasised '*we want to evolve the apparel industry to a future where every material is used and reused safely*' and '*where ecosystems are protected.*'

Further C&A argued that '*for the apparel industry to become truly circular each part of the value chain must evolve*' and reported on its participation in the Ellen MacArthur Foundation's 'Make Fashion Circular Initiative. This initiative looks to drive collaboration between industry leaders and '*its ambition is to ensure clothes are made from safe and*

renewable materials, new business models increase their use, and old clothes are turned into new. In this spirit, C&A identified *'six enablers of a circular fashion industry'*, namely technology to recover fibres: higher value of down-cycled textiles; the capability to reduce post-industrial waste; consumer participation in collecting used clothes; automated sorting of collected materials; and the capability to sort and reduce post-industrial waste.' C&A suggested that its commitment to a more circular fashion industry was demonstrated through its *'GOLD level Cradle-to-Cradle Certified products'* which are supported by *'our in-store take-back programme that allows customers to recycle clothing that has reached its end of use.'*

C&A also publicly reported on *'Our 2017 Performance.'* Under the headline *'Pioneering circularity in Stores'*, the company reported that in 2017 it had brought the first GOLD level Cradle-to-Cradle Certified products to market in stores across Europe and in Brazil and Mexico. This was followed by the introduction of many more of these products to stores later that year and the collection was expanded from its initial focus on ladies wear to include men's' and children's' wear. In total, C&A reported that over 1.3 million pieces of Cradle-to-Cradle Certified apparel had been brought to market by the end of 2017. The company also reported that its *'in-store-take-back'* programme, initially introduced in the Netherlands, had been rolled out in Belgium, Luxembourg and Switzerland, with a view to further expansion by 2020. Further C&A reported on *'accelerating change'* through its *'Fashion for Good'* initiative, which looks to develop innovative developments and good practice across the fashion and clothing industry.

In his Chief Executive Officer's message in the preface to H&M's 2017 Sustainability report, Karl-Johan Persson claimed *'we are dedicated to continue to making great fashion and design affordable by having a circular approach and being a fair and equal company.'* In a similar vein, Anna Gedda, Head of Sustainability at H&M, claimed *'accelerating the move towards full circularity is one of our main priorities'* and she suggested *'here our focus is on the continued quest for more recycled and sustainable sourced materials, improved design, production processes and product lifespan.'* More generally, H&M suggested *'the fashion industry is running out of the natural resources it uses to make products and cannot continue to operate in the same way'* and reaffirmed its belief that *'an industry wide shift from a linear to a circular business model is the only solution.'* H&M claimed to be addressing this shift *'by building circularity into every stage of our value chain, including the products we design and make, the materials and processes we use, and how our customers care for and dispose of our products.'*

In addressing *'Becoming 100% Circular'* H&M identified *'five key stages within our value chain'*, namely, design; material choice; production processes; product use; and product reuse and recycling. In focussing on design, for example, the company argued that *'circular design involves finding ways to expand product lifespan, creating greater durability and greater opportunities for rewear, reuse and recycling.'* In addition to product design, the company is also exploring how it can work with a circular approach when designing stores and here the goal is to increase both the operational efficiency and the longevity of stores. In focusing on materials, the company suggested that *'by choosing to work with*

more recycled and other sustainable sourced materials, we can reduce the negative impacts of material production in our value chain. In a similar vein, H&M recognised the vital importance of water and chemicals in the production process and stressed that the way it addresses chemical and water management is crucial in achieving sustainable production and its 100% circular ambition.

H&M's belief is that *'innovation will be key to achieving our 100% circularity ambition'* and that *'many challenges that the industry currently faces can and will be overcome through new innovation'* and suggested *'that's why we are supporting ground breaking companies such as re:newcell, Worn Again and Treetotextile.'* The company also outlined its Key Performance Indicators and its progress in meeting them, between 2014 and 2017. The percentage of recycled or sustainably sourced material of total material used, for example, rose from 13% to 35% during this period and the corresponding figures for cotton from sustainable sources and stores with recycling systems for main types of store waste rose from 22% to 59% and 58% to 64% respectively. During the same period, the tonnes of garments collected through the garment collecting initiative rose from 7,684 tonnes to 17,771 tonnes.

Under the banner *'closing the Loop'*, Inditex claimed *'we want to close the loop and move towards a circular economy – developing a complete and efficient life cycle for our products, in which nothing goes to waste.'* The company claimed *'by 2020 one of our aims is no longer send anything to landfill from our own headquarters, logistics centres, stores and factories'* and that *'we are also making it easier for our customers to drop off their used garments with us, so that we can aim to give a second life or recycle them.'* In moving *'towards a circular economy'*, the company emphasised the importance of its *'Right to Wear'* philosophy, which calls for *'responsibility in all production stages'* and which embraces raw materials, design, manufacturing, logistics and retail stores.

Inditex also publicly provided some limited reporting information on its achievements in *'Closing the Loop.'* The company reported that in 2017 it collected over 12,200 tons of garments, through almost 600 clothing containers in stores and a further 1,800 in Spanish streets, which were donated to people in need, reused for industrial materials or upcycled and transformed into new fibres. The company's Zara brand is leading the way here and all its stores in Spain, Portugal, UK, Ireland, the Netherlands, Sweden, Denmark, China, Hong Kong and Macao had clothes collection containers, and pilot collection programmes had been set up in Austria, Canada, Japan and the Lebanon. Inditex also reported that more than 40% of its energy consumption in its stores, headquarters, logistics centres and its own factories came from renewable sources in 2017 and claimed to be planning to increase this figure to 80% by 2015.

Marks and Spencer claimed to be supporting *'the transition to a sustainable circular economy'*, prioritising *'business model innovation'* and putting *'circular ways of working into practice.'* Further, Marks and Spencer recognised that *'a waste-centric approach to resource efficiency is no longer sufficient and potentially gets in the way of resources being used in the most efficient and effective way.'* Rather the company argued *'we need to transition to a circular economy where the value of materials and energy used in products are kept for as*

long as possible. In looking to put *'the circular economy into action'*, Marks and Spencer reported that its approach focused on becoming a net waste business, helping its suppliers to reduce and recycle waste and to send no waste to landfill, to create partnerships to help customers to reuse and recycle products and to prioritise business model innovation. More generally, the company cited that it was a signatory to the Sustainable Clothing Action Plan 2020 Commitment, which looks to tackle the environmental impacts of clothing.

None of the other six selected clothing and fashion retailers explicitly recognised the concept of the circular economy on their corporate websites, though they all addressed the issue of recycling. Next, for example, reported that two of the foci of its corporate responsibility strategy were *'recycling unwanted products'* and *'waste recycling and water use'* while J D Sports reported its commitment to *'maximising the amount of our waste that is or can be recycled.'* In a similar vein, New Look reported its commitment to wastewater treatment and to reduce, reuse and recycle waste, Calzedonia asserted its belief that *'that recycling is an issue that concerns us all'* while Arcadia emphasised its commitment to reduce its waste footprint across all its brands. Primark argued *'recycling is an important way that all of us can better look after the planet and reduce the amount of waste that ends up in landfill'*, and claimed *'we want to find a good home for any clothes that we don't sell.'* Here the company reported *'in Europe we have been donating all our unsold clothing and buying samples to the charity Newlife since 2010.'*

Only two of the selected clothing and fashion retailers, namely C&A and Marks and Spencer, explicitly addressed the concept of natural capital, though the majority emphasised the importance of looking to adopt a more sustainable approach to natural resources. C&A reported supporting a *'project on natural capital dependencies of cotton production'*, run by the University of Cambridge Institute for Sustainability Leadership. Here the focus was on *'water, biodiversity and soil, particularly at the growing stage of the supply chain where natural capital challenges are most prevalent.'* More generally, C&A outlined its commitment to *'certified organic cotton,'* which it described as *'a cornerstone business objective.'* The company emphasised that organic cotton *'protects soil quality, biodiversity and water supply while preventing water pollution'* and that *'it's safer for farmers and their communities' health.'* Further, C&A reported that in 2017, 40% of the cotton used in its garments was certified organic, and the company argued *'by offering organic cotton garments and communicating the benefits to our customers we can continue to help drive demand for it.'*

Marks and Spencer reported on its participation in the Accounting for Sustainability Chief Financial Officer Network, which looks to identify how positive business outcomes can be achieved through the integration of environmental, social and economic considerations. As part of this work, Marks and Spencer have been *'engaged on natural capital accounting, whole life costing and how we communicate on these matters to our investors.'* That said, Marks and Spencer suggested that further work was required on natural capital *'definitions and methodologies'* and that the company was *'taking part in the development and testing of natural capital protocols.'* More generally, Marks and Spencer recognised *'we rely on natural resources to produce our high quality products and run our stores and operations'*

and that *'growing pressure on diminishing resources and poor global stewardship could increase our costs, restrict our access to key raw materials and make our global supply chains more volatile.'* Equally tellingly, and under the banner *'Business and Nature cannot be separate'*, Mike Batty, Director of Sustainable Business at Marks and Spencer argued *'nature is at the heart of any consumer goods business'* and that *'soil, water, clean air, forests and pollinators are the basic building blocks of commerce.'*

Some of the other selected clothing and fashion retailers emphasised their commitment to adopting a sustainable approach to the natural resources on which the industry depends. Inditex, for example, stressed its commitment to use *'more sustainable raw materials.'* More specifically, the company outlined that in using cotton as a raw material in the creation of many of its garments, a *'focus on organic or ecological cotton allows us to reduce the environmental impacts of production, as unlike conventional cotton, its cultivation is carried out with organic seeds and more sustainable methods.'* New Look recognised that *'each stage of production comes with its own environmental challenges, from the high volumes of water needed to grow raw materials to the treatment of pollution from chemicals used in the dyeing process.'* In looking to address these challenges, New Look emphasised its commitment *'to protecting the environment, conserving natural resources and conducting business in an environmentally responsible manner.'*

Discussion

The findings reveal that the leading European clothing and fashion retailers have addressed the concept of the circular economy in a variety of ways within their sustainability strategies but that, to date, the concept of natural capital has received much less attention within these strategies. That said, a number of sets of issues merit reflection and discussion. Firstly, the concepts of the circular economy and natural capital have a variety of definitions and can hold different meanings. Korhonen et al. (2018), for example, argued that the circular economy was *'an essentially contested concept'*, which is *'loosely based on a fragmented collection of ideas derived from a variety of scientific disciplines and semi-scientific concepts.'* Korhonen's et al. (2018) literature review of papers on the circular economy identified 11 definitions of the term circular economy and perhaps more surprisingly this review revealed that 13 papers *'had neither a definition nor a description of what circular economy was supposed to mean in their studies.'* Arguably more critically, Gregson et al. (2015) suggested the idea of the circular economy is *'more often celebrated than critically interrogated'* and that *'its actual enactment is limited and fragile.'*

In a similar vein, natural capital is also a contested concept. Gough (2005) argued that as originally introduced by David Pearce in 1988, *'natural capital was a device to develop an approach to sustainable development from within the established dominant paradigm of economics'*, while for others *'it was fundamental to the mounting of a challenge to that paradigm which emphasised ecosystem processes and ecological knowledge over the accounting of environmental assets.'* More recently Read and Scott Catto (2014) suggested that these competing positions are deeply entrenched and that *'the argument between those who would substitute financial for natural capital'* and those who see *'natural capital as primary and sacrosanct'* is unlikely to be resolved. At the present time the overwhelmingly dominant government and business policy responses to the perceived

natural capital challenge are rooted in attempts to frame nature and natural resources in economic and financial terms and to assess the financial value of natural capital.

Secondly, there are issues about measurement and accounting. Measuring circularity, for example, presents a major challenge, but in looking to move towards a more circular economy, a number of approaches to measurement have been developed. The Ellen McArthur Foundation, Granta Material Intelligence and Life (2015), for example, developed a *'Circularity Indicators Project'*, which looks to measure *'the circularity of products and businesses.'* While recognising that *'measuring the circularity of a product or service can be a challenge due to the complexity and variety of actions, activities and projects that could be called circular'*, the US Chamber of Commerce Foundation (2018a) has developed a *'Circular Economy Toolbox'*, which includes a number of metrics to measure impact. The proposed circular economy metrics include the carbon footprint, estimated cost savings when leasing rather than buying, estimated resource and emission offsets and the percentage of a product that can be recycled or repaired at the end of its useful life. At the same time the US Chamber of Commerce Foundation (2018b), asserted *'there is currently no single accepted framework to enable organizations to assess and report on their progress in moving towards circularity'* and argued that the lack of such a *'framework represents one of the greatest needs, and greatest opportunities, in the circular economy.'*

In looking to explore the relationship between natural capital and economic theory, Nadal (2016) recognised that *'the natural capital metaphor is currently being introduced to provide a framework for the economic measurement of environmental degradation.'* However, he argued that there were *'deep problems affecting the use of this metaphor'* and that the *'natural capital approach will not be able to deliver on its promises to measure natural capital stocks or the stream of natural capital services'* (Nadal 2016). More specifically, Nadal (2016) suggested that the valuation techniques currently being used for natural capital have major limitations and that the *'data they generate may lead to gross misallocation of resources and cannot provide guidance for environmental policy making.'*

Fenichel and Abbott (2014) argued that *'the value of natural capital remains crudely measured at best'* and that *'the paucity of estimates of the value of natural capital that are grounded in economic capital theory suggests that in practice the treatment of natural capital remains largely metaphorical.'* Perhaps more polemically, Friends of the Earth Europe (2014) argued that *'calculations of natural capital do not represent, and can rarely capture, the true value of nature.'* Arguably more worryingly, Friends of the Earth Europe (2014) suggested *'if the value of nature is expressed in purely monetary terms there is a high risk that nature can then be legitimately destroyed as long as a payment is made, often with a promise that nature will be protected or created elsewhere through offsetting schemes.'*

Thirdly, there are issues about the relationship between both the circular economy and natural capital and sustainability. Christie, Lee and Murphy (2016), for example, suggested that natural capital *'has the potential to be a vital component in delivering local and national sustainability'* but argued that *'natural capital risks being used as yet another measure of relative sustainability and resource efficiency gains'* whereas *'it needs to be considered in the context of absolute sustainability.'* The issues of both spatial and time scales can be important here. On the one hand, for example, increases in natural capital

claimed for a development at the local scale may not enhance sustainability at regional, national or global scales. On the other hand, a claimed local net gain in natural capital, associated with offsetting biodiversity losses, for example, may lead to the growth of invasive species, which, over time, may diminish natural capital. Christie, Lee and Murphy (2016) further posed the question *'in adding to natural capital, are we simply making relative gains that could be diminished or lost because of breaches in absolute sustainability boundaries.'* Rather pessimistically, Christie, Lee and Murphy (2016) concluded that *'extensions in natural capital cannot be enough to keep us, at global scale, within absolute ecological limits for development, such as the worldwide carbon budget that must be respected if we are to avoid forced global warming of 2 degrees centigrade or more.'*

In a similar vein, Geissdoerfer et al. (2017) claimed that *'the conceptual relationship between the circular economy and sustainability is not clear'* and argued that this *'has potential detrimental implications for the advancement of sustainability science and the diffusion of practices based on these concepts.'* Further Geissdoerfer et al. (2017) argued that the principal focus is on *'the environmental performance of the circular economy rather than taking a holistic view on all three dimensions of sustainability.'* At the same time Geissdoerfer et al. (2017) also argued that the focus of circular economy initiatives is often on *'individual economic benefits through input reduction, efficiency gains and waste avoidance with relatively immediate results compared to sustainability'* and that *'long term viability seems to be excluded from most discussions.'*

Finally, many of the selected retailers couched their commitments to the circular economy and to natural capital and resources in terms of continuing business imperatives, not least efficiency and continuing growth, as well as sustainability. This is reflected, for example, in H&M's argument that *'our vision is not only necessary from a social and environmental perspective - it also makes good business sense'* in that *'long term investments in sustainability provide us with long term business opportunities.'* On the one hand, this might be seen to resonate with the concept of shared value, which has been defined by Porter and Kramer (2011) as *'policies and practices that enhance the competitiveness of a company while simultaneously addressing the economic and social conditions in the communities in which it operates.'* However, Crane et al. (2014) identified a number of weaknesses and shortcomings in the creation of the shared value model. They argued, for example, that the model *'ignores the tensions between social and economic goals'*, that it is *'naïve about the challenges of business compliance'* and that it is *'based on a shallow conception of the corporation's role in society'* (Crane et al. 2014). In justifying this assertion, they conclude that the model seeks to *'rethink the purpose of the corporation without questioning the sanctity of corporate self-interest'* (Crane 2014).

On the other hand, and arguably more contentiously, there are concerns, that the concepts might be captured by corporate interests, and more specifically by corporate capitalism, to justify continuing economic growth despite concerns about the overconsumption of natural resources and the damaging environmental effects of such growth. Valenzuela and Bohm (2017), for example, argued that the terms circular economy and sustainability were effectively being *'captured by politic-economic elites claiming that rapid economic growth can be achieved in a way that manages to remain responsible to environment and society.'* In their conclusions, Valenzuela and Bohm (2017) pessimistically

suggest that *'the closer we get to the ideal of a fully circular economy, the more we are allowed to consume without taking an ethico-political stance.'*

Conclusion

The concepts of the circular economy and natural capital are increasingly common features of the sustainability narratives of a growing number of companies. This case study explores if, and how, Europe's leading clothing and fashion retailers have addressed both of these concepts as part of their sustainability strategies. The case study reveals that while the leading European clothing and fashion retailers have employed the concept of the circular economy in a variety of ways, the concept of natural capital has received much less attention. More generally, the authors argue that both concepts raise a number of issues, relating to different and contesting meanings, measurement and accounting, relationships to sustainability and business imperatives and economic growth. The authors are aware that the case study has a number of limitations, not least, that it is based on information drawn from the leading European clothing and fashion retailers' corporate websites and that the retailers' engagement with the concepts of the circular economy and natural capital is in its early stages. However, the authors believe that their approach is appropriate in what is an exploratory case study and that, as such, it provides a platform for future research. Looking to the future, academic researchers might, for example, undertake more detailed case studies of how specific clothing and fashion retailers are addressing the circular economy and natural capital and also focus on how these retailers are looking to prioritise both concepts throughout their supply chains.

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