February 2023

Can the Circular Economy deliver Positive Social Outcomes? An Exploration using Human-Scale Development Principles

A thesis submitted by Rebecca Katherine Murray Clube

for the degree of Doctor of Philosophy at Imperial College London

Centre for Environmental Policy, Faculty of Natural Sciences

Imperial College
London

Statement of Originality

I can confirm that the work contained within this thesis is my own. Any guidance, data, images or text resulting from the work of others has been fully acknowledged in this document, for example through citations, footnotes and further information in the annexes of this thesis. Journal articles associated with this thesis, including those published with the supervisor Mike Tennant as the second author, have been acknowledged at the start of each relevant chapter.
RKMC

Copyright Declaration

The copyright of this thesis rests with the author. Unless otherwise indicated, its contents are licensed under a Creative Commons Attribution-Non Commercial 4.0 International Licence (CC BY-NC). Under this licence, you may copy and redistribute the material in any medium or format. You may also create and distribute modified versions of the work. This is on the condition that: you credit the author and do not use it, or any derivative works, for a commercial purpose. When reusing or sharing this work, ensure you make the licence terms clear to others by naming the licence and linking to the licence text. Where a work has been adapted, you should indicate that the work has been changed and describe those changes. Please seek permission from the copyright holder for uses of this work that are not included in this licence or permitted under UK Copyright Law.
RKMC

Journal publications

- There are currently four journal publications associated with this thesis; at the time of writing the published articles have garnered 65+ citations according to Google Scholar. These are listed below.

Clube, RKM. & Tennant, M. (2023). What would a human-centred 'Social' Circular Economy look like? Drawing from Max-Neef's Human-Scale Development Proposal. *Journal of Cleaner Production.* https://doi.org/10.1016/j.jclepro.2022.135455

Clube, RKM (2022). Is job creation a legitimate social benefit of the circular economy? *Resources, Conservation and Recycling.* https://doi.org/10.1016/j.resconrec.2022.106220

Clube, RKM., & Tennant, M. (2021). Social inclusion and the circular economy: The case of a fashion textiles manufacturer in Vietnam. *Business Strategy and Development.* https://doi.org/10.1002/bsd2.179

Clube, RKM., & Tennant, M. (2020). The Circular Economy and human Needs satisfaction: Promising the radical delivering the familiar. *Ecological Economics*. https://doi.org/10.1016/j.ecolecon.2020.106772

Additional publications and presentations

- There are additional presentations and publications associated with this thesis. These are listed below.

Dictionary of Ecological Economics, Terms for the new millennium (forthcoming, 2023): Definition contribution: *"Human Needs Assessment". https://www.e-elgar.com/shop/gbp/dictionary-of-ecological-economics-9781788974905.html*

Interdisciplinary Circular Economy Conference (ICEC), November 2020: Presentation & Abstract, *"Strengthening the social dimension of the Circular Economy through the Exploration of Human Needs"*

Global Fashion Conference, October 2021: Presentation & proceedings.

Abstract

This Circular Economy ("CE") has emerged as a topic of interest amongst a range of stakeholders. The concept is framed as having the potential to overturn the prevailing extractive and polluting linear system to a circular alternative, whilst delivering various economic, environmental and social benefits. However, despite enthusiasm regarding the concept's transformative potential, there remains a lack of compelling societal narrative for the CE's adoption. The literature often contains general references to positive social outcomes but without elaborating how the CE can address or ameliorate acute sustainable development challenges, such as equity, inclusion, justice and human health. Hence, this presents a gap in the current discussion. This thesis proposes that a CE that can satisfy human needs would provide a compelling social narrative, aligning the CE vision with sustainable development. Max-Neef's Human-Scale Development (H-SD) Proposal is utilised as a lens for analysis throughout this thesis. Both primary and secondary qualitative methods are utilised, including document analysis, interviews and a case study to explore seminal and developing CE narratives using the H-SD framing. This includes both macro-level analysis and industry-specific exploration (fashion textiles). This thesis builds on a small, but emerging, literature base that argues that the CE – in its current dominant form - could reproduce the unfavourable social characteristics that exist in the linear system. On this basis, the penultimate chapter includes a proposal for a radical reframing of the CE based on H-SD principles, the Social CE.

Acknowledgements

To begin with I would like to thank the Alumni Fund for enabling me the freedom to develop and engage in a research topic of my choice through the Imperial College President's Scholarship Scheme. This has been an invaluable opportunity that would not have been feasible without the generous support of this college fund.

Next, I would like to express my immense gratitude to my supervisor, Mike Tennant. Thank you for over four years of unrivalled support, swift feedback and indispensable advice. I feel very lucky to have had you as a supervisor and made my PhD experience an enjoyable one.

I would like to thank my student peers and all the staff at the Centre for Environmental Policy and wider Imperial College community, who have provided intellectual, administrative and emotional guidance. I would especially like to mention Corina Angheloiu who has navigated the PhD journey with me and made it more interesting and enjoyable as a result.

Outside of the Imperial College community, I would like to acknowledge all the anonymous reviewers that reviewed and provided (generally useful) recommendations for the journal articles that present the findings of this thesis. I would like to further thank Mònica Guillen-Royo, an expert in the H-SD theory utilised in this thesis, also who provided me with early feedback and advice.

I would like to thank my family, particularly my mother, father, brother and grandparents for their support during the writing of this thesis. To all my friends who asked how it is going, these check-ins were always appreciated.

Last but not least, I would like to thank my partner, Karl, for his ongoing words of advice and constant kindness during the writing of this thesis.

This thesis is dedicated to my grandfather, Joe, who I lost along the way but would have been proud to see it completed.

Abbreviations

BE – Blue Economy

C2C – Cradle to Cradle

CE – Circular Economy

CSR – Corporate Social Responsibility

EMF – Ellen MacArthur Foundation

EPR – Extended Producer Responsibility

EU – European Union

FHN – Fundamental Human Needs

FTI – Fashion textiles industry

GDP – Gross domestic product

H-SD – Human-Scale Development

ILO – International Labour Organisation

IPCC – Intergovernmental Panel on Climate Change

MDG – Millennium Development Goals

NGO – Non-Government Organisation

PE – Performance Economy

RD – Regenerative Design

rPET – recycled polyethylene terephthalate

SDG – Sustainable Development Goal

UK – United Kingdom

UN – United Nations

USA – United States of America

WCED – World Commission on Environment and Development

WHO – World Health Organisation

Contents

1. INTRODUCTION 11

1.1. CHAPTER OVERVIEW 11
1.2. CONTEXT: THE FAILINGS OF THE LINEAR ECONOMY 11
1.2.1. An Alternative Outlook: The emergence of the Circular Economy 12
1.2.2. Critiques of the CE 14
1.3. RESEARCH PROBLEM 17
1.3.1. Research purpose, objectives and questions 18
1.4. RESEARCH PHILOSOPHY AND APPROACH 19
1.4.1. Research epistemology 19
1.4.2. Research Design: Qualitative approach 20
1.4.3. Research ethics 23
1.5. THESIS STRUCTURE 24

2. CONCEPTUAL FRAMING: SUSTAINABLE DEVELOPMENT, ECONOMIC GROWTH AND HUMAN NEEDS ... 27

2.1. CHAPTER OVERVIEW 27
2.2. CORE THEORETICAL FOUNDATIONS 27
2.2.1. An introduction to Sustainable Development 27
2.2.2. GDP, decoupling and the CE 31
2.2.3. Human needs approach 36
2.3. INTEGRATING A HUMAN NEEDS PERSPECTIVE INTO THE CE 47
2.4. CHAPTER CONCLUSION 48

3. THEORETICAL EXPLORATION: WERE THE SEMINAL CE TEXTS INCLUSIVE OF HUMAN NEEDS CONSIDERATIONS? 49

3.1. CHAPTER OVERVIEW 50
3.2. CHAPTER AIMS AND RESEARCH QUESTIONS 50
3.3. LITERATURE CONTEXT: SUPPLEMENTARY LITERATURE ON CURRENT CE 50
3.3.1. Increasing Policy interest 50
3.3.2. Private sector interest 52
3.4. CHAPTER METHODOLOGY 53
3.4.1. Methods: Qualitative, exploratory approach 53
3.4.2. Analysis: Manual coding 53
3.4.3. Methodological limitations 54
3.5. FINDINGS 54
3.5.1. Cradle to Cradle: Remaking the way we make things ("C2C") (matrix 2) 54
3.5.2. The Performance Economy ("PE") (matrix 3) 57
3.5.3. Regenerative Design for Sustainable Development ("RD") (matrix 4) 59
3.5.4. The Blue Economy ("BE") (Pauli, 2010) (matrix 5) 62
3.6. DISCUSSION 64
3.6.1. Production and Consumption 64
3.6.2. Actors and Implementation 65
3.6.3. A Local Approach 65
3.6.4. Technology & Natural Processes 66
3.7. CONCLUSION AND REFLECTIONS 67
3.7.1. Chapter Conclusion 67
3.7.2. Chapter Reflections and additional Insights: Job creation in a CE 68

4. CAN CIRCULARITY IN THE FASHION TEXTILES INDUSTRY RESULT IN MORE FAVOURABLE SOCIAL OUTCOMES THAN IN THE LINEAR APPROACH? 71

4.1. CHAPTER OVERVIEW 71
4.2. CHAPTER AIMS AND APPROACH 71
4.3. LITERATURE BACKGROUND 71
4.3.1. Fast Fashion as dominant approach 71
4.3.2. Long, fragmented and exploitative supply-chains 72
4.3.3. Dual environmental and social challenges 74
4.3.4. The CE as an alternative approach 75
4.4. CHAPTER METHODOLOGY: PRIMARY DATA COLLECTION 76
4.4.1. Semi-structured interviews 76
4.5. FINDINGS 78
4.5.1. Circularity is an emerging concept in the FTI 78
4.5.2. Circularity applications and interpretations 79
4.5.3. The social dimension of sustainability in the circular fashion transition 86
4.6. CHAPTER DISCUSSION 93
4.7. CHAPTER CONCLUSION AND REFLECTIONS 95
4.7.1. Conclusion 95
4.7.2. Reflections on recruitment & Limitations of the participant sample 95

5. CASE STUDY PART 1: USING A DEVIANT CASE TO IDENTIFY UNIQUE SOCIO-ENVIRONMENTAL APPROACHES AT THE MICRO-LEVEL 97

5.1. CHAPTER OVERVIEW 97
5.2. AIMS AND RESEARCH QUESTIONS 97
5.3. METHOD: CASE STUDY APPROACH 98
5.3.1. Identifying and defining the case 98
5.3.2. Scoping and bounding the case 99
5.3.3. Data sources 100
5.3.4. Analysis 103
5.3.5. Methodological reflection: navigating research in COVID-19 103
5.4. FINDINGS 104
5.4.1. Overview 104
5.4.2. Community impact charity engagement 105
5.4.3. Labour strategy 106
5.4.4. Circularity: Core Operations 108
5.4.5. Circular Initiative: Saitex Farms 112
5.4.6. Circular Initiative: STELAPOP 114
5.4.7. Circular Initiative: Rekut 115
5.4.8. Saitex USA 116
5.4.9. Expansion: Vertical Integration through Mill 118
5.5. CHAPTER DISCUSSION 121
5.6. CHAPTER CONCLUSION AND REFLECTIONS 124
5.6.1. Conclusion 124
5.6.2. Reflection: Does less factory pollution really improve the local community? 125
5.6.3. Reflection: Can a manufacturer of a pseudo-satisfier ever be considered sustainable? 125

6. CASE STUDY PART 2, THE REKUT VENTURE (EMBEDDED CASE) 127

6.1. CHAPTER OVERVIEW 127
6.2. CHAPTER AIMS AND RESEARCH QUESTIONS 127
6.3. LITERATURE BACKGROUND: SUPPLEMENTARY LITERATURE 128
6.3.1. Persons with Disabilities 128
6.3.2. Vietnam and Disability 129
6.3.3. CE and disabilities? 130
6.4. DATA COLLECTION 130
6.4.1. Interviews: Management and employee 130
6.4.2. Analysis 132
6.4.3. Special ethical considerations and methodological challenges 132

6.5. FINDINGS 133
6.5.1. Inclusion 134
6.5.2. Physical and psychological safety 135
6.5.3. Training and skills development 136
6.5.4. Wage and financial independence 137
6.5.5. Development of friendships and social contacts 137
6.5.6. Work-life balance 138
6.6. DISCUSSION OF EMBEDDED CASE 138
6.7. CHAPTER CONCLUSION AND REFLECTIONS 140
6.7.1. Conclusion 140
6.7.2. Reflection: An additional category of satisfier? 140

7. DISCUSSION 142

7.1. CHAPTER OVERVIEW 142
7.2. DISCUSSION: THE NEED FOR A RADICAL REFRAMING 142
7.2.2. Social CE: Transitioning from wants to needs 147
7.2.3. Dominant CE: An efficiency focus 148
7.2.4. Social CE: Moving from efficiency to sufficiency 151
7.2.5. Dominant CE: Business elite as key actors 153
7.2.6. Social CE: Expansion to include a diverse range of actors 155
7.3. CHAPTER CONCLUSION 158

8. CONCLUSION 159

8.1. CHAPTER OVERVIEW 159
8.2. SUMMARY OF KEY FINDINGS 159
8.2.1. Findings related to the social dimension of the CE 159
8.2.2. FTI specific findings: 161
8.3. AVENUES FOR FURTHER RESEARCH 162
8.3.1. Participatory exercises and consultations 162
8.3.2. Clarifying and extending the concept of "gateway" satisfiers 163
8.3.3. A deep dive into consumption 163
8.3.4. Beyond the avoidance of harms 163
8.3.5. Health and the CE? 164
8.3.6. Switching logic towards a Social CE 164
8.3.7. Justice impacts of CE transitions 164

9. REFERENCES 166

10. ANNEX 183

Annex a: Ethics 183
Annex b: Chapter 4 participants 184
Annex c: Chapter 4 topic guides 186
Annex d: Example transcript 186
Annex e: Chapter 4 additional analysis 194
Annex f: Chapter 5/6 Country information 195
Annex g: Chapter 5 case study scoping 196
Annex h: Chapter 5/6 participant information 197
Annex i: Chapter 5/6 document summary 198
Annex j: summary of certifications 202
Annex k: Chapter 6 managerial recommendations 204

List of Figures

Figure 1: The SDGs. 29
Figure 2: Hierarchy of human needs. 37
Figure 3: Summary of the three components of the H-SD proposal 38
Figure 4: Snapshot of FTI. 72
Figure 5: Overview of strategies mentioned during interview. 80
Figure 6: Brief case overview. 99
Figure 7: Overview of case study approach. 100
Figure 8: Denim snapshot. 104
Figure 9: Reconciling the CE with a human needs perspective. 144

List of Tables

Table 1: Summary of features of the key methods employed within this thesis. 22
Table 2: Summary of Chapters 25
Table 3: Classification of Satisfiers 43
Table 4: Contemporary sustainability studies using the H-SD as a foundation or central framework. 48
Table 5: Chapter 2 summary 50
Table 6: Summary of seminal texts analysed in this study. 54
Table 7: Chapter 3 summary 71
Table 8: Chapter 4 summary 96
Table 9: Saitex strategies & initiatives and links to both CE & social outcomes 126
Table 10: Chapter 5 summary 141
Table 11: Chapter 6 summary 142
Table 12: Social CE 157

List of Matrices

Matrix 1: Example matrix of satisfiers. 41
Matrix 2: Summary of satisfiers identified in C2C 57
Matrix 3: Summary of satisfiers identified in PE 60
Matrix 4: Summary of satisfiers identified in RD 62
Matrix 5: Summary of satisfiers identified in BE. 64
Matrix 6: Summary of satisfiers identified in the embedded case. 133

List of Images

Images 1: Examples of cultivations: 114
Images 2: Examples of STELAPOP. 115

1. Introduction

1.1. Chapter overview

This chapter begins by providing the background context relating to the unsustainable linear industrial system. Then, the concept of exploration – the Circular Economy ("CE") - is introduced. The fundamental problematic research gap is pinpointed: the lack of focus on the social dimension of circularity. After, the research purpose, objectives and questions are stated. The research philosophy and approach, including the methodological choices and ethical considerations are discussed. Finally, the structure of the thesis, including the research questions and expected contributions of each chapter, is outlined before concluding the chapter.

1.2. Context: The failings of the linear economy

> *"Like winds and sunsets, wild things were taken for granted until progress began to do away with them."*
> (Aldo Leopold, 1949)

Since the industrial revolution, consumption and production has followed a so-called *linear* system. Within this system raw materials are extracted, transformed into finished goods then used and disposed of with little or no attention paid to end-of-life scenarios (Sauvé et al., 2016). This approach may be referred to as the "take-make-dispose" or "cradle to grave" models (EMF, 2013; McDonough and Braungart, 2002). Despite stark warnings about anthropogenic impacts on the planet dating back over seventy years (Carson, 1962; Hardin, 1968; Leopold, 1949; WCED, 1987), this linear approach prevails: it is ubiquitous in current ways of living since economic growth with mass-consumerism and a desire for the *new* being heavily embedded in the capitalist mindset (Jackson, 2013; O'Rourke and Lollo, 2015; Wright et al., 2018). It has further accelerated and intensified alongside demographic changes such as population growth, increasing urbanisation and per capita income increases.

The linear economy has provided various socio-economic benefits and continues to play an important role for improving the livelihoods of millions across the world, particularly in low-income regions (Dollar et al., 2016; Pritchett and Kenny, 2013). Nevertheless, this extractive industrial mindset has resulted in long-term and persisting environmental and socio-economic externalities, including contamination of natural resources, climate change and societal imbalances (Day et al., 2018; O'Neill et al., 2018). Scholars argue that the unprecedented pressure on the planet can cause potentially irreversible alteration of self-regulating natural systems, which in turn disrupts essential ecological services of which humans rely on (*ibid*). Rockström et al. (2009) identified nine processes that are fundamental to the Earth's stable functioning and should not be surpassed, referred to as *planetary boundaries*. Concerningly, evidence suggests four of these have already been overstepped (Steffen et al., 2015). These are: climate change, loss of biosphere integrity, land-system change and altered biogeochemical cycles (*ibid*). With such profound change, it is argued that the Earth has transitioned to a new geological epoch - the Anthropocene - where fundamental changes from anthropogenic activities have emerged, which are outside the realm of any previous natural variability (Rockström et al., 2009; Wright et al., 2018). The International Panel of Climate Change ("IPCC")

(2018) have stressed the need to limit global warming to a 1.5 degrees Celsius rise to prevent the worst impacts of climate change. If ambitious temperature limits are to be adhered to then there must be rapid, far-reaching and unprecedented changes across all aspects of society (Day et al., 2018; IPCC, 2018)).

The exploitation of the environment has been matched with exploited human populations, particularly in so-called Global South[1] regions, as environmental and social impacts are intrinsically connected (Fritz and Koch, 2014; Jackson, 2013; Rockström et al., 2009). Mass production and consumption that is synonymous with the linear economy have caused widespread societal externalities (Fritz and Koch, 2014; O'Rourke and Lollo, 2015; Wiedmann et al., 2020). These include: precarious labour conditions, uneven social opportunity, well-being concerns and widening wealth-poverty divisions (O'Hara, 2009). The combination of a globalised world and overwhelming demand for material goods has resulted in disproportionate social and environmental burdens placed on low-income nations, as businesses have sought to compete in heavily price sensitive markets by seeking low-cost offshoring strategies (Max-Neef, 2010). High-income nations eschew responsibility by exploiting lax regulation in low-income manufacturing hubs (Franco, 2017; O'Hara, 2009). However, is not only the Global South who are experiencing these social and ecological challenges. Socio-economic divides are increasingly prevalent in the Global North and have been particularly acute following the 2009 global financial crisis (Holmes, 2018) and are intensifying due to the COVID-19 pandemic (Ahmed et al., 2020). Housing shortages, food price volatility, well-being and health crises (e.g. mental and lifestyle related ills) are growing burdens on developed world governments, and are set to increase given climate change impacts (Holmes, 2018; O'Hara, 2009).

1.2.1. An Alternative Outlook: The emergence of the Circular Economy

The inauguration of the 2030 agenda in 2015 through the establishment of the Sustainable Development Goals ("SDGs") presented a landmark moment in international sustainability co-ordination. The 17 goals acknowledge the interconnectivity between the stable functioning of the earth and thriving societies (Coscieme et al., 2020; Everard and Longhurst, 2018; Schroeder et al., 2019). With these top-down commitments, there has been increasing pressure to transform the industrial approach. In the inaugural report (UN, 2015, p.8), it is stated that the agenda seeks to:

> *"...commit to making fundamental changes in the way that our societies produce and consume goods and services. Governments, international organizations, the business sector and other non-State actors and individuals must contribute to changing unsustainable consumption and production patterns..."*

This priority is further augmented in a standalone goal, SDG 12 ("Responsible Production and Consumption"), which demonstrates the widespread need to transform the current system (*ibid*).

In the last twenty years, the concept of the CE has generated significant interest from a range of stakeholders, including from the private sector, governments and regions, international agencies and NGOs. The

[1] Within this thesis, regions are referred to as *Global South* and *North*, as well as *developing* and *developed* (as used by IPCC and UN). I would however like to acknowledge that such terminology is considered problematic, as they may be interpreted as reinforcing hegemonic neo-colonial narratives and inferring hierarchies between nations (Khan et al., 2022).

CE is presented as an alternative model to the linear model by reducing reliance on virgin resource extraction and ensuring a more sustainable production and consumption outlook (De Angelis and Ianulardo, 2020; Schulz et al., 2019). Although only recently garnering more popular attention, the CE concept is not new. Early influences include Boulding's (1966) *spaceship earth* metaphor, highlighting the need for a closed system within the carrying capacity of the earth. Its more recent academic origins emerged from differing schools of thought - from engineering and Industrial Ecology (Frosch and Gallopoulos, 1989), to design and architecture (Lyle, 1996; McDonough and Braungart, 2002) and business and economics communities (Pauli, 2010; Pearce and Turner, 1990; Stahel, 2010). In contemporary practice, the Ellen MacArthur Foundation ("EMF") has emerged as an influential voice, advocating for a transition to circularity (Kirchherr and van Santen, 2019; Lazarevic and Valve, 2017; Pitkänen et al., 2020).

Although a variety of definitions exist, Kirchherr et al. (2017, p.224) formed an all-encompassing description of the CE based on a review of the literature:

> *"A circular economy describes an economic system that is based on business models which replace the 'end-of-life' concept with reducing, alternatively reusing, recycling and recovering materials in production/ distribution and consumption processes, thus operating at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations."*

The CE consists of a *"*diverse bundle of ideas*"* (Gregson et al., 2015, p.220) and hence classified as an "umbrella concept" (Blomsma and Brennan, 2017; Homrich et al., 2018). It is broadly framed as having significant potential for value generation by keeping resources and materials in use at the highest value for as long as possible in society, enabling reduced extraction of virgin materials (EMF, 2013). Non-renewable fuels and materials are substituted for renewable and regenerative alternatives (*ibid*). Most commonly, new circular business models and policy interventions have been adopted in practice (De Angelis and Ianulardo, 2020), whilst citizens are expected to shift from *consumers* to *users* (Accenture, 2014; EMF, 2013; Wastling et al., 2018). These approaches tend to surround the extensively discussed "3R's" – reduce, reuse and recycling - to *close, slow* and *narrow* resource loops (Bocken et al., 2016; Corona et al., 2019). *Closing* loops refers to consideration of end-of-life by seeking to reduce waste by revalorising resources through recycling strategies (Bocken et al., 2016). *Slowing* loops refers to extending product value by keeping materials in use for as long as possible, such as through increasing durability supported by repair activities, remanufacturing and new business models (e.g. product-service systems) (Bocken et al., 2016; Tukker, 2015). *Narrowing* loops refers to efficiency strategies to reduce reliance on critical raw materials through their preservation, ultimately leading to reduced resource intensity on a per unit basis (Bocken et al., 2016).

The expected benefits of the CE have been framed as holistic, providing economic, social and environmental value with the capability of the concept to addressing sustainable development challenges, including the SDGs, often communicated (EMF, 2021; EU, 2020, 2015). This in theory is reflected in the EMF's claim that the CE is *"a systems solution framework that tackles global challenges like climate change, biodiversity loss, waste and pollution"* (EMF, 2021, p.16).

1.2.2. Critiques of the CE

The recent growth of interest in circularity means there are varying appropriations and conceptual interpretations of the CE amongst different stakeholders (Corona et al., 2019; Korhonen et al., 2018a; Lazarevic and Valve, 2017). The result is a confused and inconsistent narrative, which can be adjusted to suit the interests of various stakeholders with different vested interests. Korhonen et al. (2018b, p.544) view the CE as an *"essentially contested topic"* whilst Gregson et al. (2015, p.2018) suggest the concept is *"more often celebrated than critically interrogated".* There is a plethora of interrelated critiques regarding the CE's current trajectory, some of which are discussed below that are foundational for this thesis.

1.2.2.1. Current interpretations represent business-as-usual

Despite bold statements about the positive impacts of transitioning to a CE, there is mounting evidence to suggest that any radical social and environmental transformative visions have so far failed to emerge (Hobson and Lynch, 2016; Moreau et al., 2017). Current CE interpretations typically involve various commercialised interpretations of reduce, reuse and recycle strategies, which have essentially resulted in enhanced waste management rather than deep transformative institutional or system-wide changes (Ghisellini et al., 2016; Hobson and Lynch, 2016; Merli et al., 2018; Moreau et al., 2017). Instead, business interventions are mainly activated through the creation of environmentally *efficient* products and processed with a focus on technology, which are diffused into society through economic rationalist market-based mechanisms (Hobson and Lynch, 2016; James, 2022; Kirchherr et al., 2017; Moreau et al., 2017). This *business case* for circularity has seen major global corporations publicising their transition to circularity (e.g. Groupe Renault, 2020; H&M Group, 2018) and consultancies noting how these models can exploit novel circular revenue streams (e.g. Accenture, 2014, p.2 describe a "circular advantage" worth "trillions").

The impacts of the CE are currently unremarkable (Skene, 2018). The global economy is estimated to be 8.6% circular and is currently facing a downward trajectory as primary production and consumption continues to increase (Circle Economy, 2021). An increasing body of literature recognises the shortcomings with the current narrative: that a preoccupation with business-led solutions represents a weak form of ecological modernisation discourse (Calisto Friant et al., 2020; D'Amato, 2021; Hobson and Lynch, 2016; Rask, 2022). Weak ecological modernisation is characterised by undue focus on technological solutions; a technocratic approach to governance; and focus on advancing the economic position of predominantly developed nations (Dryzek, 2013). Hence, the ability of the CE to meet sustainable development challenges may be misplaced since the concept risks being interpreted in a reductionist manner to merely refer material recirculation (Corona et al., 2019). The trajectory mainly reiterates existing attempts to *green* business (York and Rosa, 2003). This focus on incremental improvements may be a reason why the CE has captured the interest of businesses, since it can be viewed as compatible with existing organisational objectives (Lazarevic and Valve, 2017). In fact, Johansson and Henriksson (2020) conclude that current *weak* forms of circularity do not challenge business-as-usual, but rather expands it by adding business opportunities.

In practical terms, a range of financial, political and social barriers have thus far hindered the implementation and widespread adoption of novel circular business models (e.g. Agyemang et al., 2019; Clube and Tennant, 2020a; Kirchherr et al., 2018). There appears to be a narrow stakeholder view with undue focus on business actors, meaning that other key actors are excluded. The commitment and participation of a broad stakeholder base is likely required for a successful CE, but the role or positioning of other actors have not been thoroughly explored or included in conceptualisation (Moreau et al., 2017). Leipold et al. (2021, p.6) summarise that a private sector driven CE tends to *"highlight individual opportunities rather than collective equity problems"*.

1.2.2.2. Unproven environmental impacts

The environmental dimension of the CE is explored in the academic literature, and positive environmental outcomes are cited by practitioners as a motivation to adopt circular strategies. Perhaps the most stated environmental benefits of circularity stem from aspects such as reduced greenhouse gas emissions, less reliance on virgin resource extraction, and the regeneration of nature (EMF, 2013; EU, 2020; Naustdalslid, 2014). Generally, scholars agree that circularity can reduce society's impact on the environment with potential to contribute to solving some of today's most pressing environmental issues (e.g. van den Bergh, 2020, p.7: "*Circularity is highly relevant for stopping climate change"*). However, there has been less research on the impacts of CE on some urgent ecological challenges, such as tackling biodiversity loss; Buchmann-Duck and Beazley (2020, p.2) note that "*while biodiversity is undeniably threatened in the linear economy, little research exists on how this would directly change in a circular economy"*. Circularity may only focus on nature conservation to the extent of those resources that can be monetised by exchange values (*ibid*). Hence the intrinsic connection between environmental and social outcomes are frequently overlooked, ignoring complexities of a holistic systems approach (Merli et al., 2018; Sauvé et al., 2016; Schröder et al., 2020).

In terms of actual impact, there are contested findings in terms of realised environmental outcomes, in part because of a lack of empirical evidence. Critics highlight that the CE narrative is oversimplified (Geissdoerfer et al., 2017; Millar et al., 2019; Skene, 2018). There is focus on the decoupling perspective, where economic growth can be decoupled from environmental impacts. This is highly compelling from a business outlook, but is empirically unsubstantiated (Gregson et al., 2015). There is concern that decoupling will only occur at a *relative* rather than *absolute* basis (Johansson and Henriksson, 2020; Zink and Geyer, 2017) since the CE fails to deeply consider how current forms of production and consumption generate social and environmental problems (Millar et al., 2019; O'Rourke and Lollo, 2015; Schulz et al., 2019). Geissdoerfer et al. (2018) observe that not all systems incorporating circularity are intrinsically more sustainable. The current CE narrative is highly techno-centric, resulting in an efficiency-based, ecological modernisation discourse (Calisto Friant et al., 2020; Lazarevic and Valve, 2017). However, there are technical limitations to material durability, economic viability challenges and cultural barriers that make perpetual material cycling unrealistic (Gregson et al., 2015; Skene, 2018). Concerningly, there are claims that circular materials and products could have a higher overall environmental impact than the existing linear counterpart (Calisto Friant et al., 2020). There has ultimately been growing

critique and scepticism to the extent that the CE can transform the current way of living; Skene (2018, p.482) facetiously describes it as *"an economist's paradise and an Enlightenment dream."*

1.2.2.3. Lack of attention to the social dimension of sustainability

There is a growing consensus that the social dimension of sustainability is insufficiently articulated or addressed, or sometimes overlooked completely (Homrich et al., 2018; Merli et al., 2018; Sehnem et al., 2019). Kirchherr et al. (2017) identify that the most common stated goal in the CE literature is economic prosperity whereas social components are rarely explored. They found only a single definition in their analysis had any reference to critical issues, such as future generations, suggesting that short-term perspectives dominate the current narrative (*ibid*). This shortcoming was summarised by Schöggl et al. (2020, p.13):

> *"…social topics remain underrepresented or are even neglected. Even though the semantic analysis reveals that this has been a clear point of criticism throughout the observed time period, the problem of how the incorporation of social and consumption-based issues may be achieved remains largely unresolved"*

Documents tend to refer to the expected positive impacts of circularity, such as improved well-being or health, in a general sense without substance as how these desired outcomes might be achieved (Padilla-Rivera et al., 2020; Pitkänen et al., 2020; WHO, 2018). For example, the EMF (2017, p.16) stipulates that for Europe the CE can *"create better economic, social, and environmental outcomes than the current development path"*. Nevertheless, there have been few attempts at substantiating these social impacts, and so it is premature to assume that the impacts will be beneficial for all.

Most commonly job creation is cited as a societal benefit (Govindan and Hasanagic, 2018; Horbach and Rammer, 2020; Mies and Gold, 2021; Padilla-Rivera et al., 2020). It has been suggested that circular strategies shift labour needs to centre around repair, reuse and recycling activities, which can create new vocational opportunities and associated socio-economic advantages (EMF, 2013; Stahel, 2010). Nonetheless, many claims regarding vocational opportunities generally surround reductionist perspectives whereby quantity of new jobs and associated financial benefits are highlighted, without detailing how these jobs can lead to better wellbeing outcomes for the workforce in comparison to linear alternatives (Mies and Gold, 2021; Pieroni et al., 2019; Walker et al., 2021). This omission is problematic given calls for "decent work" in sustainable development outlooks (e.g. SDG 8) (UN, 2015). This supports the agenda of the International Labour Organisation ("ILO") that identifies decent work as encompassing: job creation; rights at work; social protection; social dialogue as well as having gender equality as a crosscutting objective (ILO, 2017).

There are claims that the CE can help meet the SDGs, yet the explicit connection between circularity and sustainable development remains ambiguous (Cecchin et al., 2020; Homrich et al., 2018; Korhonen et al., 2018a). Schröder et al. (2020) observe that poverty, human rights and justice issues are largely neglected, yet are essential to sustainable development, including achievement of the SDGs. This agrees with Murray et al. (2017, p.376) who argue that the CE literature is *"virtually silent on the social dimension*". The authors recognise that ecological renewal and a reduction in the use finite resources are likely to benefit humans. However, more

explicit social goals are not stated or comprehensively explored with ethical and moral concerns missing from the current construct (*ibid,* p376):

> *"It is unclear how the concept of the CE will lead to greater social equality, in terms of inter- and intra-generational equity, gender, racial and religious equality and other diversity, financial equality, or in terms of equality of social opportunity."*

These oversights are exacerbated by the fact that currently research is focused on wealthy regions, and the impacts on the so-called Global South are less explored[2]. This leaves gaps in terms of implementation and impacts, which risks reinforcing existing structural injustices; currently high resource consumption is not generated equally across the globe with wealthy countries using substantially more resources on a per capita basis than many low-income nations (Eisenmenger et al., 2020; Rockström et al., 2009). Furthermore, policy documentation generally fails to discuss any possible *negative* social impacts or unfavourable trade-offs (Pitkänen et al., 2020). Ultimately, such an oversight means that claims that the CE is compatible with sustainable development are unfounded (Hart and Pomponi, 2021; Kirchherr et al., 2017; Skene, 2018).

1.3. Research problem

If a CE is to address sustainable development, then the concept would need to have broad economic, environmental and social benefits (Murray et al., 2017; WCED, 1987). The sparse attention to the social dimension of sustainability in current CE interpretations is particularly concerning with this shortcoming is increasingly being highlighted in the literature (Moreau et al., 2017). Nevertheless, at this stage there is no consensus as to what the social benefits are; how they will be realised; and ultimately how the CE can contribute to sustainable development (Millar et al., 2019; Murray et al., 2017). There is a lack of attention as to how the CE can meet societal needs and ensure a more favourable outcome to the linear economy (Alaerts et al., 2019; Murray et al., 2017). Existing literature tends to take an impoverished view of citizens, framing them as passive actors who benefit from new circular products or services (Hobson and Lynch, 2016).

At a systems level, it is unclear how the CE can address pertinent complex social challenges such as inter and intra-generation equity, financial equality and social opportunity (Murray et al., 2017). A so-called *Global North* focused outlook means there is a distinct lack of empirical evidence to show how circularity can contribute to transformation of lower income nations, where negative environmental and social impacts are often intense (Mishra et al., 2019; Moktadir et al., 2020). Only a small handful of scholars are seemingly seeking to address this shortcoming (e.g. Hobson and Lynch, 2016; Inigo and Blok, 2019; Moreau et al., 2017; Schroeder et al., 2019). The concern is generally overlooked by practitioners. As such, it is unclear whether circularity currently deviates substantively from business-as-usual. These limitations likely hinder the CE's ability – in its current form - to be a tool to meet social needs within planetary boundaries, and contribute to sustainable development (D'Amato, 2021). All these challenges allude to a profound research gap in need of attention.

[2] Kirchherr and van Santen (2019) report that >95% of articles focus on developed regions.

1.3.1. Research purpose, objectives and questions

Given the systemic economic, political, social and technical complexities of operating in the 21st century economy, it is perhaps unsurprising that CE has not been fully developed or articulated to demonstrate its wider societal potential. If the CE is indeed to contribute towards sustainable development then effort must shift from exclusively economic viability to wider socio-environmental inclusion (D'Amato, 2021; Kersty Hobson and Lynch, 2016a; Moreau et al., 2017), producing outcomes conducive to furthering social progress. It has previously been argued that the role of the economy, in a general sense, is to improve life for its citizens through needs fulfilment (Alaerts et al., 2019; Rosa and Henning, 2017). Alaerts et al. (2019) therefore consider the success of the CE from a social perspective as based on an its capacity to fulfil societal needs. But what exactly this means has not been explored thus far.

The Human-Scale Development proposal (thereafter "H-SD"), developed by Max-Neef et al. (1991), is adopted as a lens to explore the social dimension of the CE[3]. This corresponds to suggestions in the literature that a focus on human needs can help in finding inclusive sustainability pathways that support human wellbeing whilst limiting pressure on the environment (Everard and Longhurst, 2018; Jackson, 2013). However, the concept of needs has not been explored in the realm of the CE given its underdeveloped social dimension. This exploratory research ultimately aims to address this gap to identify pathways and scenarios where a CE can contribute to achieving sustainable development, such as the SDGs. The work carried out in this thesis is guided by three research objectives:

- Contribute to the sparse literature on the social dimension of the CE through identification and articulation of potential social benefits.
- Using a case industry, explore the approaches being applied and assess whether they have potential to enhance social sustainability.
- As the private sector interest in the CE has surged as key stakeholders for the adoption of the CE, then it is necessary to establish how private sector, micro-level interpretations can offer legitimate social benefits in their circularity interpretations.

To address these objectives, a set of research questions were developed. As common with the qualitative research approach employed (section 1.4), these developed during the duration of the research (Creswell and Creswell, 2018). The overarching research questions are below, but more specific sub-research questions were developed in line with recommendations by Miles et al. (2018). These sub-questions relate to different chapters in this thesis and can be found in *Table 2.*

RQ1: *What are, or could be, the positive social impacts of a CE?*
RQ2*: How does the dominant narrative address social concerns in the CE?*
RQ3: *What is the role of the private sector in adopting circularity to deliver transformative social outcomes?*

These questions are iteratively contributed to throughout. Chapters 4, 5, 6 are dedicated to focusing on a specific industry interpretation of the CE. The case industry of *fashion textiles* ("FTI") has been selected to enable deep,

[3] Rationale for this choice is justified in Chapter 2.

sector specific exploration of these questions. The rationale for selecting this industry is that it has traditionally operated in a mass-production, linear manner, which has accelerated in light of the *fast fashion* model (Niinimäki et al., 2020). There have been calls to transform this industry to a circular system to reduce its environmental and societal impacts (EMF, 2017a; EU, 2020).

1.4. Research philosophy and approach

> *"Science is often misrepresented as 'the body of knowledge acquired by performing replicated controlled experiments in the laboratory.' Actually, science is something broader: the acquisition of reliable knowledge about the world."* (Jared Diamond, 2013)

The research design, specific methods, and research philosophy are interactive elements that are related to one another, building on the research purpose and objectives (Crotty, 1998), which together can be considered a research paradigm (Guba and Lincoln, 1994; Tacconi, 1998). Specifying these assumptions is necessary given they essentially denote the *worldview* being adopted (Creswell and Creswell, 2018; Guba and Lincoln, 1994). These aspects are explored in the following sections.

1.4.1. Research epistemology

An epistemology is *"a way of understanding and explaining how we know what we know"* (Crotty, 1998, p.3). This determines what knowledge is considered legitimate in a community, and conversely what is not (Braun and Clarke, 2013). There are a wide range of possible epistemic outlooks in research, such as, constructionist, subjectivist, positivist etc (Creswell and Creswell, 2018; Crotty, 1998). Until the 1970's, the majority of research in the academic literature was based on positivist viewpoints stemming from a preference to quantification (Tacconi, 1998). However, since then alternative positions have flourished (*ibid*). This research is guided by a constructionist epistemological view based in an interpretivist paradigm as throughout this research there is a focus on sense-making and thick description (Denzin and Lincoln, 2017).

A constructionist epistemology considers meaning to be assembled rather than discovered (Crotty, 1998; Moon and Blackman, 2014). Crotty (1998, p.42) summarises this epistemological positioning as:

> *"All knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between human beings and their world, and developed and transmitted within an essentially social context"*

The implication of this outlook is that meaning can be constructed in different and contrasting ways, so there is not one single *true* interpretation of reality; multiple realities coexist (Braun and Clarke, 2013). Therefore, the aim of such research may instead seek to reach an interpretative understanding and embracing the contextual factors that shape these realities (Moon and Blackman, 2014). This differs from objectivist approaches that are based on the ontological assumption that a 'real' world exists independent of human experience, so these positivist stances hence aim to obtain objectivity through identification of *truths* (e.g. through what is often referred to as the *scientific method,* such as hypothesis testing and deduction) that relate to a single reality (Crotty, 1998; Tacconi, 1998). Such truths are viewed as independent of consciousness and human experience (*ibid*). Hence, it has been suggested that positivist outlooks are associated with reductionism (Guba and Lincoln,

1994), whereas constructionism embraces complexity and plurality of meaning (Creswell and Creswell, 2018). This can overcome some of critiques associated with positivist and post-positivist epistemological outlooks, where a preference for quantification can lead to an oversimplification of complex phenomena (Tacconi, 1998). Rather, the constructionist and interpretivist stance can together encapsulate diverse human experiences and complexity, applying curious and creative approaches to research in order interpret social meaning. Hence, empirical data remains important to interpret different experiences of realities (Braun and Clarke, 2013). This subsequently enables more normative discussions of what *ought* to be in the context of the CE per the research topics. Given sustainability is increasingly being recognised as multidisciplinary in nature, then different forms of knowledge and interpretation can be captured by the research paradigm assumed in this thesis.

1.4.2. Research Design: Qualitative approach

Selecting an overarching research approach was paramount to ensure the design was appropriate to address the research questions and desired objectives whilst fitting with the philosophical positioning (Creswell and Creswell, 2018; Crotty, 1998; Miles et al., 2018). It sets out how a researcher goes about finding out whatever they believe can be known (Guba and Lincoln, 1994).

The topic of interest - the CE - can be described as an emergent and contested topic whilst at the same the broad conceptual lens is based on the complex phenomenon of human needs. A qualitative approach is suitable for the exploratory nature of this research and offers the opportunity for deep and critical insight into the subject matter (Creswell and Creswell, 2018). Qualitative approaches are generally appropriate for constructionist positioning outlined previously, given the focus on complexity, interpretation and sense-making (Denzin and Lincoln, 2017). On this basis, generalisability is not a required outcome. Rather, the aim is to produce *thick descriptions* trough in depth exploration, embracing contextual factors rather than trying to control them (Crotty, 1998; Denzin and Lincoln, 2017; Miles et al., 2018). In contrast, positivist and post-positivist epistemological positions *tend* to favour more traditional quantitative approaches given focus on external validation and generalisability (Guba and Lincoln, 1994; Tacconi, 1998).

Qualitative approaches allow for researcher reflexivity and flexibility, and hence subjectivity can add to data richness rather than being problematic (Braun and Clarke, 2013). According to Alvesson (2003, p.26), *"reflexivity aims to inspire a dynamic, flexible way of working with empirical material and escapes a simple theory/method divide."* This enables an interplay between producing interpretations whilst also challenging them (*ibid*). This is suited given the phenomenon and contexts being studied are highly complex and dynamic, such as in the case of human needs in the CE (Creswell and Creswell, 2018). This remains consistent with H-SD principles, which typically is applied in a qualitative format (Guillen-Royo, 2016; Max-Neef et al., 1991).

As commonplace in qualitative research, multiple sources of data and collection methods are used in this thesis (Denzin and Lincoln, 2017); these are summarised on *Table 1*. These developed as the research progressed since qualitative approaches often have an element of emergent design (Creswell and Creswell, 2018; Negrin et al., 2022). In qualitative approaches, the initial research plan cannot be tightly prescribed so "*some or all phases of the process may change or shift*" (Creswell and Creswell, 2018, p.182). This was evident

in this PhD research as understanding of the subject matter developed, the research questions similarly developed in line with reflexive, qualitative approaches. On this basis, reflections on the research process and findings are presented throughout the thesis to reflect on the knowledge being produced (Braun and Clarke, 2013); these are written in the first person.

It is worth noting that narrative literature reviews are utilised throughout. A narrative review is a scholarly summary that includes the author's critique and interpretation (Greenhalgh et al., 2018) and are considered more flexible than systematic approaches (Snyder, 2019). These are particularly useful when the researcher has previous knowledge of the subject matter as is the case here since research has previously been conducted by the researcher on the CE[4]. There is already a plethora of CE literature reviews approaching the tolpic from different angles (e.g. Geissdoerfer et al., 2017; Merli et al., 2018; Mies and Gold, 2021; Padilla-Rivera et al., 2020), so further adding to this is not necessarily useful or novel. Hence, focused, narrative reviews are used throughout this thesis, which is appropriate when *"wanting to study a broader topic that has been conceptualised differently and studies within diverse disciplines"* (Snyder, 2019, p.344). Narrative reviews also enable integration of grey literature, whereas systematic approaches may exclude this category of publication. The inclusion of grey literature is useful in the CE realm given practitioners are currently key implementers.

Since the research aims to explore the social components of the CE, such as well-being, social equity and opportunity, engaging with stakeholders directly facilitates understanding and interpreting social meaning (Hesse-Biber et al., 2004). The specific methods being applied are varied reflecting the exploratory nature of this research and are summarised on *Table 1.* As there were mitigating circumstances, namely the COVID-19 pandemic, the initial research plan had to be altered; this can be considered a shortcoming (referred to in Chapters 4 and 5). There was need for redesign and adaption of research planning; Jackman et al. (2022) noted that research disruption was commonly reported as problematic for doctoral students during the pandemic. Acknowledging limitations is part of an evaluative process, helping identify possible weaknesses of the research (Brutus et al., 2013). It is also useful for discovering opportunities for improving or extending research in the future. Future research points "*to theoretical and methodological areas where further development is required or desirable"* (Brutus et al., 2013, p.49). As such, ongoing effort has been directed to note such opportunities throughout all the chapters.

[4] I have previously conducted research on the CE in the fashion industry, which is one of the industries focused on in this thesis. Please see: (Clube and Tennant, 2020a).

Table 1: Summary of features of the key methods employed within this thesis.

Method	Key features	Reliability & validity
Semi-structured interviews	• Interviews are flexible & open-ended, providing insight into the lived experiences of those participating (King and Horrocks, 2010). • Suitable for exploratory topics (Creswell and Creswell, 2018). • Open-ended questioning leaves the researcher open to various possibilities & associated with constructivism worldviews (*ibid*). • Semi-structured approaches are flexible, enabling both researcher & participant to diverge from questions & take the interview into directions (Berry, 2002; King and Horrocks, 2010; Knott et al., 2022). • Reflexivity can be applied in questioning & analysis to produce rich & interpretive insights (Alvesson, 2003; Braun and Clarke, 2013).	• Objectivity issues (i.e. bias) can be mitigated through convergence from other sources. • The aim however remains is to extend knowledge rather than to generalise from data (Berry, 2002; Crotty, 1998). • Through reflexivity, the context of the data should be acknowledged & embraced; diversity of responses support data richness. This aligns with constructionist epistemologies (i.e. as opposed to suppressing ambiguity in neo-positivist approaches) (Alvesson, 2003; Creswell and Creswell, 2018). • Having a reasonable number of interviews, although there may be a pragmatic element given research timelines (Braun and Clarke, 201; Saunders and Townsend, 2016). • Without de-anonymising data, provide characteristics of participants for transparency & credibility to support rigour through quality (Knott et al., 2022).
Document review	• Document review is an unobtrusive method of gaining insight about a case since the data is not influenced by the research process. Documents can be used as data sources alone or can complement & corroborate findings identified in primary data gathering (Bowen, 2009). • Documents may support contextual insights that do not arise in the primary data (e.g. evolution of the business, outsider opinion) or it can provide context to findings that may emerge during other collection methods (e.g. interview) (*ibid*). • The type of documents can vary: from newspaper articles & press releases to internal memos & corporate plans (*ibid*).	• Seeking a diverse source of documentation from different perspectives (e.g. marketing, internal, policy, journalistic) whilst being reflexive & critical as an ongoing approach. • Evidence from certain sources (e.g. press and opinion pieces) must be viewed with a *"critical eye"* as they may not necessarily be *"precise, accurate or complete"* (Bowen, 2009, p.33). • Keeping a database of documentation for reliability (Yin, 2017).
Case study	• A case study is an empirical method that allows for an in-depth investigation of a contemporary phenomenon in a real-life context (Yin, 2017). • Suitable for complex topics (Yin, 2017; Ridder, 2017) • Context remains part of the investigation, rather than an element to control. • Can include a variety of data sources, including those listed previously (e.g. interviews, document review).	• Multiple sources of data to ensure depth & breadth of information, strengthening construct validity of the case (Rowley, 2002; Yin, 2017). • Recording the information appropriately using a chain of evidence (e.g. use of a database) (Creswell and Creswell, 2018; Yin, 2017). • Reflexive consideration of phenomena such as power, vested interests etc that may impact the viewpoints of participants. These aspects can be viewed as a form of context rather than a source of bias (Miles et al., 2018).

1.4.3. Research ethics

Ethical concerns were taken seriously throughout this research aligning with the principle of research integrity (Creswell and Creswell, 2018; Wallace and Sheldon, 2015). Ultimately it is the individuals' responsibility to ensure research is conducted ethically. The researcher has also participated in training at Imperial College and at the Social Research Association[5], covering various topics including research ethics. Aligned with institutional protocol, the University's ethics committee (SECREC) reviewed the components of the research studies of this thesis and granted a favourable review. Due to changes in the original proposal due to COVID-19 and general development of the approach, there were amendments made to the ethics forms, all of which were reviewed and approved on an ad hoc basis. See *Annex a* for an example of the approval from the ethics department.

The risk of harm for participants must be monitored and mitigated in academic research (Knott et al., 2022). The potential for harm to emerge in the research process can be considered on a continuum, ranging from very low risk of harm to substantial risk (Doyle and Buckley, 2017). Harm can include physical, psychological and reputational in nature, depending on the subject matter or research methods. The studies in this research were deemed *low risk,* as the research topics were not considered sensitive, and the research methods were appropriate. However, no research is completely risk-free and so efforts were made to assess and mitigate any ethical risks (Wallace and Sheldon, 2015). As human subjects (as interviewees) are involved in Chapters 4, 5 and 6, the key ethical issues to consider surround informed consent, anonymity (including confidentiality), data protection and power dynamics (Knott et al., 2022). The only part of the research with heightened ethical concerns was relating to the involvement of persons with disabilities in the study in Chapter 6: here additional protocols and considerations were applied to safeguard participants following recommendations of the ethics committee (discussed in Chapter 6).

1.4.3.1. Informed consent

Informed consent has been described as a cornerstone of research ethics (Doyle and Buckley, 2017). The concept of informed consent implies that participants or potential participants understand the purpose of the research and how the information will be used, hence enabling them to decide whether to take part (Denzin and Lincoln, 2017). Information was shared with the participant about the study's purpose and associated information during the recruitment phase, as recommended by Creswell and Creswell (2018). For the case study in Chapter 5 and 6, additional consent was obtained to use the organization as a case for the purpose of this research. Written consent was sought in this research using a consent form, ideally before an interview took place[6]. Participants were given opportunities to ask questions in advance by email or at the start of the interview (Lobe et al., 2020). It was made clear that participation was voluntary and that they could decline to take part in the research or could withdraw at any point (Knott et al., 2022). Participants were also able to ask questions or share any

[5] https://the-sra.org.uk/

[6] Due to COVID-19 interviews were conducted via online. This caused challenges in obtaining written consent prospectively, despite sending the participant information sheet and consent form in advance. On occasion at the start of the interview the participant signalled that they consented to take part but had forgotten to sign the sheet, so they would send it across after the interview. This was accepted in order to be reasonable in light of verbal consent

information at the end of the interview and were reminded that they can contact the researcher with any further questions or information (Braun and Clarke, 2013).

1.4.3.2. Confidentiality

In line with recommendations in the literature regarding anonymity (Braun and Clarke, 2013; Creswell and Creswell, 2018; Knott et al., 2022), it was decided that data would be either be anonymized or pseudo-anonymised, so that no personal information could be deduced from the research. This was to reduce risks for participants by maintaining confidentiality. The case study organisation in Chapter 5 and 6 agreed to have the organisation name utilised in the research; anonymity in this instance would not be useful as anyone familiar industry would likely be able to identify the company based on the unique features. Hence, watertight confidentiality would unlikely be possible in this instance.

With consent, interviews were recorded, enabling verbatim transcription (Knott et al., 2022). After transcription the original recordings were deleted in a timely manner, as advised in the literature (Lobe et al., 2020). Data was stored in a secure manner (i.e password protected) in line with data protection protocol (Braun and Clarke, 2013). Participant numbers were utilised during data processing and write-up to remove reference to identifiable personal data. This reduces data protection risks. In the presentation of the findings (Chapters 4, 5, 6), non-identifiable but context-relevant descriptions of the participants were sometimes used for contextual purposes to support data richness (e.g. job role but without mention of the organisation).

1.4.3.3. Power dynamics

When conducting academic research, it is important to consider how power dynamics can impact research processes and findings, including reflecting on the positionality of the researcher (King and Horrocks, 2010; Knott et al., 2022). In this research, semi-structured interview exchanges pose potential issues in terms of power dynamics (Creswell and Creswell, 2018; Wallace and Sheldon, 2015). For example, it could be considered that the researcher is in a *powerful* position since they dictate the questions and subsequently hold the data (with permission) (Braun and Clarke, 2013). The reverse could also be true if the participant is hard to reach or an elite informant. Thus, considering the dynamics of the researcher and participant interaction was an ongoing, reflexive process. There was effort to incorporate some of these reflections into this thesis. For example, Chapter 4 includes a section reflecting on the interactions between researcher and participant, which include concern for power issues and associated risk. Certain groups are more vulnerable than others (Braun and Clarke, 2013). Special considerations were applied to reduce potential power imbalances when interviewing a vulnerable community – persons with disabilities - in Chapter 6, these are discussed in the methodology of the chapter.

1.5. Thesis structure

The structure of this thesis is summarised in *Table 2,* including the sub-research question(s) of each chapter, rationale, methods and contributions. Chapter 2 begins with a review of the conceptual literature relating to the theoretical underpinning of this thesis, building a rationale for the use of the H-SD lens in the CE realm. Chapter 3 constitutes an initial exploration using the H-SD approach by utilising the theory as a lens for analysis of seminal

texts that are influential to the CE's development, providing a basis for comparison with the current narrative. Chapter 4 introduces the FTI as a sector for exploration, providing additional literature on the prevailing linear industry. Empirical findings of the chapter emerge from expert interviews, identifying that the FTI generally takes a narrow view of the CE. This means that the FTI is unlikely to alter how human needs are met in a CE, likely leading to the reproduction of social ills. Chapter 5 & 6 continue with this industry exploration by taking a single case study approach to analyse a denim manufacturer with a focus on circularity and sustainability. Chapter 6 consists of an embedded case study of this organisation, exploring a particularly unique and critical case that is inclusive of a marginalised community (persons with disabilities). Chapter 7 seeks to synthesise the findings together, whilst also identifying the possibility for a radical reframing of the CE based on H-SD principles (the *Social* CE). This provides ample opportunity for future research, which are summarised alongside key findings in the concluding Chapter 8.

Table 2: Summary of Chapters 2-7; Chapter 8 is a concluding chapter.

Chapter	Research question(s) & sub-question(s)	Rationale	Methods employed	Key contributions
2	• *How can the concept of human needs be used to explore the CE?*	• Introducing the literature, providing conceptual grounding relating to sustainable development & wellbeing theories.	• Narrative literature review covering grey & academic literature.	• Proposition of applying H-SD framework in context of the CE for the first time known to the author.
3	• *Did early influences of circularity have features conductive to satisfy FHNs?* • *How do the seminal visions compare to contemporary CE applications in terms of inclusion of social aims?*	• Assessing early influences of the CE's conceptual development to understand the seminal texts were inclusive of features conducive to FHN satisfaction. • Opportunity to use the H-SD as an analytical lens to explore the social dimension of the CE.	• Additional literature re dominant CE applications • Qualitative content analysis of 4 seminal texts using the H-SD as a framework for analysis.	• Identifies diverse visions of early CE influences in terms of human need satisfaction, hence indication evolutionary selectivity of the concept. • Publication in *Ecological Economics* (Clube and Tennant, 2020b). • Reflections from this chapter & Chapter 3 relate to a perspective article in *Resources, Conservation & Recycling* (Clube, 2022).
4	• *How is the CE approached in the FTI & are social impacts considered?*	• Use of H-SD as both a diagnostic and analytical tool. • This was a selected target industry due to high environmental & social impacts, triggering growing interest in developing a circular fashion industry.	• Literature review covering CE in the FTI. • 23 semi-structured exploratory interviews with sustainability professionals working in the fashion industry.	• Contribution to FTI & CE transition, providing empirical evidence of dominant applications & neglect of social impacts; *wants* of Global North citizens remain elevated above *needs* of workers. • Ancillary findings re CE *knowledge* published in fashion conference proceedings (Clube, 2021).
5	• *How can the CE contribute to satisfaction of*	• Exploration of how human needs perspectives can be	• Case study of a denim manufacturer	• Provides insight into a unique case, contributing to less

	fundamental human needs & sustainable development? • *How can a business contribute to satisfaction of human needs for employees & wider community through circularity strategies?*	developed in a business context. • Logics of profitability can be replaced with ecological economics perspectives whereby social & environmental impacts are elevated.	with operations in Vietnam & USA. • Review of documentary evidence including internal & external documentation. • 17 interviews.	explored upstream side of the CE in the FTI. • Social impacts relating to *health* (need for *protection*) can be associated with circular manufacturing. • Plans to publish key Chapter findings.
6	• *How can a CE initiative contribute to needs fulfilment of persons with disabilities in the workforce?*	• An embedded case: in-depth exploration of a social circular initiative. This provides a more detailed exploration than the overall case study. • Focus on persons with disabilities, which contributes to knowledge relating to equity and justice, which has not been explored thus far.	• Additional literature scoping. • 6x semi-structured group interviews with persons with disabilities (x3 participants/ interview). • 5x semi-structured interviews with managers (also used in Chapter 5).	• Identifies that CE & social impact can be conscientiously addressed, aligning strategies with SDG outlooks. • Contributes to a literature gap relating to how the CE can improve the livelihoods of vulnerable populations. • Core findings are published in *Business Strategy & the Environment* (Clube and Tennant, 2021).
7	• *What would a 'Social' CE look like?*	• Dominant applications of the CE focused on reducing harms rather than genuine social enrichment.	• Synthesising of previous narrative reviews & direct comparison to three H-SD principles.	• Identifies a radical vision of a CE based on H-SD principles. • Core findings published in *Journal of Cleaner Production* (Clube and Tennant, 2023).

1.3. Chapter Conclusion

This Chapter introduced the key contextual information for this thesis to illuminate the research problem upon which the studies of the next chapters are developed upon. The lack of social concern in the current CE narrative is a major shortcoming that has so far lacked any in-depth exploration, both theoretically and empirically, in the academic literature. The Chapter outlined the key objectives and overarching questions guiding this research, as well as the core methodological approaches adopted, which are appropriate for the stated epistemological assumptions. Finally, an outline of the thesis was presented, including summarising the research sub-questions of each chapter as well as the rationale, methods adopted and subsequent contribution to the literature.

2. Conceptual framing: Sustainable Development, economic growth and human needs

> *"...the serious fact remains that while our societies have become increasingly complex, our theories of society, whether social or economic, have become increasingly simplistic."* (Max-Neef, 1991, p.97)

2.1. Chapter overview

Chapter 1 introduced key CE concepts, including the prominent business model perspective of the current CE. There remains the challenge that the current CE is subject to conceptual contention, especially relating to the social dimension of sustainability. This chapter begins by providing the foundations for explores the concept of Sustainable Development, introducing the landmark Brundtland Report's definition which places *human needs* as central. Next, the reliance of gross domestic product ("GDP") indicators in development discourse is introduced and the viewpoint is presented that the CE has a similar pre-occupation of financial performance at the neglect of the social dimension of sustainability. The concept of wellbeing, including the eudaimonic concept of human needs is introduced. The core theory of exploration in this thesis, the H-SD proposal, is described. The chapter concludes with the claim that underlines this thesis: that if a CE narrative can be developed that can satisfy human needs of citizens would provide a compelling social narrative for transitioning to circularity.

2.2. Core theoretical foundations

2.2.1. An introduction to Sustainable Development

The second half of the 20th century saw an unprecedented period of rapid industrialisation and technological advancements accompanied by economic growth (Jackson, 2013). However, growing awareness of an emerging environmental crisis, rising global populations and widening inequalities placed attention to the need for an alternative pathway of development. The nascent environmental movement in the 1960's (e.g. Carson et al., 2002; Hardin, 1968) centred on the USA and Europe placed attention on the ecological turmoil that acompanied an era of industrialisation and globalisation. The recognition of the urgent need to change the course of development yet tensions surrounding how the world's poorest were going to meet their developmental aspirations surfaced. The notion that socio-economic and environmental problems in developing countries were unlikely to be solved through replicating the pathways of industrialised, developed nations lead to stakeholders seeking alternative pathways for development (Du Pisani, 2006). Against this backdrop the landmark Brundtland Report was published in 1987 setting a global agenda for sustainable development to ensure the *"the security, well-being, and very survival of the planet"* (WCED, 1987, p.23). Here, the popular definition of Sustainable Development was coined as (*ibid*, p.43):

> *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs"*.

The Brundtland Report had a substantial set of objectives which were vast and varied (from concerns about flora and fauna to poverty alleviation requirements), highlighting intrinsic connections between economic, social and environmental outcomes. It was recognised that environmental flourishing was required for longevity of

humanity and wellbeing, rather than simply an exploitative nature-human relationship (*ibid*). Environmental problems were framed as global rather than local in nature, reflecting increasing globalisation and interconnection between nations. Therefore, requiring top-down intervention and policy commitments. In addition, the consideration of both current and future generations introduced a moral aspect into development agendas (*ibid*).

The Brundtland Report stressed a balance interplay between the three dimensions of sustainability (WCED, 1987). Some scholars view these economic, environmental and social components as inherently interconnected, whereas others view there to be a hierarchical component. Helne and Hirvilammi (2015) argue that the very separation of these three components is flawed since it may imply the autonomy of the dimensions, ignoring the interconnections which exist within and between the economy, society and nature. From a practical standpoint, the report acknowledged the tensions between objectives for economic growth and environmental protection. Thus, a continued focus on achieving economic development was caveated by stressing the importance of equitable opportunities for all (WCED, 1987).

Economic growth for developing regions was highlighted as enabling environmental conservation, as poverty and ecological degredation were perceived as linked. Critics observed an underlying tension between ecological conservation and economic growth – both at the time and retrospectively – suggesting that the report's objectives were aspirational, yet challenging to operationalise (Gusmão Caiado et al., 2018; Sneddon et al., 2006). Power dynamics were overlooked, especially relating to different global and local actors and institutions (Sneddon et al., 2006). These shortcomings leading to what critiques refer to as "weak sustainability" interpretations of sustainable development, as opposed to "strong sustainability" regimes (Dryzek, 2013; Helne and Hirvilammi, 2015; Sauvé et al., 2016). The intended outcomes of sustainable development remain ambiguous, leaving strategies exposed to being diluted to *weaker* versions of sustainability to fit with existing power structures (Helne and Hirvilammi, 2015). Moore (2011, p.143) refers to the sustainable development narrative adopted at proceeding international policy conferences as "constructively ambiguous", arguing that deliberately vague language enabled progress and consensus between policy-makers of different nations without controversy. Similarly, Dodds (1997, p.96) summarised the WCED's approach to sustainable development as *"an ethical position packaged for political purposes"*.

The Milleneum Development Goals ("MDGs") were formulated after years of stagnant development progress, setting a global agenda between 2000 and 2015 (Sachs, 2012). The MDGs provided a framework for international co-operation and comprised of eight goals and 18 targets to tackle key development challenges, and specifically lift the (then) billion people out of extreme poverty. The outcomes of the MDGs were mixed. On the one hand, they did achieve the goal of raising millions out of extreme poverty, but outcomes were unevenly spread across nations (Sachs, 2012; Stewart, 2015). On the otherhand, key sustainability challenges were left unaddressed, including the high-consumption synonymous with wealthy regions and objectives relating to inclusive societies (e.g. persons with disabilities) (Stewart, 2015). A major shortcoming was a lack of awareness of the goals across stakeholder groups, and particularly, the exclusion of the private sector resulting in a lack of overall buy-in or interest from businesses (Sachs, 2012).

These critiques were rectified in the SDGs that were inaugurated in 2015 (UN, 2015). These 17 goals, depicted in *Figure 1*, acknowledge the interconnectivity between the stable functioning of the earth and thriving societies by seeking to ensure human outlooks in development (Coscieme et al., 2020; Everard and Longhurst, 2018; Schroeder et al., 2019) with the premise of *leave no one behind* (UN, 2015). There is greater focus on international co-ordination and responsibility, whereby all nations must transition towards more sustainable societies through a system-wide change with inclusion of a variety of actors, including at a local level (Eisenmenger et al., 2020; Rendtorff, 2019). Unlike the MDGs, there has been greater interest and involvement of the private sector from the outset. This provides opportunities for new progressive business models that go beyond profitability by incorporating genuine locally-embedded social and environmental value (Rendtorff, 2019). At a goal and target level, the involvement of the private sector is specifically referenced throughout (UN, 2015). Although this has resulted in greater adoption from a wider variety of actors, including the business community, it has also resulted in concerns that the way the SDGs are operationalised may elevate economic objectives above social and environmental objectives (Eisenmenger et al., 2020). Moreover, Everard and Longhurst (2018) express concern that businesses may develop strategies around specific goals, overlooking the systemic nature of the agenda.

Figure 1: The SDGs (UN, 2015).



2.2.1.1. The CE and Sustainable Development

Practitioners have advocated the importance of the CE to meeting sustainable development, including the SDGs, through a range of business, policy and societal interventions (EMF, 2021; EU, 2020). Geissdoerfer et al. (2017) observes that there is a relationship between the CE and sustainable development. For example, both concepts attempt to integrate non-economic aspects into development; have co-operation between multiple stakeholders; and embed intergenerational considerations, amongst others. Sauvé et al. (2016) considers them as broadly overlapping (e.g. through mutual overarching goals to internalise ecological costs resulting in generally improved welfare). However, these observations are contested and not consistent (Kirchherr et al., 2017; Millar et al., 2019; Murray et al., 2017).

There is no standalone SDG for the CE, but many of the goals and target level indicators make references to related concepts; the clearest link is with SDG 12, which focuses on transforming production and consumption systems (Bengtsson et al., 2018). Although the term *CE* is not explicitly used, its application is implied. For example, target 12.5 states: *"By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse"* (UN, 2015, p.22). This draws a connection with the key principles of circularity in line with its most common definitions and applications in policy and practice (Bocken et al., 2016). Given the SDGs are intended to be interconnected and indivisible (Everard and Longhurst, 2018), connecting the CE to other goals has been explored in the literature. Schroeder et al. (2018) assess the relationship between the CE and the SDGs, finding that the strongest relationships exist for SDG 6 (Clean water and sanitation), 7 (affordable and clean energy), 8 (decent work and economic growth), 12 (responsible production and consumption) and 15 (Life on Land). They argue that although CE business models and practices have potential to contribute directly and indirectly to realising the SDGs, they acknowledge that trade-offs may exist, for example between human and environmental outcomes (*ibid*). They also find limited evidence of links between CE practises and targets of, in particular, SDG 3 (Good Health and Well-being), SDG 5 (Gender Equality), SDG 10 (Reduced Inequalities), SDG 11 (Sustainable Cities and Communities) and SDG 16 (Peace, Justice and Strong Institutions), suggesting current CE narratives do not address these key sustainable development areas and vice versa. Moreover, WHO (2018) have attempted to rectify the lack of clear connection between the CE and global health by identifying a range of opportunities and barriers.

Despite enthusiasm for the CE's application to meet the SDGs, a growing body of literature questions whether circularity will result in transformative sustainable development outcomes (Millar et al., 2019; Murray et al., 2017; Pla-Julian and Guevara, 2019). Kirchherr et al. (2017) find only 12% of definitions in the CE literature directly reference Sustainable Development. There is sparse evidence that dominant CE interpretations take a holistic view incorporating economic, environmental and social perspectives (Geissdoerfer et al., 2017). As previously noted (section 2.2.1), critics have pointed out that "weak" and "strong" versions of sustainability exist, and it could be similarly argued that the CE also has a spectrum in terms of its ability to solve sustainability challenges (Johansson and Henriksson, 2020). Millar et al. (2019) point out that a lack of balance between the economic, environmental and social components of the CE will likely inhibit the capacity of future generations to meet their *needs* since social equity is largely ignored, which are essential objectives of sustainable

development. Ultimately, the authors comment that is it not only uncertain whether CE can be a successful tool for sustainable development, but also whether – in its current form - it is even a more sustainable approach than the linear economy (*ibid*). As introduced in Chapter 1, there is most concern relating to the social component of sustainable development, as it is generally neglected from the discussion. Velenturf and Purnell (2021) argue that the SDGs represent a *people first* approach. This, they conclude, is in contention with the dominant CE narrative that remains focused on resources, technology and the economy (*ibid*).

2.2.2. GDP, decoupling and the CE

2.2.2.1. An introduction to Economic Growth: GDP as an indicator for progress?

Economic growth is an attribute of market-based capitalism (Büchs and Koch, 2019a). It is most commonly demonstrated through GDP increases, which is the market value of all final goods and services produced in a country over a given period of time. In the post-war era in western nations, this growth was seen as essential to create jobs, income and ensure stability in the developed world, whilst for the poorest countries, growth was needed to ensure basic health and social improvements. This growth has been operationalised through linear approaches to production. In recent decades, GDP growth can be accounted for supported lifting many out of extreme poverty (Dollar et al., 2016), with a large proportion of beneficiaries in China (Fosu, 2017). The impacts of this growth are perceived as especially beneficial for the poorest segments of society (Dollar et al., 2016). Economic growth advocates point to the positive social outcomes relating to prosperity, thus framing economic growth as essential to realising social progress and sustainable development (e.g. *ibid*, p.81 conclude that: *"growth is good for the poor"*).

From an environmental standpoint, arguments highlight both the benefits and shortcomings associated with economic growth drives. It has been argued that GDP growth in the poorest nations has also been viewed as a prerequisite for reducing environmental degradation, for example in the aforementioned Brundtland Report (WCED, 1987). This aligns with proponents of the Environmental Kuznets Curve, which – although much debated - suggests that environmental degradation increases at the early stages of economic development, until it reaches a certain threshold whereby environmental impacts begins to decrease (Destek and Sarkodie, 2019). Here economic growth is seen as positively related to environmental quality, at least in the long term. However, a focus on GDP growth can be closely, and often directly, related to increased natural resource use, waste and pollution, amongst other environmental and social impacts (O'Neill et al., 2018; Wiedmann et al., 2020). Despite this connection, GDP has been a key metric used in sustainable development for decades (Jackson, 2013). Decoupling GDP growth from resource use has now become a central goal of many CE applications (discussed in Chapter 3) to demonstrate the economic component of sustainability (e.g. the EU CE Action Plan promotes *sustainable economic growth*) (EU, 2020).

2.2.2.2. GDP shortcomings, decoupling and the CE

"The idea that both production and consumption are bad things rather than good things is very strange to economists". (Kenneth Boulding, 1966)

For the past two centuries economic growth has been universally pursued by policy makers and economic wealth has been synonymous with the achievement of a *good life* (Dodds, 1997). However, in recent years, the use and dependence of GDP in development discourses has increasingly been the subject of scrutiny, particularly from ecological economists and degrowth scholars (Büchs and Koch, 2019b; Jakob et al., 2020; Van den bergh, 2009). Questions have been raised as to whether continued economic growth is feasible or desirable (Jakob et al., 2020). Often, reference to dominant neoclassical economic theory implies that economic growth indicators can be used as a proxy for socio-economic welfare and enhanced quality of life (i.e welfare economics) (Dodds, 1997; Giannetti et al., 2015; Van den bergh, 2009). This is perhaps a misinterpretation of the GDP concept (Bates, 2009; Pritchett and Kenny, 2013) whereby some assume that the consumption of goods and services is positively related to well-being. Nevertheless, as a result, individuals are seen as adhering to economic rationalist levers to maximise the satisfaction of exogenously determined preferences (Costanza et al., 2016; Dodds, 1997).

Van den Bergh (2009) summarises that there is both theoretical and empirical evidence to suggest that GDP is not an adequate measure of social welfare and progress, yet paradoxically it remains the dominant indicator (Costanza et al., 2016). GDP is often stated as a desired outcome of the CE (EMF, 2013; EU, 2020; Yuan et al., 2008). Millar et al. (2019) note that GDP indicators have been used in discussions relating to social equity in some CE literature, which is misplaced. Giannetti et al. (2015, p.12) comment that using GDP as an indicator for wellbeing is *"ambiguous and dangerous"*. GDP measures do not take equity issues into account; distributional aspects are not considered nor are future generational considerations (Giannetti et al., 2015; Hornborg, 2009; Kalimeris et al., 2020). Moreover, GDP measures cannot encompass complex and subjective aspects of wellbeing (e.g. self-reported wellness, happiness, life satisfaction) (Costanza et al., 2007; Kalimeris et al., 2020).

Any activities outside the realm of mainstream capitalist exchange (e.g. domestic work, solidarity economies) are excluded from GDP calculations (Fellner and Goehmann, 2020). From a sustainability standpoint, GDP does not account for externalities and ecologically unequal exchange, enabling these costs to be borne by societies and ecosystems removed from a transaction (Ambrey and Daniels, 2017; Hornborg, 2009). At a micro-level business approaches seek profit growth through improving sales and competitiveness, reflecting the growth centric macro-economic outlook, whilst similarly failing to internalise externalities – deemed market failures - associated with operating. This was pointed out back in 1966 by Boulding (*"If people had to pay the losses due to the nuisances which they create, a good deal more resources would go into the prevention of nuisances").* However, over sixty years later regulatory efforts still fall short as growth remains elevated, and voluntary, self-regulatory mechanisms (e.g. certifications) often remain the primary governance approaches (Mol, 2015). Thus, at both the macro and micro levels, biophysical limits of the planet are not acknowledged. As explained by Max-Neef et al.1991, p.58), this school of thought implies that all growth, indiscriminate as to how it is created is a good thing:

"…the economistic view of development, measured by means of such aggregate indicators as the GNP, indiscriminatingly regards as positive any processes where market transactions take place, regardless of whether they are productive, unproductive or destructive"

The SDG's have sought to reinforce the integration of a range of social and environmental factors into development. Nevertheless, the persisting use of GDP metrics in SDG indicators and targets (e.g. in SDG 8) contradicts many overlapping objectives, such as environmental conservation and reduction of social inequalities (Coscieme et al., 2020; Eisenmenger et al., 2020). In the context of the CE, the use of GDP indicators in the SDG agenda is incongruent with capturing the benefits of circular approaches such as *"sharing, repairing, reusing, refurbishing and recycling existing products and materials and maintaining utility over time"* (Coscieme et al., 2020, p.5). Thus, the use of GDP metrics and the pursuit of limitless growth is paradoxical to many of the underlying outcomes of the SDGs, and to prevent further planetary boundary overshoot (*ibid*). Similarly, Stewart (2015, p.291) points out that *"economic growth is not questioned but endorsed"* in the SDG agenda, leading to an inevitability that policymakers will continue to elevate growth above sustainability.

A focus on GDP growth places emphasis on increasing individual, material consumption and away from non-material attributes and collectively enjoyed goods, such as environmental services (e.g. green space) (Dodds, 1997; Jackson, 2013). This appears conflicting given the environmental externalities associated with consumption-led economic growth as sustainable development objectives stress the need to reduce resource use and conserve critical materials. Despite the current consumption-based societal paradigm, there is evidence to counter the assumption that increased consumption results in improved wellbeing (Ambrey and Daniels, 2017; Guillen-Royo, 2010). In fact, reducing showing that reducing consumption can result in a *wellbeing dividend* (Guillen-Royo, 2010). Here it is suggested that with that increasing income and subsequent consumption does not translate into increased happiness after a certain point in time (i.e. decreasing returns to income) (Büchs and Koch, 2019b; Daly, 1974; Guillen-Royo, 2010). It has been illustrated that most developed countries are beyond this point (Guillen-Royo, 2010). Therefore, increasing consumption in these nations cannot be expected to result in substantial improvements in the populations' wellbeing. These critical viewpoints have driven academic interest in degrowth perspectives, which argue that wellbeing can be maintained or even improved without perpetual growth (Büchs and Koch, 2019b).

2.2.2.3. Decoupling

Green growth perspectives indicate that economic growth can be decoupled from resource use through increased efficiency and technological advancements (Dryzek, 2013; York and Rosa, 2003); this is often stated outcome and objective of the CE (EMF, 2013; EU, 2020; Marino and Pariso, 2020) and indeed, broader sustainable development (Bengtsson et al., 2018; Eisenmenger et al., 2020). Economic growth is a key driver for transitioning to a CE within the EU, as evidenced by country-level analysis of objectives by (Marino and Pariso, 2020). The influential (EMF, 2017b, p.14) states that the CE would *"decouple economic growth from resource use"*. This suggests that the persisting link between environmental degradation and economic growth can be broken through circular strategies (Yuan et al., 2008). There is some evidence supporting this possibility, as new eco-materials, resource-conservative manufacturing, and efficiency strategies reduce the environmental

impacts of production. For instance, some studies have indicated that decarbonisation and dematerialisation are compatible with economic growth whilst supporting reduced poverty and improvements in quality of life (Le Quéré et al., 2019; Schandl et al., 2016).

There is a growing body of empirical evidence countering such eco-efficiency narratives or green growth approaches (Giampietro and Funtowicz, 2020; Hukkinen, 2001; Korhonen and Seager, 2008). Material Flow Analyses and other technical approaches have shown that advancements have been made in terms of relative decoupling yet, at an *absolute* level decoupling is likely highly difficult to achieve (Haas et al., 2015a; Krausmann et al., 2018; York and Rosa, 2003; Zink and Geyer, 2017). Moreover, decoupling may *appear* to occur on a national level, but this may be because energy-intensive economic activities occur in another jurisdiction, and these embodied emissions may not be accounted for (Eisenmenger et al., 2020; Moreau and Vuille, 2018). Zink and Geyer (2017) argue that underlying consumption drivers must be addressed, otherwise there is risk of a Jevon's paradox type "circular rebound" whereby primary and secondary resource use will increase negating any positive impact of moving towards a CE. Here primary resource use continues to increase, outpacing any cyclical efficiency improvements (Haas et al., 2015a; Krausmann et al., 2018; Wiedmann et al., 2020), which would only lead to a slowing of environmental degradation rather than altering it fundamentally (York and Rosa, 2003). This phenomenon has been referred to as a "treadmill of production", where improved efficiency equals greater profitability that is reinvested into the business to generate further profit, and hence production volumes (York and Rosa, 2003, p.279). Ultimately, relying on relative decoupling is insufficient, as stipulated by Eisenmenger et al. (2020, p.1104): *"Given the biophysical limits of natural resources and global sink capacities, efficiency indicators alone do not adequately monitor progress towards ecological sustainability"*.

A focus on GDP in CE agendas has raised critique that the concept has taken on *weak* sustainability or ecological modernisation narratives (Gregson et al., 2015; Sauvé et al., 2016). Giampietro and Funtowicz (2020) consider the CE as a politically motivated narrative to enable everlasting economic growth. They argue that the economics discipline has selected familiar and favourable aspects of circularity to drive an economic growth driven agenda, ignoring the fact that many of the promises of the CE have been proved technically untenable by disciplines outside of economics (e.g. circular flows are limited by thermodynamic constraints) (*ibid*). Moreau et al. (2017, p.497) similarly find that the focus on the CE currently surrounds "*cost-effective opportunities in the realm of economic competitiveness"*, neglecting questioning of underlying societal and institutional factors which are key to the CE's development.

2.2.2.4. Beyond GDP: incorporating well-being into sustainable development and the CE

Rosa and Henning (2017, p.1) comment that the *function* of the economy should be to allow for *"the good life for people, to better, not worsen their situation"*. This calls into question the place of economic growth: if it is not producing higher rates of well-being for citizens, then the economy's function becomes redundant (*ibid*). A "fetishism of numbers" has dominated the development discourse (Max-Neef et al., 1991, p.64); an undue focus on performance metrics means that policy makers may lose sight of the overall purpose of development: to improve societal outcomes for its citizens. The CE has followed a similar pathway by championing GDP.

In response to an increasing body of evidence of the shortcomings of GDP, there are calls to incorporate non-financial aspects into ways of viewing progress, and theories have emerged to explore alternative approaches to development (Chambers, 2005; Dodds, 1997). This includes incorporating the concept of wellbeing into indicators, for instance, the Human Development Index and Gini Co-efficient measures (Malay, 2019). Nevertheless, as Malay (2019) observes, since these new indicators are similarly prescribed by top-down powerful policy actors in the same epistemological community as GDP proponents, so the outcomes are often similar to those expected from GDP rather than radically transformative[7].

In the CE realm there is a distinct lack of attention to the issue of well-being. However, scholars have begun to note this shortcoming. Current CE interpretations, despite framed as system-wide by nature, appear to mirror existing generic sustainable production and consumption strategies which alone do not have the ability to transform societies and improve the livelihoods of citizens (Hobson and Lynch, 2016; Moreau et al., 2017; Pla-Julian and Guevara, 2019). Overall, few attempts have been made to show how CE strategies can positively impact citizens in terms of human well-being. There is currently an impoverished view of the citizen, whereby they remain a peripheral and generally passive actor responding through economic rationalist exchanges (Hobson and Lynch, 2016). For example, in terms of circular business models, Pieroni et al. (2019) notes that any social benefits (e.g. societal well-being and enrichment) tend to be secondary benefits, rather than central to the value proposition.

2.2.2.5. Clarifying "wellbeing"

The term wellbeing, whilst used in a range of contexts, is complex and contested (Lamb and Steinberger, 2017). Although wellbeing is often discussed as a normative ideal in sustainable development (e.g. SDG 3: "Good Health & Well-being") (UN, 2015) and wider political agendas (Chambers, 2005), there has been less attention in policy and business literature as to what *wellbeing* or *improved wellbeing* entails (Dodds, 1997; Lamb and Steinberger, 2017). Rather, political or social systems often orient themselves around perceived means for achieving wellbeing (e.g. maximising welfare through consumerism) rather than the actual end goal (e.g. needs satisfaction) (Fellner and Goehmann, 2020; Helne and Hirvilammi, 2015). Broadly, wellbeing can refer to a wide array of human experience: from social, psychological and spiritual (Chambers, 2005; Dodds, 1997). It can be observed as something all humans wish to achieve in their lives.

Measures of wellbeing are both subjective and complex to interpret since, unlike the economic counterpart "welfare", wellbeing cannot be easily reduced to a monetary value (Crivits et al., 2010). This results in the term being used vaguely or loosely. Wellbeing literature recognises two schools of thought: hedonic and eudaimonic perspectives (Deci and Ryan, 2008). Hedonic perspectives argue that wellbeing arises from individual states whereby the good life is achieved through feelings of enjoyment and balancing pleasure over

[7] An exceptional approach is undertaken in Bhutan, where Gross National Happiness is used as a metric. The approach was first inspired in the early 1970s when the then king, Jigme Singye Wangchuck, proclaimed: *"Gross National Happiness is more important than Gross National Product"* (Bates, 2009). Years later a policy approach which favoured environmental conservation and well-being was integrated into the country's five-year planning regime, and now the Gross National Happiness Index is based on 33 indicators. This approach is unique to Bhutan; it has yet to spread beyond its borders.

pain (Lamb and Steinberger, 2017). These are the basis of subjective wellbeing studies whereby descriptive happiness and life satisfaction assessments are carried out to gauge individual experiences (Bates, 2009). However, the usefulness of these self-assessments is uncertain, since individuals adapt their expectations to their situation (Easterlin, 1995; Easterlin, 1974). On the other hand, eudaimonic accounts of wellbeing suggest that *needs* or *capabilities* enable humans to function and flourish through considering multidimensional aspects (e.g. social, cultural, psychological) of what constitutes a good life (Bates, 2009; Fellner and Goehmann, 2020). The outcomes of eudaimonic flourishing stem from political and cultural contexts and so are distinct from hedonic feelings of happiness that can be temporal and subjective (Lamb and Steinberger, 2017). Fellner and Goehmann (2020, p.313) summarise that *"while hedonic thinking is only concerned with the outcome, namely pleasure, eudaimonic thinking is concerned with the processes"*. With a preoccupation on economic growth, both hedonic and eudaimonic accounts of wellbeing are often undermined (Jakob et al., 2020).

2.2.3. Human needs approach

This research explores the concept of human needs in the context of a CE. The eudaimonic perspective suggests that the fulfilment of human needs are pre-conditions to achieving well-being (Brand-Correa and Steinberger, 2017; Büchs and Koch, 2019b; Everard and Longhurst, 2018). According to Gough (2015), a society that fails to meet human needs is likely to cause serious harm in terms of impaired social participation. Therefore, avoiding such harm through focusing on interventions which meet human needs is essential for a well-functioning society that meets sustainable development objectives, including the SDGs (Everard and Longhurst, 2018; Lorek and Spangenberg, 2014).

The concept of human needs can be seen as highly relevant to overall sustainability and can be assessed as foundational for development (Sirgy, 2021). Max-Neef et al. (1991, p.14) observed that: *"it is accepted almost as commonplace that development and human needs are irreducible components of a single equation"*. As noted in section 2.2.1, the concept of needs was introduced as a prerequisite for realising Sustainable Development in the Brundtland definition (WCED, 1987), and remains discussed in the SDG documentation (UN, 2015). Nevertheless, the concept of needs has been criticised for being vague and open to interpretation, and underpinned by different ontological perspectives (Mahlert, 2021). Even in the Brundtland Report, the discussion of what needs are as a concept is missing (Gough, 2015, p.1192). This lack of clarity means that various interpretations can be used to justify market-based, material consumption since *needs* and *wants* are inextricably tied up in consumption-based societies (Jackson, 2013; Mahlert, 2021).

Since sustainable development focuses on *needs* rather than *wants* or *economic growth,* it is critical to identify a framework to understand needs. Theories suggest that human needs are identifiable, specific and universal, and thus their fulfilment can enable societal flourishing when these are met, or harm if they are not (Jackson, 2013; Jakob et al., 2020; Mahlert, 2021). Two key perspectives come from (Maslow, 1943, 2013) and Max-Neef et al. (1991), who both argue that there are universal underlying needs, without specifying the means for their fulfilment or gratification (Dodds, 1997). Here, human needs are objective in the sense that they are seen as fixed and require fulfilment to ensure wellbeing (Büchs and Koch, 2019b)

2.2.3.1. Maslow's hierarchy of human needs

Maslow (1954), a psychologist seeking to explain human motivation, argued that individuals are motivated by distinct categories of needs, and to reach ultimate fulfilment then these must be met. These are what Maslow referred to as "basic needs", which became an approach utilised in sustainable development narratives. At the lower levels ("lower order needs"), there are psychological needs which encompass basic subsistence needs whereas at the top of the hierarchy are self-actualisation needs ("higher order needs") (*Figure 2).* The top of the pyramid is described as *"to become all you can become"* (Maslow, 1954). Although Maslow is perhaps the most widely applied needs theory (Clift, 2003), there are numerous critiques stating that the hierarchy represents a simplistic account of a highly complex phenomenon (Jackson et al., 2004; Wahba and Bridwell, 1976). The hierarchical nature of needs fulfilment means that upper needs cannot be fulfilled until lower needs are met, suggesting that some individuals may be blocked from reaching higher needs because of contextual circumstance (Dodds, 1997). For example, this would suggest that one cannot have a loving family life if, for instance, there were a lack of safety due to civil unrest.

Maslow's pyramid has been experimented in a range of settings. However, it is the marketing and management communities that have commonly adopted this school of thought. For instance, for the former it has been used to understand citizen motivations and develop consumer segments for marketing purposes. Whilst for the latter, it has been used by human relations specialists to develop strategies to ensure workers are motivated at work, by focusing on how organisations can support satisfaction of higher order needs (Sirgy, 2021). Thus, key critiques surround its individualistic nature and ignorance of wider human and environmental spheres (Jackson et al., 2004). These features make it a less desirable framework to utilise in this research in comparison with Max-Neef's H-SD.

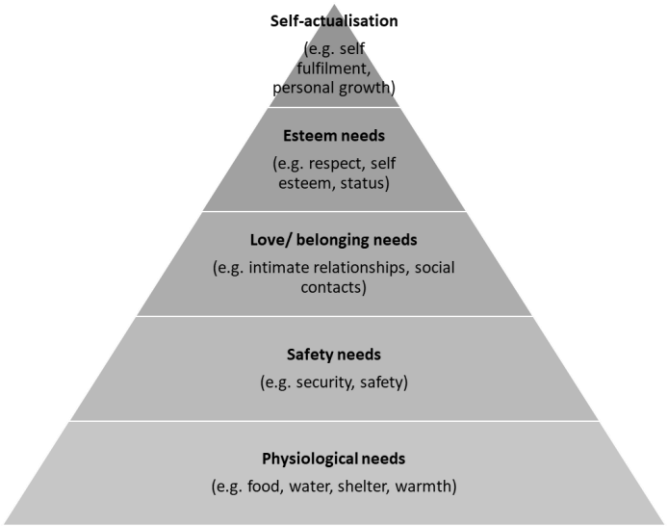


Figure 2: Hierarchy of human needs, based on Maslow (1954).

2.2.3.2. Max-Neef's Human-Scale Development ("H-SD")

Max-Neef et al. (1991) proposed the H-SD to ensure human-centric development pathways. This was in response to failed neoliberal development agendas – originally referencing the Latin America context - which tended to be prescriptive and top-down in nature (*ibid*). The proposal argued that development should be about people rather than objects, refocusing development on extending the human experience in terms of wellbeing rather than on preoccupations with consumption and economic growth. This directly countered the prevailing focus on consumption and materialism whereby that life is *"placed at the service of artefacts, rather than artefacts at the service of life"* (*ibid*, p.25). As such, the authors are similarly critical of societies where the citizen is viewed foremost as a consumer, which presents a reductionist outlook *(ibid,* p.59)*:*

> *"...there are many models that postpone social development in the name of consumer sovereignty, while overlooking the fact that reducing a person to the mere category of a consumer also impairs the possibilities of personal development."*

Instead, the H-SD refocuses development as centred around the citizen, foremost by emphasising systemic human need satisfaction to enable wellbeing.

The H-SD is transdisciplinary in nature (Max-Neef et al., 1991), and represents a flexible, eudaimonic approach to well-being, aligning with calls for sustainable development and transformative action (Cruz et al., 2009; Spiering and Barrera, 2021). The proposal encompasses three pillars (*Figure 3*):

- fundamental human need satisfaction;
- organic articulations; and
- self-reliance.

These three components are integrated, mutually enforcing and underlined by the perspective that satisfying human needs is interconnected to the preservation of the natural environment (Guillen-Royo, 2016). As summarised by Max-Neef et al. (1991, p.59), the H-SD *"advocates a concept of development which is essentially ecological".*

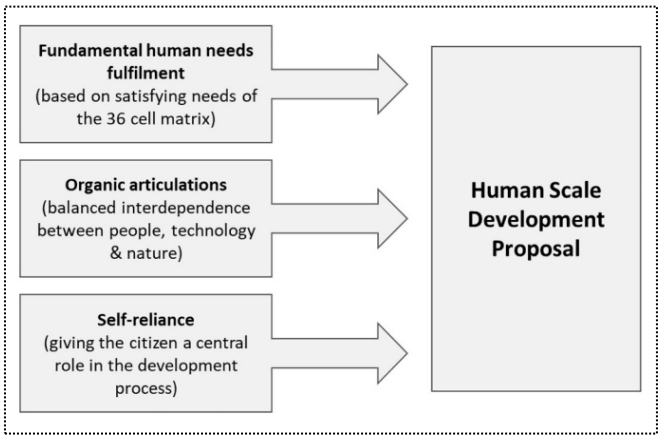


Figure 3: Summary of the three components of the H-SD proposal (based on Guillen-Royo, 2016)**.**

Organic articulations

Max-Neef et al. (1991) argue for systems to have balanced interdependence based on the construction of organic articulations. Only an articulated system can be considered a healthy one (Guillen-Royo, 2016). This balance can be realised on various levels: between the personal and the social, the micro and the macro, planning and autonomy, and between the state and civil society. Undue focus on any single component or actor can upset the system, and hence the H-SD approach implies balance. For example, Max-Neef et al. (1991) were critical of the persisting development dialogue that places humans above nature, causing a heavily anthropocentric viewpoint of the world. The H-SD does not explicitly exclude goals for economic growth, and generally supports the notion that universally people should have access to the required goods and services to sustain a quality of life. However, the authors note undesirable scenarios where GDP growth would be considered positive even if it was destructive to nature (i.e. through extractive industrial activities) (*ibid*). An indiscriminate growth-focused agenda constitutes a failure to balance human and natural systems. Moreover, the authors were highly critical of efficiency drives that sought to use technology indiscriminately. Rather, Max-Neef et al. (1991, p.59) do not veto the use of technologies; instead, they support:

> *"...designing and using technologies that can be adapted to a truly eco-humanist process of development and thus ensure the conservation of natural resources for the future"*.

Ultimately, a balanced ("organic") interdependence between different components in the system is a desired outcome of H-SD.

Self-reliance

Advancing self-reliance is an overarching goal of the H-SD proposal. This supports a development perspective that is human-centered *"where people are the protagonists in their future"* (Max-Neef et al., 1991, p.10), countering failures of traditional development paths which are top-down and prescriptive. This self-reliance can be interpreted as concerning various aspects of life, from governance to lifestyles, but especially illuminating the importance of giving citizens a central role in development processes. In practice, this means local-level, grassroots movements are encouraged, such as youth groups, indigenous populations, ecovillages, and entrepreneurial hubs (*ibid*). Here citizens are encouraged to share and develop their own ideas for societal progress. Both private and public institutions should seek out grassroots initiatives whilst supporting them financially and non-financially to ensure their successful realisation. Self-reliance can also be interpreted on the local, national and regional levels. Max-Neef et al. (1991) did not fully discuss their perspective on the extent or intricacies of self-reliance. However, other theorists in the realm, such as Galtung (1986, 1976), suggest that self-reliance does not necessarily imply total self-sufficiency, but it reduces the exposure to power imbalances (e.g. between nations) and external shocks[8].

[8] It seems relevant to point out that during the course of this research the COVID-19 pandemic clearly constituted an external shock. A lack of self-reliance in terms of food production and product manufacturing became an increasingly obvious characteristic of the political economies of many nations, paralleling globalisation and free trade agreements. This, as Galtung (1976) warned leaves a nation in a vulnerable situation. The UK and many other countries experienced a failure to manage personal protective equipment needs due to an ongoing dependence on just-in-time global supply-chains.

The H-SD advocates that self-reliance should be induced through participation and collaboration (Max-Neef et al., 1991). For instance, collaboration should occur between different stakeholders (e.g. between political elites and local citizens) through participatory processes. This means ensuring a democratic and inclusive approach to development and decision-making to enable positive outcomes in terms of self-reliance.

Fundamental human needs

The H-SD views fundamental human needs as few, finite and classifiable, whilst being non-hierarchical and interrelated (Max-Neef et al., 1991). – This contrasts other perspectives, including Maslow's, which suggests a tiered approach to needs fulfilment and human motivation. The centrality of human needs in the H-SD links the concept to sustainable development, where needs are at the forefront. Whilst some perspectives suggest that *needs* vary between cultures and societies (Streeten and Burki, 1978), the H-SD considers needs as constant. Instead, it is the way they are *satisfied* that varies. According to Max-Neef et al. (1991) there are nine fundamental human needs ("FHN") based on axiological values: *subsistence, protection, affection, participation, understanding, idleness, creation, identity and freedom*.

Satisfiers are an essential concept in the H-SD. Satisfiers are variable and non-static (Cruz et al., 2009); they change across timeframes and between cultures, paradigms and societies (Max-Neef et al., 1991). The FHNs are satisfied at four existential categorical levels (*being, having, doing, interacting*). *Being* refers to personal or collective attributes. *Having* concerns norms, laws, institutions and mechanisms. *Doing* refers to actions, personal or collective. Finally, *interacting* refers to the time and space where the needs are satisfied, or how one articulates their environment (*ibid*). Max-Neef et al. (1991) proposed these forementioned axiological and existential categories are displayed on a 36-cell matrix, enabling the matrix to be filled with satisfiers of different communities (*Matrix 1*).

Matrix 1: Example matrix of satisfiers based on Max-Neef et al. (1991).

	BEING	HAVING	DOING	INTERACTING
SUBSISTENCE	physical health; mental health; equilibrium; sense of humour; adaptability	food; shelter; work	Feed, procreate, rest, work	Living environment, social setting
PROTECTION	care; adaptability; equilibrium; solidarity	insurance systems; savings; social security; health systems; rights; family; work	Co-operate, prevent, plan, take care of, cure, help	Living space, social environment, dwelling
AFFECTION	Self-esteem; solidarity; respect; tolerance; generosity; receptiveness; passion; determination; sensuality; sense of humour	friendships; partners; family; partnerships; relationships with nature	Express emotions, share, take care of, cultivate, appreciate	Privacy, intimacy, home, spaces of togetherness
UNDERSTANDING	critical conscience; curiosity; receptiveness; astonishment; discipline; intuition; rationality	literature; teachers; method; educational and communication policies	Investigate, study, educate, experiment, analyse, meditate, interpret	Settings of formative interaction, schools, universities, academies groups, communities, family
PARTICIPATION	adaptability, receptiveness; solidarity; willingness; determination; dedication; respect; passion; sense of humour	rights; responsibilities; duties; privileges; work	Become affiliated, cooperate, propose, share, dissent, obey, interact, agree on, express opinions	Settings of interaction, parties, associations, churches, family, communities, neighbourhoods,
LEISURE	curiosity; imagination; receptiveness; recklessness; sense of humour; lack of worry; tranquillity; sensuality	games; spectacles; clubs; parties; piece of mind	Day-dream, brood, dream recall old times, give way to fantasies, remember, relax, have fun, play	Privacy, intimacy, spaces of closeness, free time, surroundings, landscapes
CREATION	passion; determination; intuition; imagination; boldness; rationality; curiosity autonomy; inventiveness;	abilities; skills; method; work	Work, invent, build, design compose, interpret	Productive and feedback settings, workshops, cultural groups, audiences, spaces for expression, temporal freedom
IDENTITY	sense of belonging; consistency; differentiation; self-esteem; assertiveness	Symbols, language, religions, habits, customs, reference groups, roles, groups, values, norms, historic memory, work	Commit oneself, integrate oneself, confront, decide on, get to know oneself, recognize oneself, actualize oneself, grow	Social rhythms, every day settings, setting which one belongs to, maturation stages
FREEDOM	autonomy; self-esteem; determination; passion; assertiveness; open-mindedness; boldness; rebelliousness; tolerance	equal rights	Dissent, choose, be different from, run risks, develop awareness, commit oneself, disobey	Temporal/special plasticity

In contrast with Maslow's hierarchical approach, the H-SD considers needs as interactive and interrelated (Crivits et al., 2010; Max-Neef et al., 1991), providing a systemic vision whereby wellbeing is multidimensional and not purely economic in nature. For Dodds (1997, p.104), this constitutes a "*radical reconstruction of the notion of development, and a dramatic reduction in the perceived significance of economic activity to community well-being*".

Satisfiers are non-material in nature but may have a corresponding material good (e.g. *education* may be a satisfier for the need for *understanding*, and *textbooks* may be the corresponding good). The focus on needs as non-material in nature, according to Jackson (2013), rejects the "myth" that material goods are a *need*. There is one clear exception: the FHN of *subsistence.* Max-Neef et al. (1991, p.17) recognise *"the need of subsistence, that is, to remain alive"* requires economic goods to enable, for example, nutrition and shelter. However, in the current trajectory other, non-essential material goods are often treated as an end (i.e. the need), rather than as a supporting mechanism to satisfy an axiological need (Max-Neef et al., 1991). Following Max-Neef, Jackson (1996, p.190) claims that the industrial economy tries *to "satisfy these non-material needs in material ways"*. Cruz et al. (2009, p.2023) also draw upon this shift:

> *"...the rise of modern free-market society, (as a new interacting milieu), requires for the members of society a full range of new satisfiers at the having level (money, property, credit, etc.), of being (consumer, owner, free to buy and sell, etc.) and doing level (shopping, acting "rationally" in chrematistic terms, etc) in order to satisfy their fundamental needs."*

Max-Neef et al. (1991) extend *poverty* beyond a singular monetary term in the context of the needs depicted in the matrix. This introduces the notion that the insufficient satisfaction of any human need constitutes a form of poverty (or *poverties* if multiple needs are left inadequately satisfied) (*ibid*). As noted by Cruz et al. (2009, p.2024) *"Every person, culture or society may be rich in certain aspects of life, and poor in others*". In this vein a citizen could, for example, have a decent income and thus be financially wealthy (i.e. satisfying *subsistence* needs) but experience a poverty of other needs. For example, if one does not have the ability to vote, this could represent a failure to satisfy other needs, such as the need for *freedom* and *participation*. When any poverty is not resolved, then it can result in individual and collective *pathologies,* that are essentially deficits in aspects of life that undermine individual and societal wellbeing. Jackson et al. (2004) extended this framing by considering the feelings associated with having a need satisfied or unsatisfied, for example, satisfying a subsistence need through adequate access to nutrition would leave an individual feel satiated, whilst failure to satisfy it instead leave the individual hungry.

Max-Neef et al. (1991) distinguish satisfiers into five key categories (*Table 3*), demonstrating that conceptually satisfiers are not neutral. This enables in-depth analysis and evaluation of how needs are satisfied across cultures and societies, and thus whether they can be considered sustainable. Guillen-Royo (2016) notes that of most relevance to sustainability is the concept of synergic satisfiers. A *synergic* satisfier simultaneously satisfies more than one human need, thus being inherently more sustainable than a *singular* satisfier (*ibid*) (e.g. green space may fulfil clean air, contributing not only to supporting good health and, so *subsistence* needs, but also as a satisfier for other needs whilst also providing a space of play, contributing to fulfilling the need for *leisure*). Needs can be satisfied or left unsatisfied at three main levels: individually, within oneself (*eigenwelt*);

with a social group with respect to others in their local community (*mitwelt*) and at the ecosystem level, within the context of the wider environment (*umwelt*) (Max-Neef et al., 1991). In work published during this research, Spiering and Barrera (2021) argued that an additional level can be added, referred to as *nachwelt,* to denote the needs of future generations in line with sustainable development requisites. However, it could be argued that since Max-Neef's outlook is fundamentally ecological (Guillen-Royo, 2016), then the needs of future generations have inherently been considered.

Table 3: Classification of Satisfiers (authors own adapted from Guillen-Royo, 2016; Max-Neef et al., 1991).

Category	Description	Example
Synergic	A satisfier that fulfils a particular need whilst simultaneously contributing to the fulfilment of other needs.	Community decision-making may satisfy the need for *participation*, whilst also contributing to fulfilling needs such as *understanding, identity* & *freedom.*
Singular	A satisfier that fulfils a single need, without considerable contribution to any other FHN.	A Food Bank, may provide *subsistence* through food provision, but does not satisfy other needs at the same time.
Inhibiting	A satisfier which satisfies a need in such a way (e.g. over-satisfying) that it becomes difficult to satisfy other needs.	An authoritarian classroom environment may seek to satisfy *understanding,* but in doing so may impair the opportunity to satisfy other needs (e.g. *participation, creation* & *freedom).*
Pseudo	A perceived satisfier that results in a false sensation of satisfying a given need.	Fashion or trends may falsely give the impression of satisfying the need for *identity.*
Violating or destroyers	A perceived satisfier of paradoxical effect - applied for the purpose of satisfying a given need, but fundamentally overpower the likelihood of actual satisfaction. Further contributes to impairing the satisfaction of other needs.	A government censorship programme may give the impression of satisfying the need for *protection.* Instead, it results in preventing the satisfaction of other needs (e.g. of *freedom*).

2.2.3.3. Human needs and Sustainability

The centrality of human needs in the H-SD proposal creates a direct link with sustainable development literature, and today remains relevant given reference to human needs in the SDGs (UN, 2015). The traditional use envisioned by Max-Neef et al. (1991) is in a workshop setting, enabling participants of communities to identify their existing wellbeing based on analysis of satisfiers of FHNs, followed by developing a utopian matrix to identify so-called bridging satisfiers. However, the H-SD has emerged as a flexible framework that can be used in a range of disciplines and contexts. It has increasingly been adopted by policy and environment communities. The H-SD can be used to assess and evaluate how in different contexts some satisfiers may help fulfil needs, whilst impacting the needs systems of others (human and non-human) in both positive and negative ways (Jolibert et al., 2011; Mahlert, 2021).

Max-Neef et al. (1991) posit that the type of satisfiers that exist in a society have developed over time and are influenced by political and social rhythms. This reiterates the observation that although needs are universal, the satisfiers are dynamic, and have different and, possibly conflicting, impacts on needs fulfilment between individuals, communities and groups. In turn this subsequently results in a spectrum of possibilities for

harming or conserving the natural environment. For example, Brand-Correa et al. (2020) note that significant investment in public road networks influenced the escalation of private-car use as a material satisfier of modern Western society. Max-Neef et al. (1991) were highly critical of societies unduly focused on the acquisition of material artifacts. They argued that such goods are confused as *needs* rather than a means of FHN *satisfaction*: *"The speed of production and the diversification of objects have become ends in themselves and as such are no longer able to satisfy any need whatsoever"* (*ibid*, p.28). In the same vein, Fellner and Goehmann (2020) suggest that citizens in the current consumerist culture desire the satisfiers that society has *learnt* to want (i.e. through structural and institutional conditions). However, in the same way that satisfiers have developed, it is possible to change the satisfiers with appropriate interventions and cultural shifts (Brand-Correa et al., 2020; Max-Neef et al., 1991).

2.2.3.4. Wide-ranging application of the H-SD approach across disciplines

Since the H-SD was first proposed in 1986 and its translation into the English language in 1990, it has been applied in wide-ranging contexts. Following suggestions by the original authors themselves, the H-SD proposal and its principles have been widely adopted, adapted and used as a lens in various disciplinary realms by both academics and practitioners. Max-Neef themself pointed out that the H-SD can be further developed and experimented with, reinforcing the notion that the proposal should by no means be utilised only in its traditional sense or applied in particular geographies. Amongst H-SD advocates, Spiering and Barrera (2021, p.1439) argue that the approach *"provides several entry points for addressing complex sustainability challenges"*, which can support transformative change. Similarly, Rauschmayer et al. (2012, p.6) comment that *"such a matrix can be used (and developed further) to take stock of existing goods and services and to highlight the ways in which they (or the social or natural systems providing these goods and services) contribute to or inhibit the fulfilment of needs".*

Table 4 summarises the contemporary academic studies in the sustainability literature that have used the H-SD principles as a core framing. Such studies have provided insights into why scholars find the framework so compelling. For instance, in energy research, Brand-Correa and Steinberger (2017) argue the importance of incorporating eudaimonic perspectives into analysis finding that the H-SD perspective is *"eminently suitable"* for studying how energy demand can remain within planetary boundaries. They reinforce the fact that satisfiers are culturally, socially and temporally flexible whilst framing energy services as essential satisfiers of FHNs. They suggest that for policy makers, identifying the energy services that produce the most synergic satisfiers, could help better focus policy efforts towards strategies that improve wellbeing. For Malhert (2021), the flexible characteristics of the H-SD are particularly useful for evaluating policy practices, by accounting for complexity and dynamism, which can ensure balanced outcomes rather than purely idealistic perspectives. For Jolibert et al. (2011) – which included Max-Neef as a co-author – they argued that studies of needs' satisfaction should be extended to be inclusive and relevant to non-human species. They utilise the H-SD to explore conflict resolution and sustainable organisation within conservation efforts of otters in Portugal. Utilising the lens of the H-SD to perform retrospective analysis of needs and satisfiers, this enabled identification and negotiation of tensions that emerge between fish farming and otter protection. According to Jolibert et al. (2011, p.267), such an approach provided novel insights that can reconcile *"articulations between people, nature and technology"* by capturing the viewpoints of multiple stakeholders, including for otters through interpretation the required satisfiers.

Furthermore, it is worth noting that the use of the H-SD has extended to other disciplines. The theoretical framing has been integrated into diverse subject matters such as design and innovation (Dahlke et al., 2021); occupational studies (e.g. Olivares-Aising, 2018), communication research (e.g. Socha and Beck, 2015), social work (e.g. Nangombe and Ackermann, 2013), medical care (Jorge, 2010; Thompson and Mckeever, 2014), engineering (e.g. Salado and Nilchiani, 2014), amongst others. Hence, scholars of versatile disciplinary interests with different geographic focuses (Global South and Global North), ideologies (capitalist and socialist) and research paradigms (qualitative and quantitative) have clearly recognised the value of the H-SD principles through diverse engagement.

Table 4: (Non-exhaustive) list of contemporary English language sustainability studies using the H-SD as a foundation or central framework. There are also many more studies in Spanish, as well as some in other languages.

Authors (date)	Sustainability focus	Location of study	Research approach	Highlights
Schenck et al. (2022)	Waste management	South Africa	Quantitative & qualitative: Interviews, surveys, observation.	• Through the lens of the H-SD, the study explores waste management in rural townships by collecting a range of data on current waste practices. • By interpreting the data with the H-SD framing, the study identifies strategies to improve waste management practices, based on those that can deliver synergic solutions that satisfy local needs.
Stella et al. (2022)	Sustainable food systems	Italy	Qualitative: theory proposal	• The study combines H-SD principles with design thinking to propose a sustainable 'food village'. • This conceptual contribution promotes social & environmental value across the agri-chain.
Cardoso et al. (2022)	Urban sustainability	Not specified	Qualitative: theory proposal	• The study links the H-SD to a proposed framework to assess urban environments & envision development based on FHN satisfiers rather than economic imperatives (i.e. consumption). • The study compiles a list of indicators useful for cities & urban spaces based on the FHNs.
Guillen-Royo (2021)	Sustainable transport	Norway	Quantitative & qualitative: Interviews, surveys	• Using a wellbeing lens to explore how flying less for work in a domestic context in a pandemic impacted wellbeing through FHN satisfaction. • Interviews with domestic travellers identify that flying less could be a *synergic satisfier*.
Brand-Correa et al. (2020)	Sustainable consumption	Global North	Qualitative: theory proposal	• Explores the 'consumption corridors' concept (minimum & maximum consumption levels) to identify levels of consumption that, normatively, can satisfy FHNs. • Article proposes a framework using HSD principles to illustrate how satisfiers seem to 'escalate' over time so unsustainable satisfiers become culturally embedded. The example of 'private car use' escalation is presented. • This provides leverage points for effective policy interventions.
Kaltenborn et al. (2020)	Ecosystem services	Norway	Mixed methods	• Utilises FHNs identified by Max-Neef to understand the relationship between cultural ecosystem services & wellbeing.

Sahakian and Anantharaman (2020)	Green urban spaces	India	Qualitative: interviews	• Explores the social practices of urban green space users, identifying how parks can be interpreted as synergic satisfiers of FHNs for different social groups.
Gimelli et al. (2019)	Water services	India	Mixed methods: case study	• Utilises the H-SD to show how water services have broad impacts on wellbeing, satisfying a range of FHNs in informal settlements.
Vita et al. (2019)	Carbon emissions	Not specified	Quantitative: statistical secondary data analysis	• Estimates carbon & energy footprints associated with FHN through 35 subjective & objective indicators. • The study presents the complex relationship between quality of life and environmental impact, identifying potential strategies for decoupling. For instance, the findings suggest >50% of global emissions relate to *subsistence* & *protection* needs.
Kobayashi et al. (2019)	Sustainable production	Vietnam	Qualitative: workshops	• Using concepts of needs and satisfiers, the study explores the notion of identifying *barriers* to needs satisfaction in the context of sustainable product development.
Katrini (2018)	Sustainable consumption	United Kingdom & Greece	Qualitative: case studies	• Utilises FHNs lens to explore case studies focused on cultures & practices associated with the sharing economy. • The cases ultimately showcase the synergic nature of sharing based activities.
Centgraf (2018)	Energy	Germany	Qualitative: case study, interviews, workshops	• Explores how renewable energy cooperatives can satisfy human needs using the H-SD as a transdisciplinary framework. • The study identified factors that impact community involvement with the cooperatives whilst also forming utopic visions of these entities.
Kobayashi and Fukushige (2018)	Sustainable design	Not specified	Qualitative: theory proposal	• Utilises H-SD needs categories to support eco-product design in a developing country context. • A needs approach is presented as the starting point for the proposed 'the living sphere approach' to product design.
Brand-Correa et al. (2018)	Energy	Colombia	Qualitative: workshops	• Utilises the H-SD in workshops of two different communities to understand how energy services are linked to FHN satisfaction. • Identified opportunities to decouple energy from wellbeing through different energy services provisions via bottom-up rather than technocratic solutions.
Brand-Correa et al. (2017)	Energy	Not specified	Quantitative & Qualitative: theory proposal	• Since energy systems are the main source of greenhouse gas emissions, the study proposes FHN satisfaction to analyse energy demand & support appropriate context-specific policy development. • The H-SD is used to develop a mixed methods normative framework to analyse the relationship between, & decoupling of, energy services & human needs.
Mattioli (2016)	Transport	United Kingdom	Qualitative: theory proposal	• Proposal to integrate H-SD perspective & structuration theory to develop a novel framework to explore tensions between justice & accessibility with an intergenerational lens.

Jolibert et al. (2014)	Sustainable development	Belgium	Qualitative	• Utilises the H-SD to build future scenarios for regional planning by considering the needs of various stakeholders. • The approach enables identification of values and practices that help identify areas of convergence and conflict relating to environmentalism, with the purpose of supporting sustainable regional development.
Church et al. (2011)	Conservation	United Kingdom	Mixed methods	• This technical report utilises H-SD as a structured framework to explore how ecosystems & wildlife habitats acquire cultural meaning, and hence become a source of human need satisfaction.
Jolibert et al.* (2011)	Conservation	Portugal	Qualitative	• Proposes that conservation dialogues must extend to including the needs of non-human species. • Using the H-SD, the study explores conservation of otters by identifying the satisfiers of their needs with reference to features of self-reliance & organic articulations.

*Max-Neef is a co-author of this article, demonstrating his encouragement of non-conventional applications.

2.3. Integrating a human needs perspective into the CE

The flexibility and exploratory potential offered by the H-SD approach means it can be used to examine emerging paradigms and discourse developments. This perspective provides a compelling entry point to explore both existing CE approaches and alternative imaginaries based on human needs principles. The phenomenon of human needs has been rarely discussed in the CE, despite being recognised as a core component in sustainable development discourse (Everard and Longhurst, 2018; WCED, 1987). Wellbeing implies the satisfaction of human needs, yet the way needs are met has inevitable social and ecological consequences (Guillen-Royo, 2016; Helne and Hirvilammi, 2015; Max-Neef et al., 1991).

Therefore, this thesis is built on the premise that it is relevant to understand how needs may be satisfied in the context of the CE to develop a compelling social narrative, whilst also being conducive to environmental goals, such as preventing further overshoot of planetary boundaries (Rockström et al., 2009). Hence, a wider perspective is needed for the CE to extend beyond economic viability alone to explore whether circularity has the potential to deliver sustainable satisfiers for those involved in the system (e.g. as workers, citizens etc) and for the environment. This aligns with an observation of Alaerts et al. (2019): they argued that if a CE had the potential to fulfil the needs of citizens and provide positive environmental outcomes, then this would be a compelling social narrative for its adoption.

The human needs perspective can offer a route to challenge the existing work on the CE where any discussion of social impact or specifically, human needs, has often been implicit rather than explicit (Alaerts et al., 2019; Jaeger-Erben et al., 2021; Leipold et al., 2021; Moreau et al., 2017). There are some exceptions to a narrow understanding of social sustainability in the CE scholarship that are explicitly inclusive of human needs. Notably, Lemille (2020) developed the "circular humansphere" to provide a framework to place wellbeing as central to the CE. They presented a fundamental principle as to "focus on vital needs of beings", which encompasses both human and non-human species (Lemille, 2020). In addition, Schröder et al. (2020) examined

integrating Human Development perspectives into CE agendas. They utilise a macro framing of Human Development, which is generally utilised in a global development context. The proposal seeks to integrate aspects of inclusion and empowerment; this includes recognising the different knowledge and skillsets of populations that can support the formation of transformative circularity strategies. This would enable an equitable CE, ensuring wellbeing of all stakeholders, including vulnerable citizens are accounted for (*ibid*). However, although human development aspects here were connected to the CE for the first time, the authors did not provide insights into the specific human-needs which a CE might satisfy, or the possible approaches entailed. Hence, this leaves ample opportunity for expansion and experimentation around these complex topics.

This thesis uses the H-SD as both a lens for analysis to explore the social dimension of the CE, and also a framework to support the development of a more socially-inclusive CE. Critically connecting the *needs* perspective to the CE can provide a lens to more deeply conceptualise and action the relationship between the CE and sustainable development. Through nuanced exploration and discussion, the thesis seeks to critically engage with topics such as inclusion, equity and justice, which have thus far been missing from the CE literature and practice (Murray et al., 2017; Schröder et al., 2020).

2.4. Chapter conclusion

As summarised on *Table 5*, this chapter has outlined some of the conceptual underpinnings for exploration of the CE based on FHN satisfaction. To begin with this chapter introduced Sustainable Development concept, identifying the centrality of meeting human needs as an objective of policy agendas. Within this, shortcomings are illuminated, such as economic aspects being elevated above social and ecological dimensions as GDP growth drives persist. This is problematic given the SDGs have called for a more systemic and multidimensional approach. This focus on economic growth is a similarly stated objective of the CE, especially among policy and business community who champion the decoupling perspective. However, such approaches are based on weak sustainability, reflecting a weak ecological modernisation discourse. Alternative perspectives were introduced, including the concept of wellbeing and specifically human needs. Finally, the viewpoint of Max-Neef et al. (1991) was presented as an emancipatory alternative to the status quo of neoclassical economics. The three components of the H-SD proposal were described. The versatility of the framework was illustrated through reference to the wide-ranging applications of the H-SD in sustainability studies across different geographies, as well as in other diverse disciplinary realms. The tenets of the H-SD are thus selected as a suitable and novel theoretical lens for exploration of the social dimension of circularity within this thesis.

Table 5: Chapter 2 summary.

Chapter question(s)	Key findings	Areas for further exploration

How can the concept of human needs be used to explore the CE?	• There are many different interpretations of well-being in the literature, but eudaimonic perspectives based on *needs* directly connects to sustainable development agendas. Thus, exploring the concept of *needs* in the context of the CE is suitable given desires in the literature to better connect the two concepts (CE & sustainable development). • Max-Neef et al. (1991) concept of H-SD identifies three interrelated pillars: construction of organic articulations; self-reliance; and FHN satisfaction. • The distinction between static *needs* and non-static *satisfiers* suggests that FHNs can be met in sustainable or unsustainable ways, depending on political, institutional and cultural conditions. • The H-SD has been used in wide-ranging disciplinary, geographical and sectoral contexts.	• Application of the concepts of *needs* and *satisfiers* in the context of the CE. • Assessment of how different CE discourses and practical applications, include (or fail to) features conducive to FHN satisfaction.

3. Theoretical exploration: Were the seminal CE texts inclusive of human needs considerations?

3.1. Chapter overview

This chapter begins by presenting the critical literature on the CE, building on the foundational claims of this thesis identified in the previous chapters. From here a theoretical exploration is undertaken, using the H-SD to analyse a selection of the seminal texts on which the CE concept has developed. This enables a critical exploration and comparison of the CE's evolution with current discourse using the lens of the H-SD to identify whether social considerations – through human needs satisfaction - are embedded in earlier visions of circularity. This research is a fundamental basis for further exploration of FHNs in the context of the CE, whilst also providing avenues for further exploration in this thesis and for future research. Please note that the core findings of this chapter have been published in *Ecological Economics* journal (Clube and Tennant, 2020b).

3.2. Chapter aims and research questions

One of the key critiques in the literature is the conceptual contention and varied interpretations of the CE concept (Korhonen et al., 2018b). As introduced in Chapter 1, of particular concern to this body of research is that the social dimension of circularity is unsubstantiated, contested and ambiguous. The aim of this stage of the research is for the first time to connect FHNs in the context of the overall H-SD framework to the CE literature. As a means of exploration, the study seeks to establish *if* and *how* inclusive early CE influences were – here gauged by seminal CE texts - of human needs in order to compare it with current applications. This chapter is guided by the following research questions:

- *Did early influences of circularity have features conductive to satisfy FHNs?*
- *How do the seminal visions compare to contemporary CE applications in terms of inclusion of social aims?*

3.3. Literature Context: Supplementary literature on current CE

It is necessary for this Chapter to supplement the literature from Chapter 1 & 2. These chapters introduced foundational concepts to this thesis and outlined the research problem. A supplementary, narrative literature review is presented below to provide greater detail regarding the dominant business and policy applications of the CE. This provides further evidence for these assertions whilst also providing the basis for observations and comparisons made later in this study.

3.3.1. Increasing Policy interest

The CE is being increasingly diffused into political agendas through top-down interventions via policy frameworks, economic instruments and regulatory support approaches at regional, national and local levels (Merli et al., 2018; Winans et al., 2017). With exception of China, research and application has predominantly been focused on Europe, as well as in Canada and Japan (Ghisellini et al., 2016) but is beginning to emerge in low and middle-income (e.g. Colombia, Egypt, Gabon) countries[9]. China and the EU's contemporary CE

[9] UK based think tank Chatham House has developed an online tool identifying CE policies across the globe: https://circulareconomy.earth/. Here, analysis shows that many policies have elements of circularity, but have been reframed or

applications are generally accepted as the most established and, hence, most studied overall in terms of implementation.

Although circularity principles have been in waste management policies across the globe for many years (e.g. Japan's recycling laws and Germany's "Closed Substance Cycle and Waste Management Act" in 1994), China was an early adopter of the CE (Winans et al., 2017). Institutional drives supported industrial ecology principles being embedded as a national development strategy in 2002 in response to resource pressures and rising pollution (Geng and Doberstein, 2008; Su et al., 2013). The strategy is seen as the environmental pillar of a "harmonious society" (Naustdalslid, 2014). Later, China formalised the CE into national legislation through the Circular Economy Promotion Law (*ibid*). These are implemented through a variety of top-down approaches with institutional support including laws, standards and fiscal interventions, which continue to be updated in China's five-year plans (Winans et al., 2017). In practical terms, the China CE strategy involves realising a closed loop system of material flow to support improvements in resource efficiency in industrial activities and enabling an integrated solid waste management system (McDowall et al., 2017; Su et al., 2013) whilst maintaining economic growth (Geng and Doberstein, 2008; Yuan et al., 2008). Implementation levels and scale vary, with explicit integration of CE principles into land-use planning in line with rural-urban transitions (McDowall et al., 2017). There has been implementation through intrafirm industrial symbiosis at eco-park level, in line with a regional approach (McDowall et al., 2017; Su et al., 2013).

The EU has had ongoing agenda for waste management and resource policy for member states. In 2015, a CE Package was established to explicitly focus on the CE concept going forward by providing policy direction and implementation support for circular strategies for the region (Bartl, 2018; Coscieme et al., 2020; Moreau et al., 2017). The package, based on the earlier waste directive (i.e. policy layering[10]), includes actions regarding circular policy, with a focus on various interpretations of waste management principles (Bartl, 2018; Fitch-Roy et al., 2020). These principles are diffused into national agendas through various approaches: from top-down legal and fiscal interventions to voluntary mechanisms, and others (EU, 2015). The EU's CE objectives have become more comprehensive following the introduction of Europe's Green New Deal, where a *New* Circular Economy Action Plan was established (EU, 2020). The updated action plan directs a range of strategic priorities to transition the EU to a "sustainable economic system" (*ibid*, p.4). These priorities include targeting high environmental impact industries (e.g. electronics, textiles) and components (e.g. cement, steel); developing industrial and design strategies (e.g. lifecycle thinking, eco-design); and rebooting waste management plans (e.g. reducing and managing toxic materials), amongst others (*ibid*). There is great emphasis on the role of the private sector in facilitating a circular transition, but also on citizens as both consumers and workers. As introduced in earlier chapters, both the EU and EMF claims that the CE can be a pathway to decoupling economic growth from

redeveloped from more traditional waste management interventions (e.g. "recycling" policies are now considered "circular policies", suggesting *policy layering*).

[10] In policy literature, the concept of *layering* describes when a policy or process has been incrementally developed, retrofitted and essentially *stacked* over time. Rather than a totally new policy being developed, a pre-existing one is added to, since the new policy may share an overarching unified logic to the existing one. The result is that there may be inconsistent elements, complexities and entrenched influences built into the policy. This has been argued as a feature of some CE approaches, such as the EU's as noted by Fitch-Roy et al. (2020).

resource use. The region ultimately highlights the importance of a transition to the CE for achievement of the SDG's and to stay within planetary boundaries (EU, 2020). The job creation potential of a CE is expected to be positive for citizens with 700,000 new jobs being created, contributing to increasing GDP by 0.5% by 2030 (*ibid*).

3.3.2. Private sector interest

In practice the CE uptake has been influenced by policy but, in line with the EU's aspirations, often implemented by the private sector (Korhonen et al., 2018a; Leipold and Petit-Boix, 2018). Multinational corporations, consultancies and new entrants have adopted circularity as a strategy in diverse ways, with an array of sustainability impacts. As introduced in Chapter 1, most commonly strategies relate to reduce, reuse and recycling to *close, slow* and *narrow* resource loops (Bocken et al., 2016; Corona et al., 2019).

As noted in Chapter 1, the most referred to organisation in the CE realm seems to be the EMF: they are recognised as driving the rapid increase in corporate interest in the concept since their inauguration in 2009 (Hobson and Lynch, 2016; Kirchherr and van Santen, 2019; Murray et al., 2017). Through a range of outreach activities (e.g. promotion of circular business models; disseminating reports; encouraging private sector strategic alliances; and supporting knowledge sharing initiatives), they have successfully engaged stakeholders from various sectors (e.g. fashion, plastics, food). The EMF (2013, p.5) claims the CE is *"an economic opportunity worth billions"* based on decoupling resource use from revenues, which has provided a commercial impetus for private sector uptake. At the same time, stating that circularity is a whole systems solution, implying attention to environmental and social goals as well as economic (*ibid*). In the business model literature, Bocken et al. (2016, p.312) claim that *"the move to a circular economy model is an example of a radical change, which will require a new way of thinking and doing business".*

Despite such aspiration, in practice applications (and hence impacts) are predominantly focused on incremental business interpretations or end-of-pipeline solutions (Gregson et al., 2015; Homrich et al., 2018) . For example, through analysis of existing listed companies, Stewart and Niero (2018) identify that for large corporates end-of-life and sourcing strategies are the most common applications of circularity, and to a lesser extent design and business model strategies. Similarly, Kalmykova et al. (2018) identify that in terms of the value chain focused on in the CE literature, the recovery/ recycling stage and the consumption/ use stage are prominently featured. However, they find that manufacturing and distribution remain under-discussed. Lazarevic and Valve (2017) observe that the focus on incremental improvements may be a reason why the CE has captured the interest of businesses, since it can be viewed as compatible with existing organisational structures and objectives.

The business-focused CE vision, supported by policy, results in oversight of other key actors (De Angelis and Ianulardo, 2020). This risks a narrow outcome given a transformative CE is likely to require total participation and engagement across all stakeholder groups at the strategy, product, organisational, regional, national and global levels (Millar et al., 2019; Su et al., 2013). Reflecting the business-orientated nature of current applications, Moreau et al. (2017, p.497) argue that the CE currently surrounds *"cost-effective opportunities in the realm of economic competitiveness"*, neglecting questioning of underlying societal and institutional factors.

They argue that the CE must go further than economically viable efforts of cycling materials and suggest inspiration to be drawn from alternative trajectories which query current institutional governance structures.

3.4. Chapter methodology

3.4.1. Methods: Qualitative, exploratory approach

This Chapter represents the first stage of the research where the H-SD framework is applied to the CE. The Chapter utilises a human needs assessment with the H-SD matrix (Max-Neef et al., 1991) to explore how inclusive early CE visions were of the social dimension of sustainability. Using a human needs lens, seminal visions are compared to contemporary interpretations of the concept outlined above and in earlier chapters. Due to the nature of the complex social phenomenon being explored (human needs) and of the data set (non-fiction books), a qualitative and exploratory research approach was deemed appropriate. Qualitative approaches enable rich, interpretative and critical insights which are not gained through quantification (Basit, 2003). A qualitative content analysis methodology was selected to analyse the data and identify key themes in the texts (Basit, 2003; Kuckartz, 2014)

Four texts were selected for analysis; further details are summarised on *Table 6.* These were purposively selected based on their frequent reference to being foundational for the CE's conceptual development (noted in the table).

Table 6: Summary of seminal texts analysed in this study.

Title	Authors	Date	Pages	Discipline	Examples of academic & grey literature that have referred to the text as influential
Cradle to Cradle: Remaking the way we make things ("C2C")	William McDonough & Michael Braungart	2002	193	Design, architecture	Club of Rome (2015); EMF (2013); Geissdoerfer et al. (2017); Homrich et al. (2018); Korhonen et al. (2018); Merli et al., (2018); Winans et al. (2017)
Regenerative Design for Sustainable Development ("RD")	John Lyle	1996	338	Design, architecture	EMF (2013); Geissdoerfer et al. (2017); Homrich et al. (2018); Merli et al. (2018); Winans et al. (2017)
The Blue Economy ("BE")	Gunther Pauli	2010	308	Business	EMF (2013); Geissdoerfer et al. (2017); Homrich et al. (2018); Korhonen et al. (2018)
The Performance Economy ("PE")	Walter Stahel	2010	349	Economics	Club of Rome (2015); EMF (2013); Geissdoerfer et al. (2017); Homrich et al. (2018); Korhonen et al. (2018); Merli et al. (2018); Winans et al. (2017)

3.4.2. Analysis: Manual coding

A content analysis of the texts was deemed appropriate given the aims of the study (Kuckartz, 2014). Firstly, familiarisation with the texts was enabled through an initial speed read to grasp the overall sentiment and key concepts. The texts were then analysed more deeply to identify themes of satisfiers (Max-Neef et al., 1991) that were commonly referenced in the texts. After, it was necessary to interpret the satisfiers in terms of the corresponding need(s) they can satisfy on an axiological and existential level of the H-SD framework (*ibid*). The example matrix and description of satisfiers (illustrated in chapter 2) was used to guide the identification process and their subsequent allocation to the respective human need(s). After, themes were drawn to enable comparison between the texts, and with the current narrative. Content analysis can be an onerous task as there may be significant steps to make sense of the data (Basit, 2003). This was clear since the selected texts were in a hardcopy format (except from PE) since there were difficulties obtaining digital versions of all the texts. Thus, a manual, offline approach was necessary utilising paper memos and manual highlighting to identify satisfiers. The texts collectively have over 1000 pages.

For validity and reliability purposes, a second reviewer (Mike Tennant) who was familiar with the H-SD and the texts being assessed reviewed a small selection of randomly selected sample pages of the documents to ensure that interpretation converged. It was not possible for the second reviewer to independently code the total pages of all the texts due to time constraints. As suggested in the literature (Kuckartz, 2014), a discussion after independent review of the sample pages took place to ensure interpretation of the texts were aligned.

3.4.3. Methodological limitations

As with all methods, there are inevitably shortcomings that must be acknowledged. Firstly, only four texts were selected, and it could be argued that this puts the study at risk of confirmation bias through cherry-picking the texts to fit the line of argument. However, the sample of texts could have been extended beyond the four selected, but there is likelihood that the conclusions would have been the same: that the CE has selectively developed to favour the economic aspects of circularity at the neglect of more complex social concerns. Secondly, there is an element of subjectivity when assessing what satisfier corresponds to which need(s) per the matrix. Due to the volume and complexity of the texts, the aim was not to identify every satisfier, rather themes of satisfiers. Thus, the findings here are not conclusive and could be further developed (e.g. adding quantitative counts) and expanded upon.

3.5. Findings

This section presents the findings of the analysis. The core concepts within the texts are introduced, highlighting themes of satisfiers identified. Supporting matrices are included to visually summarise the satisfiers of FHNs associated with each text, enabling comparison between the visions, but also with the current CE interpretations. Red boxes indicate when there was not a clear link to satisfiers identified. Afterwards, there is a discussion with a more comprehensive synthesis with reference to extant literature.

3.5.1. Cradle to Cradle: Remaking the way we make things (“C2C”) (*matrix 2*)

C2C is a design-orientated text, which seeks to provide insight into redesigning products and processes away from linearity towards circularity. Whilst the term "CE" is not specifically used, instead it is described as moving away from a "cradle to grave" approach to a "cradle to cradle" alternative (McDonough and Braungart, 2002, p.27). The approach is presented as holistic, and it is claimed that design should ensure human needs are met in an evolving cultural and technical context *(ibid,* p.183). A key principle is *"waste equals food"* where technical and biological nutrients are used in a cyclical approach (ibid, p.92). The premise of *"mutual enrichment"* is advocated, suggesting that interventions should be optimal for both the human and the ecosystem *(ibid,* p.87). For example, the authors advocate to consider local ecosystems, and appropriate management can contribute to an abundance of resources for both nature and human benefit (*ibid,* p.91). Thus, essential natural resources for human survival (e.g. clean water, renewable energy) can ensure resource security, satisfying *subsistence* and *protection* needs. On the other hand, "crude products" are those that harm both human and environmental health (e.g. materials with toxic chemicals) (*ibid*); these would be pseudo or inhibiting satisfiers, according to the classifications of Max-Neef et al. (1991). Crude products should be eliminated and replaced with safe, natural materials for improved ecological and human health outcomes (McDonough and Braungart, 2002).

The authors reject commonplace "eco-efficiency" strategies, as these approaches are incremental, favouring reduction rather than absolute elimination, which can still be problematic (e.g. in case of endocrine disrupting chemicals) (*ibid*, p.54). Alternatively, the authors advocate the need for "eco-effectiveness", which they claim would encompass cultural, ecological and commercial aspects (*ibid,* p.82). For example, the authors are critical of commonly applied approaches, such as "reuse" and "recycling" (*ibid,* p.55) and point out that such terms are often misleading. Specifically, reuse often implies transferring waste to developing countries where it may cause further environmental and social challenges. The terminology of recycling is misleading since *downcycling* is typically employed in practice (I.e. the value is less than the original product). Thus, design is essential to overcome these challenges and ensure a proactive approach to material management.

Given the product and design-focused nature of the text, businesses are framed as key actors with commercialisation potential of C2C strategies highlighted. Innovation is favoured to overcome challenges associated with the prevailing cradle to grave mindset, which can be interpreted as satisfying *understanding* and *creation* needs. New business models, for example, product-service systems, are a means to achieve business goals and fulfil consumer *wants* without the high-impact on the environment that is synonymous with the industrial economy. Regulatory support mechanisms, including self-regulation, such as eco-labels and banned chemical lists, are included as strategies for protection. Responsibility is placed on businesses to ameliorate their processes by ensuring fair wages and overcoming existing challenges relating to worker exploitation. Improving corporate practices contributes to satisfying needs of *subsistence*, *protection* and *freedom*.

McDonough and Braungart's (2002) notion of "eco-effectiveness" is described as going beyond solely a product focus by suggesting that working and living environments should encompass these characteristics. For example, spaces should be designed so that nature is included and enriched for the benefit of its inhabitants *(ibid,* p.75). The human appreciation and connection with nature is recognised and can be interpreted as a satisfier of human needs. Furthermore, "culturally bespoke" solutions are discussed throughout with the

viewpoint that cultural variations and preferences should be integrated to “celebrate diversity” (*ibid,* p.142). This is in opposition of the dominant generic “one-size-fits-all" designs, which ignore passive design potential of integrating the local environment but also because they fail to fulfil desires for “pleasure and delight” that stems from unique infrastructure. Culturally distinct, bespoke solutions and heterogeneous communities can be assessed as a synergic satisfier for *leisure* and *identity* needs, whilst in the context of housing can also be a satisfier for *subsistence* needs. When environmental benefits are realised from passive design solutions (e.g. natural shade or wind resistant locations), then this can further satisfy *protection* needs through improved comfort and safety from reduced climatic exposure.

Although not the focus of the text, the C2C outlook includes references to broader macroeconomic issues. The authors critique the growth-focused economic paradigm. Rather than conventional economic approaches, “Good growth” is advocated, which should encompass cultural and spiritual components (*ibid,* p.183). This somewhat aligns with the H-SD approach (Max-Neef et al., 1991) given balanced relations between the economy, nature and humans, are framed as integral to positive wellbeing outcomes. Finally, there are reference to sustainable development concepts, such as ensuring social equality and future generational issues, suggesting consideration of *identify* and *freedom* needs.

Matrix 2: Summary of satisfiers identified in C2C (adapted from Clube and Tennant, 2020b).

	BEING	HAVING	DOING	INTERACTING
SUBSISTENCE	Physical health (p.167); mental health (p.75)	Shelter (p.124); jobs (p.123); renewable energy (p.131); abundant resources (p.91); fair wages (p.152)	Rest (p.124); work (p.151); relax (p.180)	Living space & dwellings (p.124); green space (p.180); workplaces (p.74).
PROTECTION	Safe (p.37); physical health (p.167)	Systems of protection (e.g. banned chemical lists)(p.166); fair wages (p.152); safe materials (p.167); resource security (p.91); energy security(p.131)	Lack of satisfiers	Living space & dwellings (p.124); safe & pleasant working environment (p.74)
AFFECTION	Lack of satisfiers	Lack of satisfiers	Lack of satisfiers	Lack of satisfiers
UNDERSTANDING	Inventive & experimentation (p.178)	Jobs (p.123); opportunity to innovate (p.178)	Experiment (p.181); innovate (p.178)	Workplaces (p.74)
PARTICIPATION	Lack of satisfiers	Meaningful jobs (p.123); transport systems (p.91)	Lack of satisfiers	Spaces, communities & surroundings (p.183); workplaces (p.74)
LEISURE	Sense of tranquillity (p.75); pleasure & delight (p.144)	Tranquil work atmosphere (p.75); relationships with nature (p.122); cultural diversity (p.144)	Relax (p.180)	Green space (p.180); pleasant work environment (p.74); culturally distinct settings (p.144)
CREATION	Imagination (p.181); experimentation (p.184)	Meaningful jobs (p.123); opportunity to innovate (p.184)	Experiment (p.181); innovate (p.178)	Spaces, communities & surroundings (p.183)
IDENTITY	Sense of belonging (p.144); pleasure & delight (p.144); expression (p.141)	Cultural diversity (p.144); customisation (p.141)	Lack of satisfiers	culturally distinct communities (p.144)
FREEDOM	Lack of satisfiers	Intergenerational responsibility (p.185); fair wages (p.152)	Lack of satisfiers	Lack of satisfiers

3.5.2. The Performance Economy ("PE") (*matrix 3*)

Stahel (2010, p.6) seeks to provide an alternative to the linear, resource-intensive industrial economy by replacing "vicious loops" with "virtuous loops". The text is critical of industrial systems where businesses externalise environmental costs and have no incentive to take accountability for material goods beyond the point of sale (*ibid,* p.93). Thus, the text suggests conserving natural resources (the *lake*) whilst ensuring they create circular value (through valorisation of the *loops*). The premise of the PE is the exploitation of science with the aim of decoupling wealth from resource throughput. Nevertheless, it is stated that the PE *"will complement,*

not replace the manufacturing economy" (*ibid,* p.287), High economic growth is framed as an objective of a PE and hence economic actors are central.

Reflecting the text's title, performance-based business models are essential: these replace product ownership with performance service-systems (Stahel, 2010). A variety of corporate and governmental case study examples are described based on performance principles. On this basis a new metric of measurement on value-per-weight is introduced (*Ibid*, p.9), which rewards efficiency as opposed to volume of material throughput. In coherence with this, the necessity of replacing fossil fuel intensive activities with labour-intensive activities is presented as fundamental. Performance-based offerings provide the customer with the functionality of the product without outright ownership. Here, ample opportunities are created for related labour-intensive activities (e.g. repair and maintenance). Within this shift, some satisfiers of human needs are likely to emerge, relating mainly to *subsistence* and *protection* needs, primarily through financial security from employment opportunities. Outcomes of new PE business models are generally financially focused, such as higher revenues, competitiveness and citizen wealth (through employment). Citizens are mainly framed as either workers or consumers. Education and training must be fostered to ensure citizens are equipped for PE jobs. Steady employment and training opportunities could further ensure the development of skills and knowledge, thus satisfying *understanding* and *participation* needs.

A consistent theme is the shift from the global economy to the local with an abundance of skilled and manual employment opportunities (*Matrix 3*). Since the PE embraces service-life extension for durable goods then local servicing is acknowledged as essential to support this (Stahel, 2010, p.183). There is regional equity in terms of distribution of employment: opportunities for work span regions which typically suffer from high unemployment, including rural regions. An abundance of job opportunities can be satisfiers for multiple human needs; satisfiers relating to employment represent the majority for the PE. However, "local" in the PE seemingly refers to developed world economies (e.g. *ibid,* p.12: the goal of *"creating more jobs at home"*) without substantiated consideration as to the impact on developing countries, although the text suggests that emerging nations can leapfrog stages of development with PE principles (*ibid,* p.278)

The text advocates for *"systems solutions through radical changes in framework conditions"* (Stahel, 2010, p.66). These changes mainly relate to technical, regulatory and fiscal mechanisms (e.g. *ibid* p.266: taxation) to drive market transformation, but with businesses as the primary implementers through commercial strategies. For instance, cost internalisation and Extended Producer Responsibility ("EPR") are framed as facilitating concepts for the PE by inducing the private sector to account for the full lifecycle of their offerings (*Ibid*, p.177). A top-down approach is reinforced throughout, with economic incentives and self-regulation driving change. It is advocated that the *"technical and scientific elite"* (*Ibid,* p.264) must support the concept to ensure its successful adoption. In terms of H-SD, this would contribute to the need for *protection* - albeit, financially. However, there is scarce expansion of the system beyond economic considerations throughout the text. Instead, a standalone final chapter of the book considers *"sustainability and the Performance Economy"* (*Ibid,* p.269), where social considerations (described as a form of *"welfare"*, suggesting a neoclassical economic view) are discussed as one of the three pillars of sustainability. The premise is promising but unsubstantiated:

that the PE would support a decent quality of life for all (*Ibid*, p.273). In fact, it is explicitly acknowledged in the text that research has not been done on social benefits, such as equity and societal cohesion, of a PE (*Ibid*, p.281).

Matrix 3: Summary of satisfiers identified in PE (adapted from Clube and Tennant, 2020b).

	BEING	**HAVING**	**DOING**	**INTERACTING**
SUBSISTENCE	Lack of satisfiers	Jobs (p.180); financial security (p.2); renewable energy (p.273)	Work (p.180)	Local workplaces (p.281)
PROTECTION	Lack of satisfiers	Financial security; resource security (p.5); regulatory systems (p.177); fiscal policies (p.66); energy security (p.273)	Work (p.180)	Lack of satisfiers
AFFECTION	Lack of satisfiers	Lack of satisfiers	Lack of satisfiers	Lack of satisfiers
UNDERSTANDING	Experimental (p.76); knowledgeable (p.264)	Skilled & manual jobs (p.180); educational curriculum (p.264); regulatory systems (p.177); fiscal policies (p.66)	Work (p.180); innovate & experiment (p.76); learn (p.264)	Local workplaces (p.281); places of education (p.264)
PARTICIPATION	Lack of satisfiers	Skilled & manual jobs (p.180); equitable geographic distribution of jobs (p.281)	Work (p.180)	Local workplaces (p.281); places of education (p.264)
LEISURE	Lack of satisfiers	Lack of satisfiers	Lack of satisfiers	Lack of satisfiers
CREATION	Innovative & experimental (p.76)	Skilled & manual jobs (p.180)	Innovate & experiment (p.76)	Lack of satisfiers
IDENTITY	Lack of satisfiers	Equitable geographic distribution of jobs (p.281)	Lack of satisfiers	Local workplaces (p.281)
FREEDOM	Lack of satisfiers	Equitable geographic distribution of jobs (p.281); financial freedom (p.2)	Lack of satisfiers	Lack of satisfiers

3.5.3. Regenerative Design for Sustainable Development ("RD") (*matrix 4*)

Lyle (1996, p.10) explains that *"regenerative design means replacing the present linear system of throughput flows with cyclical flows at sources, consumption centres and sinks"*. The approach is critical of the degenerative patterns and social dysfunctions synonymous with the linear economy (*Ibid,* p.5). In contrast, regenerative approaches utilise and replicate ecosystems to provide a radically different system from the dominating industrial era. Human and natural systems are viewed as deeply interrelated and interdependent; it is argued that human needs are likely to only be met if the needs of wider environmental species are also fulfilled (*Ibid*, p.3). Lyle (1996) views industrial systems as oversimplified, neglecting this mutual thriving of natural and social processes, whereas regenerative approaches are highly complex (*Ibid*, p.37).

RD takes a systems approach to sustainability, with reference to a variety of actors and sectors, from the built environment (Lyle, 1996, p.255) and agricultural systems (p.194) to education (p.270), policy (p.318)

and accountancy (p.313). This holistic outlook produces an array of satisfiers of human needs (matrix 3). There is conscious concern for mental and physical health, with frequent reference to strategies to improve these outlooks. For instance, in terms of the need for *subsistence*, there is acknowledgement that shelter for humans should be designed in a manner *"which everyone can lead a productive, comfortable, secure and meaningful life"* (*ibid,* p.101). It is stipulated that a regenerative human habitat will require fundamental change in how design is approached: If interiors and living environments do not represent nature, then any human-nature relationship is already stunted (*Ibid*, p.101). It is stressed that human activities must realign with nature's processes for a harmonious relationship (*Ibid,* p.100), aligning with H-SD's advocacy for organic articulations within systems (Max-Neef et al., 1991). For example, flora can be used for natural pollution control, microclimate regulation and sheltering in living and workspaces (Lyle, 1996, p.102); all these provide ecological benefits whilst contributing to satisfying FHNs (*Matrix 4*). A transition of energy away from fossil fuel sources to safe, renewable and clean alternatives is considered essential to fostering *"social justice and general human wellbeing"* (*ibid,* p.52), contributing to FHN satisfaction.

Lyle (1996) stipulates that regenerative systems should be local and participatory, suggesting a democratic and bottom-up approach, which is well-aligned with H-SD principles (Max-Neef et al., 1991). Not only do participatory processes contribute directly to the need for *participation*, involving citizen in the decision-making and development process can additionally contribute to satisfying *understanding, creation, freedom* and *identity* needs. Participatory processes are framed as means for increasing ecological knowledge amongst communities and promotes the strengthening of human-ecology relations (Lyle, 1996).

Matrix 4: Summary of satisfiers identified in RD (adapted from Clube and Tennant, 2020b).

	BEING	HAVING	DOING	INTERACTING
SUBSISTENCE	Physical health (p.313); mental health (p.100); comfort (p.101)	Shelter (p.101); quality food (p.212); renewable energy (p.52); abundant resources (p.267); jobs (p.319)	Eating well (p.212); working (p.319); resting (p.101)	Living environment/ dwellings (p.101); social settings (p.288); urban green space (p.298); urban farms (p.212)
PROTECTION	Physical health (p.313); mental health (p.100); Primal Equilibrium (p.100)	Policies (p.318); sustainable accounting systems (p.313); resource security (p.267); subsidies (p.315); energy security (p.52); jobs (p.319); equitable wealth (p.313)	Planning (p.283); caring for natural environment (p.100)	Living environment/ dwellings (p.101)
AFFECTION	Affection for nature (implied in p.100)	Relationships with nature (p.100)	Caring for natural environment (p.100)	Community spaces (p.288); urban green space (p.298)
UNDERSTANDING	dynamic thinking (p.269); creative (p.270); with nature (p.270)	Environmental education (p.270); local level schemes (p.265)	Analysis, learning & experimentation (p.270); dynamic thinking (p.269)	Community spaces (p.288); schools & places of learning (p.270)
PARTICIPATION	Sense of belonging (p.266); inclusion (p.269)	Local level schemes (p.265); jobs (p.319); participatory processes (p.269); community responsibility (p.266)	Participating in decision-making (p.269); knowledge sharing (p.270); working (p.319); learning (p.319)	Communities (p.124); schools & places of learning (p.270); community systems (e.g. energy)(p.266)
LEISURE	Sense of tranquillity; comfort (p.101); healthy (p.299); with nature (p.299)	Local schemes (p.265); cultural & ecological diversity (p.284); relationships with nature (p.100)	Playing (p.101); relaxing (p.298); resting (p.101); exercising (p.299)	Clustered living (p.124); communities (p.124); social settings (p.288); urban green space (p.298)
CREATION	creative & analytical (p.270)	Local level schemes (p.265); cultural & ecological diversity (p.284)	Problem-solving (p.269); analysis (p.270)	Urban green space (p.298); cultural & environmental settings (p.284); community systems (p.266)
IDENTITY	Sense of belonging (p.266); inclusion (p.269)	Cultural & ecological diversity (p.284); local level schemes (p.265); participatory processes (p.269); community responsibility (p.266);	Participating in decision-making (p.269)	Cultural & environmental settings (p.284); community systems (p.266)
FREEDOM	Autonomy (p.266); inclusion (p.269)	Equitable wealth (p.313); social justice (p.52); local level schemes (p.265); community responsibility (p.266)	Participating in decision-making (p.269)	Lack of satisfiers

3.5.4. The Blue Economy ("BE") (Pauli, 2010) (*matrix 5*)

The BE approach seeks to replicate natural ecosystem functions in modern society, to reduce waste and provide opportunities for societies to live and thrive in harmony with nature (Pauli, 2010). The text consists of a diverse set of business and community-enterprise case studies to demonstrate these principles. Through the lens of the H-SD (Max-Neef et al., 1991), these many of these innovations have potential to produce multiple human and ecological benefits, thus representing a variety of satisfiers (*Matrix 5*). The central premise focuses on reproducing nature's resource efficiencies with physics principles as preferable (e.g. gravity, dynamics etc) to chemistry (Pauli, 2010). This is in reaction to concerns of the risks associated with elevating chemical approaches; toxic chemicals pose a dual threat to humans and wildlife (*Ibid*, p.78). Instead, the text argues for embracing systems complexity, using natural flows and materials related to diverse functions of "cascading models" (*Ibid*, p.69), which can provide an abundance of natural resources. This systems approach can ensure the security of critical resources, such as food, clean water and renewable energy, which can satisfy the need for *subsistence* and *protection* (*Matrix 5*).

Entrepreneurs are key actors in the BE, often framed as operating at the local level (Pauli, 2010). Significant financial capital is not a prerequisite for success as BE entrepreneurs instead benefit from superior understanding of natural ecosystem flows coupled with innovative aptitude. On this basis it can be argued that there is an element of equity in terms of opportunity both nationally and globally (e.g. *ibid* p.11: *"employment for all"*); many of the case studies are in developing regions. Pauli (2010) suggests that transitioning to a BE could create 100 million jobs within a ten-year period (*ibid,* p.237). Jobs and associated financial benefits may satisfy *subsistence* needs, and other broad needs depending on the attributes of the employment (*Matrix 5*).

Consistently, Pauli (2010) argues for the need to take a local approach. Actors in the BE must solve complex problems in a collaborative manner using locally available resources. As such, entrepreneurship and job creation go beyond solely financial benefits: skills and innovation in a BE can contribute to satisfying needs such as *understanding, participation, freedom* and *creativity*. Further, from an economic standpoint, a resource-conservative mindset means identifying opportunities to exploit various commercial revenue streams in a single enterprise (*Ibid,* p.210). This frugal creative mindset has potential to induce greater financial security, and so could satisfy needs such as *subsistence, protection* and *freedom.* Localisation extends beyond entrepreneurship to consideration of aspects such as human shelter, with examples of satisfiers such as affordable, safe, comfortable living and green space (*ibid*).

The text stipulates the importance of involving broader societal aspects, such as the education system to ensure children are better connected to nature and its services. Here, Pauli (2010) argues that school classrooms should be designed as showcases for the complexity of nature, enabling children to interact and experiment with science, sparking an entrepreneurial mindset from an early age (*Ibid*, p.225). Encompassing education can be interpreted as satisfying needs of *participation, understanding*, *creation* and *identity.*

Matrix 5: Summary of satisfiers identified in BE (adapted from Clube and Tennant, 2020b).

	BEING	HAVING	DOING	INTERACTING
SUBSISTENCE	Physical health (p.137); mental health (p.222); comfort (p.198)	Food security (p.96); financial security (p.77); jobs (p.78); renewable energy (163); affordable shelter (p.225)	Work (p.78); adapt to the natural environment (p.235)	Living environment/ dwellings (p.198); green space (p.203)
PROTECTION	Safety (p.43); physical health (p.137); mental health (p.222)	Financial security (p.77); jobs (p.78); resource security (p.11); energy security (163); food security (p.96); community resilience (p.79); local ecosystem knowledge (p.235); natural materials (p.43)	Work (p.78); adapt to the natural environment (p.235)	Living environment/ dwellings (p.198); green space (p.203)
AFFECTION	Lack of satisfiers	Lack of satisfiers	Lack of satisfiers	Lack of satisfiers
UNDERSTANDING	Imagination & experimentation (p.224)	Environmental education (p.223); jobs (p.78); local ecosystem knowledge (p.235)	Analysis & experiment (p.223); innovate (p.79); learn (p.223); work (p.78)	Classrooms (p.223); local environment (p.235)
PARTICIPATION	Imagination & experimentation (p.224)	Environmental education (p.223); jobs (p.78); grassroot initiatives (p.27); opportunities for innovation (p.79); local ecosystem knowledge (p.235)	Innovate (p.79); learn (p.223)	Local environment (p.235); green space (p.203); classrooms (p.223)
LEISURE	Lack of satisfiers	Lack of satisfiers	Lack of satisfiers	Green space (p.203)
CREATION	Imagination & experimental (p.224); inspire (p.27)	Jobs (p.78); grassroot initiatives (p.27)	Analysis & experiment (p.223); innovate (p.79)	Local environment (p.235); classrooms (p.223)
IDENTITY	Empowerment, differentiation & autonomy (p.77); inclusion (p.71)	Grassroots initiatives (p.27); local approaches (p.77)	Innovate (p.79)	communities; local landscapes (p.235)
FREEDOM	Empowerment & autonomy (p.77); inclusion (p.71); differentiation (p.77)	Local approaches (p.77); financial security (p.77); opportunity to innovate (p.77); knowledge of local ecosystems (p.235)	Lack of satisfiers	Lack of satisfiers

3.6. Discussion

In the prior analysis, satisfiers of FHNs were identified from the four selected seminal texts. This analysis therefore enables identification as to whether the early visualisations of circularity were inclusive of human needs considerations, and thus whether they include attention to the social dimension of sustainability. These visions are discussed with reference to existing literature and practitioner interpretations under four key themes that emerged during the analysis: *Production and Consumption*; *Actors and Implementation*; *Localisation*; and Technology and *Natural Processes*.

3.6.1. Production and Consumption

All the texts share a basic premise that the current linear approach to production is unsustainable, and so, moving towards reconceptualising waste as a resource is essential through cycling materials. The more effective and efficient use of resources is expected to have a positive impact on environment and society, which at a very simple level resonates with the current CE discussion in policy, practice and academia (Bocken et al., 2016; Geissdoerfer et al., 2017; van den Bergh, 2020). The separation of biological and technical resources in the C2C has emerged as a core principle in the influential EMF perspective of circularity[11].

All the texts, except for RD, share the vision that business plays a central role in transforming production and consumption systems. This is consistent with the dominant business-focused outlook of the CE. C2C and the PE both advocate moving from *ownership* to *access* through exploiting new business models. These commercial strategies, amongst others based on reuse and recycle principles, are elevated in the current dominant CE interpretations (EC, 2020, EMF, 2019, Zink and Geyer, 2017). Other business models and strategies, based on reuse and recycle principles, are also prevalent in practice (EMF, 2013; EU, 2020) yet are reliant on unproven assumptions that absolute decoupling is possible (Haas et al., 2015b; Zink and Geyer, 2017). The dominant CE narrative sidesteps the fact that mass-consumption cannot fulfil many human needs (e.g. *affection, creativity*) regardless of whether through ownership or access. However, whether the CE ought to extend to satisfying, for example, *affection* needs is dependent on whether the CE is viewed as a consumption and production strategy, or whether it is seen to encompass broader societal goals (e.g. normative goals of wellbeing for all). In the RD, the latter somewhat occurs as the vision enables extensive and diverse satisfiers of human needs without a focus on materialism. Notably, *leisure, affection* and *creation* needs are satisfied in non-material ways, yet satisfiers for these needs are generally sparse in the other texts. In fact, Stahel (2010) caveats that the PE is likely to exist *in addition* to the manufacturing economy. This is consistent with the current discourse as Johansson and Henriksson (2020) observe that circularity expands commercial opportunities, rather than focusing on fundamentally diverting from the status quo. This entails a variety of rebound risks[12] (Zink and Geyer, 2017).

[11] The now prolific "butterfly" diagram depicts the separation of biological (the biosphere) and technical (the technosphere) nutrients (EMF, 2021). Scholars note the shortcomings of this diagram suggesting that it is highly oversimplified and not reflective of real-life scenarios (Leipold and Petit-Boix, 2018; Velenturf and Jopson, 2019). It remains that material streams are often mixed, chemical-intensive and heterogeneous: this is a practical barrier to circularity as materials end up being *downcycled* (discussed in chapter 4).

[12] This tension is later illustrated through primary data in Chapter 4 and 5.

3.6.2. Actors and Implementation

The H-SD principles include the necessity of organic articulations through balanced relationships between different actors and aspects of society, such as nature, technology and institutions (Max-Neef et al., 1991). The analysis demonstrates that the key actors responsible for driving and implementing new circularity principles varies between the texts, subsequently influencing the volume and variety of satisfiers which appear in each vision. In C2C and the PE, a top-down approach is evident, reflected closely with contemporary interpretations of the private sector (Geissdoerfer et al., 2017). For instance, in the PE the main actors are businesses and "the scientific elite" whilst the citizen is an economically rational agent ("consumer") taking part through trading, buying or selling used goods with other consumers (Stahel, 2010, p.262). This prescriptive emphasis on business as changemakers reinforces concerns of Hobson and Lynch (2016) regarding the current trajectory: that there is an impoverished view of the citizen, overlooking issues of equity and their likely crucial role in the circularity transition. The PE fails to radically reposition the citizen or communities, as they remain peripheral actors. The result is that satisfiers of some FHNs (e.g. *identity, freedom*) are sparse, with a likely power imbalance between actors that is unfavourable according in the H-SD proposal (Max-Neef et al., 1991). In both the RD and BE, there was greater focus on community-driven initiatives. Therefore, in the respective matrices of these visions, it appears that involving a variety of actors (e.g. policy, education, business and communities) results in more numerous and diverse satisfiers of FHNs. Although there are likely many examples of small-scale enterprises operating in the CE, the current discourse is dominated by corporate agendas. This means that many of the satisfiers identified in the BE and RD relating to bottom-up activities are unlikely to occur at scale in the current trajectory. This reflects existing observations, such as Millar et al. (2019), who identify a persisting lack of strategy as to how all stakeholders can be equally incorporated in the CE.

In PE, there is an assumption of, and subsequent reliance on, trickle down impacts of increasing financial wealth from job opportunities to achieve positive societal outcomes. The benefit for citizens is purely economic in nature (e.g. *"jobs up, wealth up"*). This is a simplistic neoclassical economic perspective, which counters the viewpoint of Max-Neef et al. (1991) where any unsatisfied need is a form of poverty. This reflects literature introduced Chapter 2; it is increasingly being understood that wealth does not necessarily assure higher levels well-being (Gough, 2015; Van den bergh, 2009). A scarcity of satisfiers in the PE illuminates that a *purely* financially focused CE results in a lack of diversity of satisfiers and, in turn, risks neglect of some FHNs. Currently, job creation is a frequently referenced as denoting the social dimension of sustainability in policy and business communities (EMF, 2013; EU, 2020; Geissdoerfer et al., 2017; Tolio et al., 2017), yet the matrices reveal that employment on its own (and without closer exploration) does not *automatically* result in the spectrum of FHNs being satisfied in a synergic manner.

3.6.3. A Local Approach

Localisation was a common theme within the texts, but local approaches were advocated for differing reasons. In the BE, it referred to identification and exploitation of business opportunities from local resources and ecosystems (e.g. Pauli, 2010, p.23: *"finding value in what is locally available"*). Additionally, BE (*ibid*) and RD (Lyle, 1996) consider benefits beyond financial in terms of localisation, such as empowerment, participation,

equity and inclusion, which produces many satisfiers (*Matrix 4, 5*). Specifically, Lyle (1996) posits that ensuring local engagement and participation can support harmonious, democratic and sustainable communities while in C2C localisation refers to culture and personal taste, supporting satisfaction of *identify* and *leisure* needs (McDonough and Braungart, 2002). Localisation in the PE stems from operationalising performance-based business approaches, creating jobs around repair and maintenance, including outside of key urban centres. Contemporary literature indeed acknowledges that local employment can overcome regional disparities, and so there may be a positive equity outcome if these jobs emerge (Padilla-Rivera et al., 2020). This aligns with current political discourses where job creation is framed as a key societal benefit for shifting to a CE (EMF, 2013; EU, 2020).

The H-SD approach places emphasis on grassroots initiatives since they can facilitate self-reliance and balanced relationships, which are advocated as fundamental to sustainable communities (Guillen-Royo, 2016; Max-Neef et al., 1991). Notions of self-reliance are evident in the BE (Pauli, 2010) and RD (Lyle, 1996) yet have not emerged strongly in contemporary CE practice. To ensure needs are satisfied in local approaches, a range of grassroots CE schemes and projects can be fostered, and local policy communities can support this process (Max-Neef et al., 1991).

3.6.4. Technology & Natural Processes

In the H-SD proposal, the necessity of balanced relationships through the construction of organic articulations (e.g. between humans, nature and technology) is a prerequisite for wellbeing of societies (Max-Neef et al., 1991). When comparing the texts, there is limited consensus about the role and positioning of both technology and nature.

Generally, there is shared acknowledgement in the texts of an overall requirement to transition away from fossil fuels towards a low-carbon, renewable energy system. This narrative has diffused into the contemporary CE strategies advocated by business and policy, and in line with global sustainability objectives, including the SDGs (Bartl, 2018, EMF, 2019, EC, 2020, IPCC, 2018). RD Lyle (1996) further considers the issue of acceptance of technologies: that even sustainable, renewable technologies face scepticism. For example, windfarms are often rejected because of their visual appearance (*ibid*, p.45). Therefore, RD advocates a human-centric approach to technology which can result in human need satisfaction through involving communities in technology projects (*ibid*, p.45: ensuring "sensitive design"). This aligns with Max-Neef et al. (1991, p.59) who endorse the use of technologies that are "eco-humanist" in character. Generally, the social implications of technological shifts need attention to ensure demand-side acceptance as this has been exposed in the literature as a barrier to uptake of CE initiatives (Hobson and Lynch, 2016; Wastling et al., 2018). A heavily technology-focused CE ignores low-technology, frugal and creative approaches to meeting societal needs. Critical scholars, such as Inigo and Blok (2019) recognise this gap, positing the need for non-technological innovation to ensure more inclusive, ethical and socially orientated outcomes.

The BE and C2C share a recurrent theme of the need to reduce chemical use (McDonough and Braungart, 2002; Pauli, 2010). This contrasts the PE where biotechnology and chemistry are framed as facilitators of

technological progress (Stahel, 2010). For instance, the use genetic modification is considered a "smart solution" in the PE (*ibid*, p.138) whereas this concept is rejected in the BE where it is referred to as *"manipulating the biology of life"* (Pauli, 2010, p.44). Invasive strategies do not align with the H-SD, which advocates for a balance between nature and technology (Max-Neef et al., 1991). Transitioning to natural and safe alternatives is embedded in global sustainable development and policy agendas[13] (EU, 2020; UN, 2015). Despite policy commitments, high chemical use remains commonplace today: Kümmerer et al. (2020) report that over 140,000 industrial chemicals are marketed worldwide. Toxic chemicals, when not appropriately managed, can be socially and environmentally problematic, having a negative outlook in terms of the satisfaction of *subsistence* and *protection* needs (or even as a *violator*). Their use is also a technical barrier at the micro level, as complex chemistry often prevents effective recycling (Kümmerer et al., 2020).

Critically assessing the role of nature in the texts reveals contrasts in prominence and positioning of natural processes. The distancing, extractive relationship humans have with nature in the industrial economy is critiqued in all the texts with exception of the PE where it is not deeply discussed. In fact, Stahel (2010) seemingly commodifies nature as its usefulness extends to its economic value (e.g. the environment is viewed as a resource) in tune with weak ecological modernisation. In contrast, RD recognises the intrinsic value of human-nature harmony and relations. Rebalancing relationships with nature would ensure that humans do not exploit ecological systems and instead benefit from sustainable satisfiers of FHNs (*Matrix 2, 4, 5*) whilst respecting planetary boundaries and conserving (and even restoring) ecosystems (Buchmann-Duck and Beazley, 2020; Desing et al., 2020). However, this has been lost in the CE's conceptual evolution as there is a persisting failure to adequately understand and address the distancing of humans with the environment (Pla-Julian and Guevara, 2019). Without such fundamental changes this may limit the CE's potential to meet global objectives, including the SDGs. Although these deep socio-environmental complexities and interdependences were stressed in RD (Lyle, 1996), they remain peripheral or sometimes completely overlooked in the current practitioner-led CE that focuses on narrow applications (EMF, 2013). The result is that underlying and interconnected societal and ecological dysfunctions associated with the industrial economy may prevail.

3.7. Conclusion and reflections

3.7.1. Chapter Conclusion

Some of the early visions of the CE have human-centric features that are conducive to FHN satisfaction, aligning with the H-SD (RD in particular). However, in practice, the economic benefits of the CE remain elevated above social and environmental dimension, which is summarised by the title of the journal article where these findings are published: *"The Circular Economy: Promising the Radical, Delivering the Familiar"* (Clube and Tennant,

[13] The EC New CE Action Plan sets out hazardous chemical reduction strategies to induce a "toxic-free" environment, supported by targeted legislations through the REACH Directive (EU, 2020, p17). At a global level, SDG 12, target 4 stated (UN, 2015, p.22): *"By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment".* At the time of writing, it is not clear whether this target has been achieved but further discussion in forthcoming chapters contributes to this aspect.

2020b). Essentially, the CE direction has been plagued by reductionism (Gasparatos et al., 2009), in both theory and ontology, which results in inadequate or unremarkable outcomes. All of the texts broadly advocate for a level of localisation, which is theoretically aligned with H-SD principles (Max-Neef et al., 1991). Both RD and BE clearly acknowledge and encompass complexity in their visions leading to human needs being satisfied in diverse ways, whereas the PE takes an efficiency-based approach where the primary social benefit relates to job creation potential. The latter framing has appeared as the dominant approach in practice as employment is most discussed as a social benefit (EMF, 2013), neglecting the social and ecological complexities that are required for human-centred outcomes. This calls into question the role of the CE, in its current form, to contributing to sustainable development, as the SDGs require a systemic, all-encompassing approach to tackling economic, environmental and social challenges (Everard and Longhurst, 2018; Schroeder et al., 2019). The findings of this chapter reinforce concerns of Millar et al. (2019): *"it is not only uncertain as to whether the Circular Economy can be a successful tool for Sustainable Development, but also whether it is a more sustainable model than the linear economy".* However, it also has identified features that a human-centred and socially relevant CE could encompass, such as balanced human-nature relations; conscientious use of technology; involvement of diverse actors; and significant changes in consumption patterns. The key takeaways from this chapter are summarised in *Table 7*.

3.7.2. Chapter Reflections and additional Insights: Job creation in a CE

This study conducted in this chapter was essential for developing the foundations of this thesis. Firstly, the approach enabled critical exploration of the seminal texts that are commonly referenced as highly influential to the CE concept. Practically applying the H-SD matrix as an analytical tool helped me develop knowledge regarding the concept of *satisfiers* (Max-Neef et al., 1991). Furthermore, the study has presented alternative angles in terms of human need satisfaction to explore. It provided reinforcement to the initial research problem - that the CE narrative is dominated by economic perspectives at the neglect of more radical societal transformative potential. At the same time, revisiting the seminal texts with a human needs lens helps identify possible features of a CE that would advance a CE to one that is more human-centred (e.g. local level participation, broad actor inclusion, sensitive technological integration). It seems that at present practitioners and – to some extent – academics, have cherrypicked aspects of the CE which are profitable and thus have a strong vested interest to implement. This exploratory research reinforced that the CE is a heavily contested topic in terms of its definitions and motivations, and points to diverging schools of thought - even in the seminal influences (Korhonen et al., 2018b).

A key question that emerged from this analysis is, if the CE's social impact is primarily viewed as job creation (including in the seminal texts - with exception of RD), then it is pertinent to explore *if* or *how* these jobs are different from those in the linear economy. If the only satisfiers they produce are financial (i.e. contributing to *subsistence*), then they may be interpreted as *singular* in nature. However, a fulfilling job may be able to satisfier needs more broadly and overcome a deficit of satisfiers associated with not having access to work; unemployment was considered socially problematic by Max-Neef et al. (1991, p.19):

> *"It is quite evident that extended unemployment will totally upset a person's fundamental needs system. Due to subsistence problems, the person will feel increasingly unprotected, crisis in the family and guilt feelings may destroy affections, lack of participation will give way to feelings of isolation and marginalization and declining self-esteem may very well generate an identity crisis."*

Thus, aspects such as local job creation potential may help reverse regional unemployment challenges in high-income county contexts, as suggested by Stahel (2010) in the PE. Nonetheless, the quality and characteristics of this employment have so-far been underexplored as quantitative social indicators (e.g. how many people are involved in a circular production process) may be used instead of qualitative assessments (Walker et al., 2021). This is demonstrated through practitioner and policy reports (e.g. (Accenture, 2014; EMF, 2013; EU, 2020, p. 20). Relatedly, Max-Neef et al. (1991) was highly critical of capitalistic perspectives of labour that hold a narrow view of the human as a substitutable cost, arguing for qualitative aspects to be elevated that could be realised through alternative forms of organisation *(ibid,* p.77)*:*

> *"Work constitutes much more than a factor of production: it fosters creativity, mobilizes social energy, preserves communal identity, deploys solidarity and utilizes organizational experience and popular knowledge for the satisfaction of individual and collective needs. Work has, then, a qualitative dimension which cannot be accounted for either by instrumental models of analysis or by economic manipulations of production functions"*

But does employment in the CE constitute *decent work* that extends beyond financial benefits alone, per H-SD principles? Reflecting on this, I did a further scoping of the literature relating to CE and employment. Job creation is expected to produce financial benefits for citizens (EMF, 2013; EU, 2020), but also – more generally - being involved in the workplace can contribute to more diverse needs and sustainable development (ILO, 2017). However, there is hardly any research into how circular jobs can result in more fulfilling or meaningful vocations compared with those in a linear economy or what skillsets might be required (Burger et al., 2019). Reference to complex topics of well-being in the workplace, such as fair pay, safety and inclusive practices, in the context of circular business approaches are sparse (Chiappetta Jabbour et al., 2019). Employment claims must be more closely explored in the realm of CE to ensure job creation quantity indicators are not relied on as the sole source of social value (Padilla-Rivera et al., 2021; Walker et al., 2021) as this would constitute reductionism (Max-Neef et al., 1991) that may be counter to broader social sustainability claims. Problematically, discussion of job creation tends to be on the benefits for Global North citizens without discussion onto how shifts to localised CE's would impact manufacturing and extractive-based economies in the Global South. I sought to further explore this avenue in Chapter 5 through a micro-level case study exploration, where labour issues are considered as a part of the case.

Table 7: Chapter 3 summary.

Chapter questions	Key findings	Areas for further exploration
• *Did early influences of circularity have features conductive to satisfy FHNs?* • *How do the seminal visions compare to contemporary CE applications in terms of inclusion of social aims?*	• Conflicting visions exist within the seminal texts in terms of potential for FHN satisfaction. • The texts – with exception of RD - considered business a key actor, resonant with dominant CE. • Commercially appealing & often incremental, strategies appear to have been cherrypicked in practice, whereas more complex socially relevant visions have been lost in the CE concept's evolution. • Contemporary CE narrative resonates most with technocratic visions of the PE whereas RD is the most inclusive of FHNs but most distant from dominant conceptualisation. • Job creation is framed as a benefit, but the extent to which these jobs can deliver social value, beyond financial, is unclear based on the analysis.	• Aspects of social value identified in the seminal texts, demonstrated through FHN satisfaction, that have not appeared in current narrative (e.g. participation, local level activities, broad stakeholder involvement) should be re-embedded into future CE visions. • Job creation considered source of social value in the CE. However, unclear if or how these jobs differ from those in the linear economy.

4. Can circularity in the fashion textiles industry result in more favourable social outcomes than in the linear approach?

"There is no beauty in the finest cloth if it makes hunger and unhappiness".
(Ghandi, 1982)

4.1. Chapter overview

This chapter provides an initial exploration of a problematic and currently predominantly linear industry - the fashion textiles industry ("FTI"). To begin with, a brief narrative literature review is conducted for contextual purposes, summarising the context of the prevailing linear FTI. Then, the methodology is presented for this chapter, which involves semi-structured interviews with 23 practitioners. Here, the primary data identifies the most common approaches being explored and applied in the industry in practice. The findings suggest that currently the social narrative of the circular fashion transition is underdeveloped. Notably, the CE seems to follow an incremental and efficiency-focused agenda. From the interviews, some possible social impacts are raised and discussed. The chapter concludes with a discussion, chapter conclusions and reflections.

4.2. Chapter aims and approach

The aim of this chapter is to introduce the FTI and explore its nascent transition to a CE. This forms a component on the overall case of the industry, which is supplemented through a case study, explored in Chapters 5 and 6. Although this chapter is broad and exploratory in scope, there are novel contributions relating to the CE and the social dimension of sustainability in the context of the FTI. The research question for this chapter is straightforward:

- *How is the CE approached in the FTI and are social impacts considered?*

A qualitative approach was selected in line with the exploratory nature of the overall thesis and its aims (Creswell and Creswell, 2018). To begin with the literature background is introduced, utilising a narrative review (*Table 1*), to outline the unsustainability of the linear FTI, pinpointing problematic environmental and social issues. After, the methodology for the primary data collection is presented. Semi-structured interviews are utilised to understand how the CE is being applied in practice in the FTI, whilst establishing whether and how the social dimension of sustainability is considered. When analysing the primary data, findings are further supplemented with additional literature and reference to the H-SD proposal. Then a chapter discussion evaluates the key findings and identifies areas for further exploration in this thesis and beyond.

4.3. Literature background

4.3.1. Fast Fashion as dominant approach

The FTI has undergone a significant commercial evolution in the last two decades, from functional to trend-centric (Bhardwaj and Fairhurst, 2010; Todeschini et al., 2017; Turker and Altuntas, 2014). Production and retail trends, such as just-in-time manufacturing, global outsourcing and the proliferation of online shopping, have resulted in a highly competitive industry dynamic (Bhardwaj and Fairhurst, 2010; Jørgensen and Jensen, 2012).

So called *fast fashion* is an exemplar of a linear production and consumption system; it has emerged as a dominant business strategy whereby mass-produced clothing is produced with speed, volume and low-cost as priorities (Bhardwaj and Fairhurst, 2010; Shirvanimoghaddam et al., 2020). Fletcher (2010, p.260) observed that in the fashion industry *"the logic of growth is well established as the basis of power and prosperity"*. Efficiency and volume-based manufacturing has ensured low-cost approaches, with synthetic fibres such as polyester and nylon, preferable due to their cost effectiveness (Niinimäki et al., 2020). Low quality and high disposability are characteristics of fast fashion, as the cheapness of clothing results in low perceived value (Fletcher, 2010). It is common for mainstream fashion retailers is to have an almost constant inventory turnover where planned obsolescence is built into the business model, by introducing new styles and trends continuously, inducing high wastage (Bly et al., 2015; EMF, 2017a; Jørgensen and Jensen, 2012). The snapshot (*Figure 4*) highlights the industry's key characteristics.

Fashion Industry: Snapshot

- Between 2008-2018, total fibre production approximately doubled, which is closely linked to the fashion industry. On a per capital level, 7.6kg fibres per person were produced in 1995, increasing to 13.8kg/ per person in 2018 (Peters et al., 2021).
- Fast fashion has caused significant increase in per capita clothing production; it is characterised by high inventory turnovers, volume, low-cost production and high disposability (Fletcher, 2010).
- Women's apparel is the largest segment; by 2026 this segment is expected to account for 79,620 million units annually (Statista, 2022a).
- The USA and China account for the highest apparel demand, whilst China, Vietnam and Bangladesh are the top exporters (Statista, 2022a).
- Synthetic, petrochemical-derived fibres account for 63% of textiles; a nominal percentage are currently produced using recycled sources (Keßler et al., 2021; Shirvanimoghaddam et al., 2020).
- Supply-chains are global and fragmented in nature, spanning multiple suppliers and regions (MarketLine, 2021; Niinimäki et al., 2020).
- Sustainability is increasingly being recognised as a key trend in the FTI.

Figure 4: Snapshot of FTI.

4.3.2. Long, fragmented and exploitative supply-chains

The complex industry supply-chain is global in nature, covering a various phases including design, raw material cultivation or production, spinning, yarn production, weaving, dyeing and finishing, cutting, sewing, distribution before it reaches the citizen as a finished product (EMF, 2017a; Taplin, 2014). Despite technological developments, processes remain highly labour intensive (Taplin, 2014), so the price of labour is highly influential to where each stage of production occurs. Due to cost-pressures leading to brands favouring offshoring strategies, textile production in developed regions has become niche[14].

[14] For example, the EU CE Action Plan (2020) states that 60% of clothing by value is produced outside of the region.

There is an exploitative competitive dynamic with power asymmetry between actors. The powerful buyer (I.e. the retailer or brand) deals with multiple (and in terms of power, weaker) suppliers (often in the hundreds or even thousands for major retailers) and frequently switch these based on achieving the lowest cost possible (Merk, 2011; Talay et al., 2022). Moreover, offshoring approach also shifts polluting activities onto these regions, causing environmental and health problems in those communities (Mair et al., 2016; Van Buren III and Schrempf-Stirling, 2022). The preference for global outsourcing to lower production costs over vertically integrated operations results in corporate oversight failures, that are often attempted to be solved through self-regulation in the absence of top-down policy (Boström and Micheletti, 2016; Niinimäki et al., 2020). Boström and Micheletti (2016, p.369) summarise this predicament:

> *"...no one government or any one global institution has sufficient jurisdictional and/or policy authority to comprehensively regulate the globalized supply and demand chain in clothing and textiles. Politicians cannot, therefore, create laws with encompassing regulation, and corporate leaders cannot implement operative measures that successfully and effectively cover all problem areas."*

Despite these shortcomings, offshoring strategies have been a cause of significant export-based growth of those economies, with associated job creation and wage increases in developing and emerging regions (Mair et al., 2016). Yet the externalities of cost-based competition are often, according to Fletcher (2010, p.261):

> *"…borne by clothing workers' 'poverty' wages and reflected in temporary employment contracts and unpaid overtime, as their employers are squeezed on price and order times by large retailers and global brands wielding their economic power and economies of scale"*.

Instances of exploitative labour practices are commonplace and well-documented (Merk, 2011). Abuses recorded across the supply-chain with a focus on the upstream, include low-wages, child labour, sexual harassment, unsafe working conditions, long hours, unpleasant environments and other forms of exploitation (Berkey, 2021; Prentice et al., 2018). There are gender implications as issues disproportionately affect women due to high representation in the FTI (Bick et al., 2018). Companies discourage trade union representation - or when they do exist - can lack bargaining power (Khan et al., 2020; Teipen and Mehl, 2022). In light of this and sparse regulation, NGOs are often responsible for exposing injustices relating to the production phase, but this may lead to external efforts such as CSR or procedural certifications, rather than improving outcomes (Dobos and Éltető, 2022; Teipen and Mehl, 2022).

In the last ten years social challenges have been in the public spotlight once again; the media has become more adept at exposing companies involved in malpractice (Boström and Micheletti, 2016). The Rana Plaza disaster in 2013[15] was a landmark moment by directing attention to the unsafe working conditions in factories that supplied many of the large retailers in the developed world (Barraud de Lagerie, 2016; Khan et al., 2020; Van Buren III and Schrempf-Stirling, 2022). Health and Safety has been reportedly increasingly on the agenda of firms as a result and has spurred some governmental intervention. However, Khan et al. (2020, p.277) critically observe:

[15] The Rana Plaza was a garment factory building in Bangladesh that collapsed killing >1100 and injuring >2500 workers.

"…the realpolitik is that although the profile of health and safety in the Bangladesh textile industry rose up the agenda on the international stage, the reality of daily life for the poorest and most insecure in its workforce did not significantly improve".

Compounding this, some large multinational companies simply chose to boycott Bangladeshi factories all together as flexible contracts enabled them to switch to production in other countries to avoid reputational risk (*ibid*). During the course of this research, there was once again considerable media scrutiny as the COVID-19 pandemic highlighted the exploitative dynamic when western retailers cancelled $40 billion worth of orders, leaving suppliers and workers in precarious scenarios without compensation (Anner, 2022; Khan and Richards, 2021; Van Buren III and Schrempf-Stirling, 2022).

4.3.3. Dual environmental and social challenges

The impacts of the FTI on society and the environment is now well-documented. There are a growing number of comprehensive literature reviews covering a variety of topics in the FTI, such as the environmental impacts of fast fashion (Niinimäki et al., 2020); waste issues (Shirvanimoghaddam et al, 2020); water use and processing (Madhav et al., 2018). Such reviews share the outlook that environmental challenges are pervasive throughout the FTI's supply-chain, from agriculture and manufacturing to end-of-life, often closely connected with complex social implications (Hossain et al., 2018; Rovira and Domingo, 2019). Cultivation of natural fibres, such as cotton, require high pesticide, land and water inputs, with chemicals polluting ecosystems and causing hazards for humans through direct and indirect exposure. It is estimated that cotton cultivation accounts for 25% of the global use of insecticides and 10% of pesticides (Ahmad and Hasanuzzaman, 2020). Depleted and toxic water sources, contaminated food chains, and high instances of cancer have been directly linked to cotton agriculture (Kannuri and Jadhav, 2018). Increasing productivity driven agendas can cause high mental tolls on smallholder farmers with reported instances of stress and suffering, sometimes leading to suicide (Kannuri and Jadhav, 2018; Khan and Damalas, 2015). Aside from natural fibres, the significant growth in synthetic materials is associated with high carbon dioxide emissions and problematic end-of-use management, linking the use of synthetics to land, air and sea pollution.

Textile dyeing and finishing requires high water, chemical and energy inputs (Dahlbo et al., 2017; Franco, 2017; Pal and Gander, 2018). A lack of robust regulation in manufacturing regions risks various possible points of exposure to workers and wider communities. Inadequate safety protocol can result in workers being exposed to various chemicals, many of which are carcinogenic (Börjeson and Boström, 2018). In response to this, Hobson (2013, p.318) exclaimed: *"do we really want fast fashion that workers give their lives for?".* Diseases, from asthma to cancers, have been attributed to various stages of textile production (Hossain et al., 2018; Palacios-Mateo et al., 2021). Workers face risks carrying out their role, but also wider communities and ecosystems are exposed as wastewater effluent pollutes local water sources (Bick et al., 2018; Boström and Micheletti, 2016). Palacios-Mateo et al. (2021) state that 20% of global water pollution is attributed to textile dyeing and finishing, highlighting the magnitude of the FTI's hazardous impacts that stops water being suitable for human use. Although most chemicals are washed out during production, there is evidence of residual chemical and microfibre release (in both water and air) during the use phase, through wear and washing (De

Falco et al., 2018; Rovira and Domingo, 2019). Citizens may be exposed to chemicals when wearing garments through dermal exposure (Rovira and Domingo, 2019). Consequently, the impacts have potential to be far reaching from the place of production.

Waste is problematic throughout the supply-chain and vast at both the production (pre-consumer) and consumption stages (post-consumer) (Shirvanimoghaddam et al., 2020). The recycling rate is low for textile products (Sandin and Peters, 2018; van den Bergh, 2020). A lack of industry specific regulatory oversight, including EPR, means a lack of accountability for producers to manage their waste throughout the supply-chain. This is exacerbated at the end-of-use where inadequate separation prevents revalorisation and. Disposal often incurs dumping, incineration, export to other regions and premature landfilling (Dahlbo et al., 2017). Clothing is commonly discarded long-before it is physically obsolete due to perpetual style changes.

4.3.4. The CE as an alternative approach

There have been for systems change in the FTI for over a decade (Fletcher, 2010), whilst Niinimäki et al. (2020, p.198) conclude that to ensure long-term stability of the industry, there is need for *"total abandonment of the fast-fashion model".* In contrast "slow fashion" celebrates the diversity and cultural significance of fashion but in a way that fits within biosphere limits focused on artisan, small-scale and local production (Fletcher, 2010, p.262). Given the scale and global nature of fashion supply-chains means, a transformation of the industry is likely to have far reaching impacts in terms of sustainable development. Ghosh and Rajan (2019) point out the potential the textiles industry has in contributing to SDG 1 (No Poverty); 5 (Gender Equality); 8 (Decent Work and Economic Growth); and, 12 (Responsible Production and Consumption).

A slowing of the FTI means seeking alternative approaches that radically alter the goals and current logic of the industry (Fletcher, 2010). In the last five years, the CE has gained traction as a concept to ameliorate high environmental impacts whilst providing value-enhancing production and consumption opportunities (Todeschini et al., 2017; Vehmas et al., 2018). This growth in interest is likely linked to the EMF's inaugural report on the industry in 2017[16]. Here, it is claimed that a circular FTI *"would lead to better economic, environmental, and societal outcomes, capturing opportunities missed by the current, linear, textiles system"* (EMF, 2017, p.22). The report describes the negative externalities of the linear industry, and proposes solutions based on the premise that the FTI should be *"restorative and regenerative by design"* (*ibid,* p.22). How a circular industry can address the societal turmoil synonymous with the industry is less substantiated, but the expected social benefits are summarised as (*ibid*, p.47):

- *"Greater utility and choice with lower overall costs for customers";*
- *"Reduced obsolescence and fewer unwanted items";*
- *"Positive health impacts";* and
- *"A better deal for employees".*

These issues are remains largely unexplored in the fashion textiles specific CE literature. Jia et al. (2020) conclude through the results of a systematic literature review that there is a lack of research looking at the interlinkages

[16] The report is titled: A New Textiles Economy: Redesigning Fashion's Future (EMF, 2017).

between social sustainability and the CE in the context of the FTI, which is reflective of the general CE literature. Moreover, the industry focus tends to be on theoretical aspects but there is sparse exploration of practical application, besides some studies relating to business model experimentation (Franco, 2017).

4.4. Chapter methodology: Primary data collection

4.4.1. Semi-structured interviews

Reflecting the exploratory approach of the overall research, the approach to primary data collection in this study was to conduct semi-structured interviews with experts (*Table 1*). According to Gläser and Laudel (2009, p.117) an expert is an individual with *"special knowledge of a social phenomenon which the interviewer is interested in".* An active[17] recruitment strategy was adopted as participants with expertise in circularity and sustainability were initially purposively (i.e. non-probabilistically, aligned with the research paradigm) targeted and contacted (Negrin et al., 2022). As the research progressed, a snowballing sampling method was also employed as participants often discussed other organisations in the interviews that sparked subsequent research and communications (Knott et al., 2022; Rowley, 2012). Furthermore, due to recruitment challenges (discussed in section 4.7.2), a more passive approach to recruitment was also applied (Negrin et al., 2022), including utilising the professional networking website LinkedIn to advertise the study and further identify potential participants. Amending the recruitment plan is acceptable when barriers arise (*ibid*).

All participants had expertise in circular fashion and were Europe-based, although often with global reach within their roles (e.g. through the supply-chain, experience or operations). Senior specialists or managers were sought in line with the desire for experts and sufficient level of knowledge to provide useful insights to answer the research questions (Knott et al., 2022; Rowley, 2012). Since recruitment was generally challenging (section 4.7.2), in some cases participants were more junior than anticipated.

4.4.1.1. Interview protocol

All the organisations or independent consultants operate in Europe. Participants were interviewed between 2020 and 2022 using video conferencing via Microsoft Teams [18]or Zoom[19], depending on the participant preference. During the COVID-19 pandemic, using videoconferencing software for research became commonplace as it can be described as a "socially distant" method of data collection (Lobe et al., 2020, p.6). In total, 23 participants[20] were interviewed in the timeframe; a descriptive list of the interviewees is summarised in *Annex b.* This was deemed a reasonable number given recommendations in the literature (Rowley, 2012; Saunders and Townsend, 2016). It became clear that similar themes and responses emerged, and so there was

[17] An active or direct recruitment strategy is when participants are contacted directly whereas a passive or indirect recruitment strategy might involve advertising the study, such as through flyers, newsletters etc (Negrin et al., 2022).
[18] https://www.microsoft.com/en-gb/microsoft-teams
[19] https://zoom.us/
[20] Early on three other participants were interviewed; however due to changes in scope these were excluded but nevertheless still provided context and general approaches being applied in the FTI.

a level of confidence that saturation had been reached for the purposes of this research, resulting in a natural closure to the process.

When designing interviews with practitioners there is a pragmatic element since participants are often not able to dedicate an extended amount of time to interview activities (Rowley, 2012). Each interview lasted between approximately 25 – 70 minutes, depending on the interest level and depth of conversation. Both the personal details of the participants and organisations that they represent were kept confidential to enable the participants to discuss topics freely; a participant number was assigned (Pn).

4.4.1.2. Changes to the interview focus due to COVID-19

The interviews were semi-structured covering a variety of topics surrounding the CE in the FTI. There were slightly different approaches to questioning depending on the stakeholder (e.g. asking consultancy participants about their clients whereas asking fashion businesses about their own operations). Furthermore, as common in qualitative interviewing there was an emergent element as questions were added, refined and developed during the research process. This was heightened in this research as due to COVID-19 disruptions: the interview purpose was altered, and this is a methodological shortcoming. Initially the interviews were intended to be for scoping purposes to identify how the CE was being applied in the FTI. As such, the early interviews were focused on understanding the different interpretations of the CE at the micro-level, including interviewing businesses operating in the industry. However, due to COVID-19, the decision was made to extend these interviews to be a more prominent aspect of this thesis, as other parts of the research had to be postponed or cancelled. Thus, a redesign was required; the line of questioning went from scoping to exploratory. The stakeholders being interviewed were also diversified. In section 4.7.2, the shortcomings of the sample are discussed.

Interviews 1-9 were conducted in 2020, beginning in the COVID-19 first UK lockdown; they were less structured and covered fewer topics than the later interviews (10-23). These earlier interviews were originally intended for scoping purposes and so tended to focus more on understanding the participant organisations business model and approach to circularity. The discussion was more general and did not necessarily delve into topics outside the realm of their role and did not ask about social impacts of the circularity transition in general (although sometimes was brought up nonetheless). The later interviews took place in 2021-2022 and the line of questioning included broader critical circularity discussions about social impacts of the circular fashion transition[21]. In general, the interviews included open-ended questioning around these broad topics (see *Annex c* for the topic guides):

- Exploring interpretations of the CE concept in relation to the FTI (including discussing the organisation the participant represents).
- The anticipated sustainability impacts of circularity relating to economic, environmental and social dimensions of sustainability.

[21] I also developed a more robust line of questioning as my confidence and interview technique improved paralleling an expanded understanding of the FTI circularity landscape.

- Policy, actors and challenges relating to the CE transition, including identifying problematic aspects of circularity in the fashion textiles industry and internal organisational transitions.

Although the intention was to not share questions in advance of the interviews, on occasion this was requested by the interviewee as a condition of participation. Thus, in these instances, a basic topic guide/ themes were shared in advance. The recording of an interview (P2) failed to record properly and not accessible but notes from the interview were used, which are still of analytical value (Knott et al., 2022). During analysis, any company names they may have referred to have also been anonymised to protect the identities and interests of the organisations. An example transcript can be found in *Annex d*.

4.4.1.3. Approach to analysis

The interviews were recorded, transcribed, and transferred to NVivo for code-based analysis. The approach involved thematic analysis as per (Braun and Clarke, 2021) based on their six-step approach[22]. Analysis occurred as an ongoing process whilst data was collected, this enabled further development of the interview questions as an iterative process, exploring topics that emerged during the data collection and analysis phases. Although constructionist perspectives have a focus on induction, in practice both inductive and deductive approaches to analysis were used in tandem; Braun and Clarke (2021 p.331) recognise that induction and deduction are *"a continuum, rather than dichotomy".* Using thematic analysis deductively in this analysis relates to the fact that the research ultimately links to the overall research questions, and thus tackles the social dimension of the CE. Concurrently, the research was broadly approached with the H-SD (Max-Neef et al., 1991), which suggests a general framing that is adopted. However, the inductive elements mean topics emerged during the analysis[23]. When the findings are presented, interview extracts are included to exemplify how the interpretations were grounded in the data (Knott et al., 2022). The findings were supplemented with additional literature searches and reflections.

4.5. Findings

4.5.1. Circularity is an emerging concept in the FTI

Reflecting the overall CE landscape, the increased interest in the concept was evidently increasing in the FTI with brands and retailers demonstrating experimentation with circularity and experts confirming that the concept was being adopted (P14: *"I think it's in the excitement phase"*). The CE was described in various ways, generally surrounding resource-centric narratives, such as *"keeping products and materials in circulation for as long as possible at the highest value"* (P15) and *"a system where no waste is created"* (P13). In terms of sustainability

[22] Braun and Clarke's (2019) six step approach consists of: 1) data familiarisation; 2) systematic data coding; 3) generating initial themes from coded data; 4) developing and reviewing themes; 5) refining, defining and naming themes; and 6) report writing. These are often overlapping in nature, reflecting the iterative and reflexive nature of qualitative analysis.

[23] In the interviews, discussions relating to practical 'knowledge' challenges of the CE emerged early on, and so I explored this topic in the earlier interviews more than the later ones. However, to reduce divergence from the research questions, I have not included this analysis in the main body of the thesis. Instead, they were published in the conference proceedings of the Global Fashion Conference (Clube, 2021).

impacts, the CE was generally viewed as a holistic model but with economic and environmental aspects being more discussed; it was considered that commercially viability was important. There was frequent reference to the EMF as a source of information, so the organisation can be deemed to be influential. A participant observed the dominance of certain players in the CE realm as potentially problematic in terms of data: *"what is always dangerous is when you get too many people citing the same source over and over again, and not coming at it from different angles"*. Some participants perceived CE to address broader sustainability objectives, encompassing social value (P5, P12, P16, P22). For example, P16 explained:

> *"...what the CE needs to be or needs to ensure is that you have sustainable consumption. And when, I hate the word sustainable, or sustainability if it's not defined, but consumption that no longer affects our planet, so it's within the planetary boundaries. And that's on a global scale. But in doing so, you're also ensuring social balance and justice and equality."*

4.5.2. Circularity applications and interpretations

Reflecting broader conceptual contention (Kirchherr et al., 2017; Korhonen et al., 2018b), varied interpretations emerged in practical application. It became clear that circularity held many different meanings with wide-ranging goals and expected impacts in terms of sustainability, with some fashion brands predominantly approaching it as a fibre strategy and others emphasising the system-wide nature of a CE. P5 raised concern that the CE is not being approached in a transformative way:

> *"The CE is not about taking the current economy and slightly changing it with a green gloss. It's about taking the current economy and smashing it open and completely reworking it. But at the moment some people are just using it as CSR or the linear economy rebranded and that's a big problem in the conversation."*

Consultants confirmed conceptual uncertainty as problematic, for example, when discussing the CE with clients (P9). The complexity of the FTI means that – in theory - different circularity strategies can be applied throughout the value chain (P22). However, P21 noted: *"I think a lot of brands are quite like blinkered about where their involvement in the CE starts and ends"*.

The strategies identified in the data are depicted on *Figure 5* and a complete list of can be found in *Annex e*. The CE was frequently described as a holistic approach to sustainability encompassing wide-ranging impacts. Nevertheless, when providing examples of circularity, they sometimes did not reflect prior statements of being a holistic model, suggesting a gap between ideology and practical application. Rather, more incremental approaches, such as fabric, add-on resale or rental and end-of-use strategies are most applied in practice (P2, P3, P21, P23). There were examples of innovations and businesses with circularity as the central value proposition that were interviewed (P1, P4, P7). Their approaches were growing in popularity and interest, but in terms of influence remain small currently compared to the size, and seemingly industry power, of larger traditional fashion incumbents.

Likely dictated by the sample, the interviews generally focused on downstream aspects of the CE. as their expertise was often in retail or business models, so their knowledge may not extend to these issues, thus biasing the discussion towards downstream topics. Strategies such as on-demand manufacturing, cleaner

production, closed-loop manufacturing, zero waste design strategies were mentioned but were not the focus of the interviews.

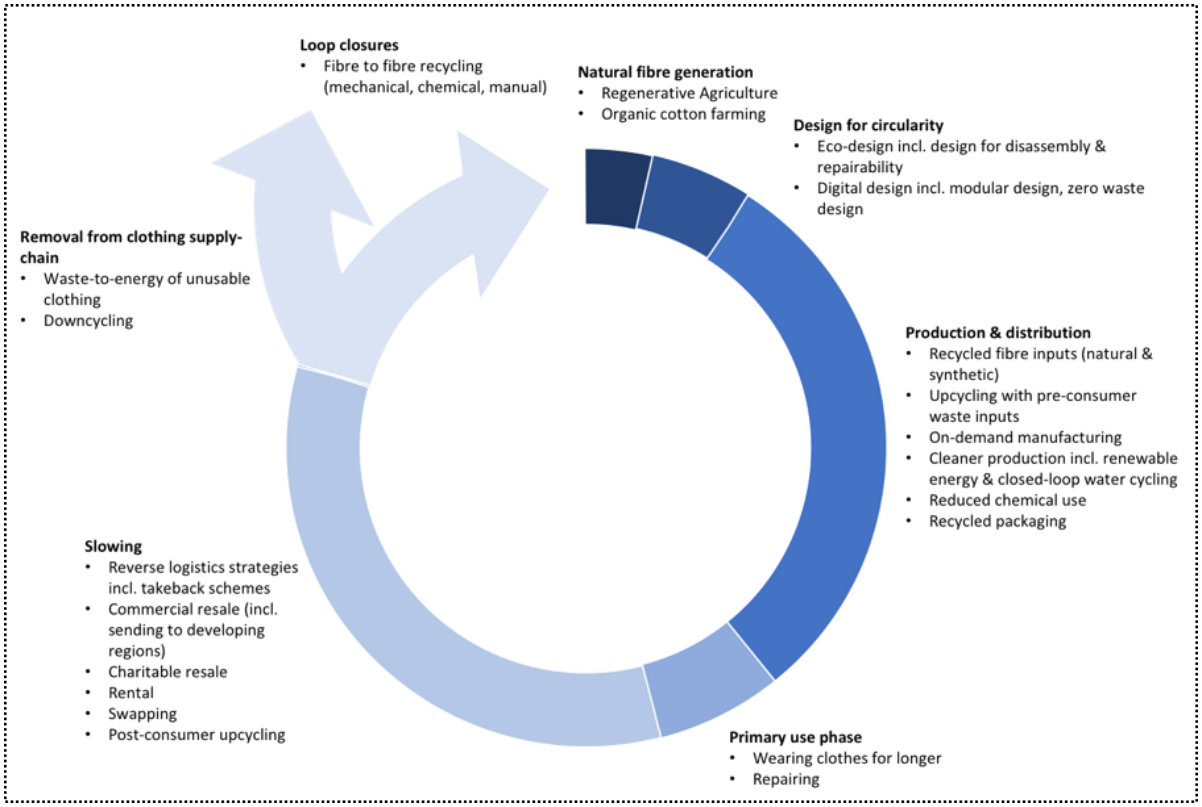


Figure 5: Overview of strategies mentioned during interview (see *Annex e* for complete list).

4.5.2.1. Material strategies

Strategies focused on the material of garments are a common interpretation of the CE concept, which aligns with observations in the literature (Buchel et al., 2022). P19 suggested that this is because *"it's the most technically mature thing to do".* At the same time, previous studies show that material is key for determining the environmental impact of the product, and so is likely to be important (Dissanayake and Weerasinghe, 2022). Nevertheless, fibre strategies sometimes represent almost the entire circularity strategy of a company (e.g. P11: *"at present, it's definitely applied just at the material choice"*), suggesting a technocratic viewpoint of the CE. The material approaches mentioned in the interviews included: increasing recycled fibre content (both natural and synthetic) (P1, P2, P3, P9, P10, P11, P12, P13, P19, P21, P22; P23); increasing bio-based materials including regenerative fibres (e.g. cellulose etc) (P5, P12, P22); and, less commonly using regenerative practices at the agriculture phase (P10, P19). Using pre-consumer waste as an input (e.g. deadstock) was raised (P5, P9, P22). Furthermore, there was growing interest in mono-materials (deemed more manageable at end-of-use) (P2, P5), alternative innovative fibres (e.g. fibres made from food waste) and organic materials (e.g. organic cotton) (P9,

P10, P15, P16). These are not always associated with the CE but nevertheless sometimes included under this realm, illustrating conceptual overlap between sustainability and circularity.

There was scepticism regarding certain fabric strategies. Using recycled content was common, especially for brands and retailers transitioning from conventional approaches (P3: *"Everyone is talking about how much recycled content is in their products"*). Yet, this was sometimes deemed problematic when based on synthetic, petrochemical-derived materials (e.g. recycled polyester or Econyl). Notably, the use of recycled rPET (recycled polyethylene terephthalate or polyester) is being adopted. Concerns emerged regarding this strategy (e.g. P16, P19, P21, P22), citing that the main source of rPET is from the waste stream of the packaging and plastic bottle industry. P21 explained that 33% of rPET currently is used for textile fibre in Europe. They suggested that this recent increased demand, and hence scarcity, of rPET means that the value of the material has risen to the extent that it may be unviable for the plastic bottle industry to use as a feedstock. This causes the bottling industry to remain reliant on virgin sources whilst causing failure to meet policy recycling targets[24] (P21). P16 summarised their view on this oxymoronic strategy:

> *"... you have 'conscious collections' produced which are...or a single product that is designed totally for circularity, you have changes in fibre. Ironically, the use of recycled polyester is from plastic bottles. So it's not even circularity. It's from another product category. So that, to me, also is not a circular economy, in my opinion, unless it's excess material that's coming from a different system that they don't need."*

The literature would consider the use of rPET as an example of 'open loop recycling' (as it is used in a different industry) rather than 'closed loop' (Leonas, 2017; Majumdar et al., 2020). This may contradict ambitions for fashion to be a closed-loop industry (P16), although P23 stated that the use of materials in other industries constitutes part of a CE. A concurrent issue is that there is no scaled solution for the end-of-use phase of rPET garments: they cannot be recycled perpetually once in fabric form (Keßler et al., 2021). The overemphasis on the use of these fibres was regarded by P21 as a form of greenwashing[25]. Furthermore, in agreement with earlier observations (Chapter 3) of McDonough and Braungart (2002), studies identify that although the language of recycling may be used in the textiles industry, in reality, materials are usually *downcycled* to a lower grade material (e.g. becoming rags for industrial uses) (Sandin and Peters, 2018). A lack of end-of-life solution persists, especially for mixed fibre garments (P19: *"It's not recyclable back into fabric at this point in the technology cycle that we're in"*).

Aside from synthetic recycled fibres, using natural recycled fibres is being explored (P12: *"ultimately what we're striving for is increasing recycled content but staying biobased"*). These materials were suggested as having biodegradable properties, and so environmentally preferable. However, these also have practical limitations. P5 & P11 explained how it is often not wise for durability or commercial sense to have 100% recycled

[24] Greer et al. (2021) refer to dilemmas like this one as a "Waste-Resource Paradox". In these paradoxical scenarios, waste could be commodified to the extent that it becomes a scarce and highly valued material stream that could cause economic, social and energy-based rebound dilemmas. This may ironically cause incentives for intentionally overproducing this 'waste'.

[25] Greenwash is an increasing phenomenon. It is when information is misleading to citizens, such as selectively sharing information or utilsing green credentials in marketing without legitimacy (Brach et al., 2018; Dobos and Éltető, 2022). This can lead to information asymmetry and lack of trust.

fibre. Studies confirm this, suggesting that 20% recycled natural fibre is optimal (Niinimäki et al., 2020). Therefore, the approach consequently requires a virgin raw material stream, which makes totally closed-loop cotton garments not presently viable. The literature adds doubt to the effectiveness of switching fibres in terms of realising overall environmental impact reductions (Amicarelli et al., 2022; Vita et al., 2020). Furthermore, as raised in the interviews and in previous studies (Keßler et al., 2021; Leal Filho et al., 2019), efforts to select a more sustainable or circular fibre entails challenges and uncertainties. For example, as noted by Palacios-Mateo et al. (2021), blended fibres or those with certain chemical dyes or treatments may contaminate the waste stream, hindering end-of-use management (P9), whilst also producing potentially harmful effects (P22). Emerging technologies, such as digital passports, are being encouraged (EMF, 2017a; EU, 2020) and is the focus of one of the participants organisations. These seek to comprehensively record a garment's composition, which can support better end-of-use treatment whilst harnessing data throughout the product lifecycle (P12, P13).

There was a general criticism towards those that have a highly fibre-focused approach to the CE, except (unsurprisingly) for those retailers interviewed where material strategies were the primary focus of their circularity strategy. Garments made from perceived 'circular' materials in reality often represent a small proportion of total sales, although the intention is likely to increase this incrementally. Companies may introduce special circular garments or ranges, but then have the remaining collection based on business-as-usual. Concerningly, market data shows the global volume of clothing continues growing (Statista, 2022a). Companies may seek to have a target percentage of a collection as, for example, *circular* or *low impact,* but implementing reductions is rare (P2, P3, P10, P11, P19). P11 explained:

> *"... generally they don't talk about it as number of items. Brands tend not to say how many items they're making, because they don't want people to know how many items they're making...[ ] So they will do it more as a percentage. So we're going to use, for example, this percentage of recycled contentcompared to virgin content."*

This predicament has previously been critically explored in the literature (Buchel et al., 2022; Palm et al., 2021). For example, Palm et al. (2021, p.663) argue that: *"changing a growing fashion and textile industry's negative contributions to the environment is about altering the quantity of fibres being produced, it is not about the fibres as such"*. Without absolute reductions, rebound effects are probable (Zink and Geyer, 2017).

4.5.2.2. Extending use strategies

Various activities focusing on slowing material loops by extending the use phase of the garment emerged, often based on 'reuse' principles. The literature finds that reuse is the most environmentally preferable approach (Bukhari et al., 2018; Sandin and Peters, 2018). Strategies such as resale, rental, swapping and post-use upcycling would be included in this category (EMF, 2017a).

Resale was deemed to be a major trend, and rental was also reported as emerging; P23 described these strategies as "the low hanging fruit". Standalone rental (peer-to-peer and business-to-consumer), swapping and resale apps, are emerging paralleling attitudinal shifts towards pre-used clothing. P10 noted that rental may be more suitable for luxury or special occasion items, reflecting previous studies (Pal and Gander, 2018). Retailers

may develop an add-on business model (e.g. a dedicated part of their website or store) for rental, upcycle or resale. Brands may seek to re-monetise previous collections, buying them back from the public for resale (P11, P13, P19, P21, P23, P25). Nevertheless, such strategies often represent small or negligible proportions when compared to conventional sales (P19: *"you get a company doing a rental model with three garments on their website"*) and are usually additional rather than a replacement, and so their transformative potential was sometimes questioned (P22). Ghisellini et al. (2021) observe that large incumbents tend to focus on consolidated interpretations of circularity that often do not represent a strong shift from their existing activities. P5 explains (extract below) their critical attitude when strategies are implemented in isolation. Supportive design, such as eco-design principles, were hinted at in other instances to ensure products are fit for longevity and repairability, reflecting suggestions in the literature (Sauvé et al., 2016; Wastling et al., 2018).

> *"It is not the CE if you just take something that is designed to be thrown away and then just share it for a bit and then throw it away. Life extension is important but it's not circularity in itself.*

Charity shops are important actors in terms of second-hand retail as well as distributing items overseas, delivering social benefits (Leal Filho et al., 2019). Reselling donated clothing can constitute a major source of income for these NGOs (Norris, 2015). In the interviews, their role was not discussed by many participants. These *de facto* CE activities have been going on for decades, but only recently discussed under the 'circularity' umbrella (P20). P16 noted the centrality of this sector:

> *"...the charity sector is a fundamental part of or I'm going to call it the reuse sector because charities form part of it, but that is a fundamental part of circularity currently for the industry. It's the only one really that fits within a CE"*

NGO participants highlighted those activities may be taken for granted yet they are responsible for diverting significant volumes of clothing away from landfill. It was framed that given sparse regulation or end-of-use management, they may carry out the activities that *should* be the responsibility of brands that produce high volumes of low-quality clothing. An NGO representative was reflexive of the usefulness of their resale activities, as they may only *delay* items eventually ending up in landfill and subsequently generating environmental harms: *"I mean, there is a sticking plaster element"* (P18). NGOs noted declining quality of donations reflecting diminishing quality associated with fast fashion, which can be problematic for resale (P17: *"I can't stop people donating rubbish, and I can't stop rubbish being made."*). NGO P17 & 18 noted that they used to be reimbursed for collecting unwanted clothing, but now securing these garments can be challenging as other stakeholders are willing to pay competitive amounts to obtain such textiles for resale. This demonstrates that used garments (that may have previously been regarded as *waste*) are now in demand and hence commodified. Theoretically, this aligns with CE aims to revalorise materials, but in other sectors scholars have raised concerns that the marketisation of previously non-commercially exchanged (e.g. donated) goods could induce unintended negative equity and justice impacts (Leipold et al., 2021). For example, fewer items may be available for social solidarity economies that serve vulnerable populations. However, this was not explored and did not emerge in this study but is as a topic ripe for future research.

4.5.2.3. End-of-use solutions

Various approaches were being implemented to tackle the end-of-use phase to ensure items are disposed of responsibly or adequately managed. Typically, end-of-use management is challenging because of increasing volumes of mixed fibre garments, fragmented approaches to collection and sorting, and further hampered by a lack of recycling infrastructure (Bukhari et al., 2018; Dissanayake and Weerasinghe, 2022). In response to attention being directed at the unsustainable nature of premature landfilling and incineration practices that have drawn increasing media scrutiny, a popular strategy is for retailers to instigate takeback schemes (P1, P3, P9, P11, P14, P15, P21) (e.g. P14: *"...takeback system is one of the first key activities that they want to implement"*). This includes having an instore collection or partnership service whereby the citizen (usually represented as a depoliticised *consumer*) can return clothing. This - in theory - enables responsible management of unwanted garments, such as through previously discussed charity resale, downcycling or other recycling strategies.

There was scepticism with regards to the effectiveness of takeback schemes (P21: *"most takeback schemes are just a load of bulls**t"*), and the intention was not clearcut (e.g. P15: "*...I'm not so sure that they really are about reducing it; maybe come in, return something, buy something new"*). Moreover, P20 observed that *"mainstream retailers are interested in takeback schemes that can increase their footfall"*, suggesting an underlying motivation to induce further consumption. This is evident as often schemes offer an economic incentive (e.g. voucher) (P1) that encourages further consumption. Reflecting the literature (Kant Hvass and Pedersen, 2019; Stal and Jansson, 2017), it was suggested that the volume of garments returned through these schemes are typically small in comparison to the sale of new items (P3). Critique emanates from the fact takeback schemes may derive positive media attention yet only focus on the end-of-use phase.

Takeback schemes may be managed by charitable partners. One NGO interviewed explained that they do not receive payment for managing the partnerships with retailers for these activities, but the value for them is in the obtained clothes for future resale. Clothes are graded for quality (P20) and resold in the market of disposal or may be bundled for resale sold abroad (P3, P6, P16, P20). However, poor quality items are likely downcycled for industrial use or even incinerated (an NGO noted that they incinerate circa 5% of donations at a waste-to-energy plant). Ultimately, implementing a meaningful takeback scheme is challenging (P3). It is difficult to know the ultimate destination of the clothes, and whether it regardless may end up in landfill. In the literature, it has been reported that the demand for used clothes is not currently keeping up with increased supply (Bukhari et al., 2018). P20 explained that the UK market for used clothes was "saturated". Unwanted garments may be exported to developing regions with negative impacts (see section 4.5.3.5).

A final scaled solution to poor quality or contaminated items is not yet available. The development of mechanical and chemical fibre-to-fibre recycling solutions were frequently mentioned (e.g. P2, P6, P7, P9, P10, P14, P15, P16; P20; P21, P22); P7 represented an organisation operating in this space. There are chemical recycling innovations in development but currently these are not available or viable at commercial scale (P21), whereas solutions exist for some natural fibres (e.g. cashmere, wool), but they may be highly manual. This manual nature of recycling fabrics has been noted as a barrier (EMF, 2017a). Technological solutions to recycling

fabrics were often framed as fundamental facilitators of circularity, with potential to solve end-of-life challenges. Partnerships and investments in this area appear to be garnering interest.

4.5.2.4. Durability, longevity and reduction

Participants recognised the need for longevity of use, including through more durable design, such as by embedding eco-design principles into the garment, designing for repair and disassembly. Companies demonstrated attempts to engage the citizen in responsible behaviour through providing information about caring for clothes, including communicating through social media, labelling and websites. Keeping items for longer is an essential part of circular fashion (P19: *"the most circular is keeping the things that you've got, as long as you can"*). This requires the citizen to care for the clothing, but also having durability embedded at the design stage. P23 observed that *"repair and renewal methods are being explored within design companies as well as through citizen empowerment"*. Repairing items was historically part of social routines (P22), however repair may not be seen as worthwhile given low-cost of replacement. Government interventions around EPR schemes and Eco-design Standards would support these activities (P11). As an example, France was the first to adopt an EPR in the FTI, introducing legislation over ten years ago (Bukhari et al., 2018), and it is expected that similar legislations will be implemented elsewhere in Europe (P15, P23). de Brito et al. (2008) noted the growing interest in EPR in the industry nearly fifteen years ago, yet this has still not been widely introduced at the time of writing. Moreover, P20 pointed noted that EPR interventions are focused on environmental aspects, often without *"explicit objectives around social impact or social value"*. Yet is has been argued that repair policy should encourage bottom-up activities that rebalance power to the citizen (Bradley and Persson, 2022). P17 & P18 noted that as an NGO they try to contribute to citizen education by hosting community events (e.g. free repair workshops).

Reduction was not being actively pursued in the industry (P11, P15, P16, P19, P21), but its necessity for an effective CE was acknowledged. Achieving reductions poses a major cultural and political challenge, and unlikely to come from businesses alone, who are reliant on increasing sales to support their underlying logic. When circularity initiatives are applied by existing incumbents (e.g. launching rental schemes), it is *in addition to* existing retail. This may be because they are currently at the experimental phase, so trying different strategies to identify which are effective before scaling. Nevertheless, dominant versions of the CE do not appear to address underlying desires for ever-changing styles, as explained by P11:

> *"But then how much is that kind of rental thing is just encouraging people to consume more? So my main issue with the with the CE is that a lot of people don't look at slowing down the economy when they look at circularity, they just want to continue, you know, rather than really fast linear, they want to do really fast circular."*

In fact, this concern is somewhat in conflict with the EMF (2017) outlook, which suggests additional choice is a social benefit for consumers[26], as CE business models may be able to enhance the consumer experience.

[26] The EMF (2017, p.47) specifically utilises language associated with neoclassical economics to describe such benefits, suggesting that a CE enables *"greater utility and choice"* for customers.

4.5.3. The social dimension of sustainability in the circular fashion transition

Although a key question into this chapter related to exploring the social impacts of transitioning to a circular industry, this was not possible in some of the interviews due to conceptual uncertainty or lack of engagement with social dimensions. It became clear that social dimension is the least discussed aspect of CE sustainability and peripheral in practice, reflecting the sparse theoretical explorations (Beyer and Arnold, 2022; Jia et al., 2020). The data suggest that social impacts and implications are generally not routinely considered by the private sector in their interpretations of the CE. NGOs, on the contrary, demonstrated that creating social value was essential to their purpose. The general oversight of the social dimension was highlighted by some participants as a shortcoming of circularity, but for others it seemed to be completely overlooked[27]; this is resonant of findings outside the FTI (Walker et al., 2021). For example, P2 stated that this was the role of another team whilst P14 hesitated but responded by exclaiming:

> *"I'm not really sure. Because like, as a company, we mostly work on resources or resource level, like more environmental side of things. We don't really work with social aspects yet."*

The general low engagement in this dimension was often in contention to previous assertions that the CE represents a holistic approach. This implies a tension between ideology and practice. In a general sense, P9 suggested that focusing on the environmental aspects of sustainability, for instance, through switching virgin fibres for recycled alternatives was relatively easy to implement, whereas altering complex human-related challenges in the supply-chain was much more difficult. Addressing social challenges may therefore get deprioritised in exchange for easily implementable fabric strategies that may come under the realm of the CE. P2 explained that social and ethical concerns were outside the scope of their role, and another team was responsible thus implying a compartmentalised approach to social and environmental challenges. Participants sometimes defaulted to discussing general social implications, for example, donations to philanthropic causes or by mentioning legislations (e.g. Modern Slavery Act) (P3, P12). P12 described their approach:

> *"We want to make sure we're sourcing from ethical supply chains where we have transparency and visibility and so that's obviously very important to us. And then of course we want to ensure within our own company, so whether that's in the office or at our distribution centres and the factory workers as well, and that like everyone and everyone's needs are being met in terms of good health, safety, living wages. So there's definitely a social focus in the sustainability team."*

P13, P22 and P23 suggested that those engaging with circularity may be more likely to direct attention to social issues. This may imply that companies or individuals with a focus on circularity implicitly care about the environment, and thus attentive to social concerns, as explained by P13:

> *"…when they care about circularity and environmental sustainability deeply, they also care naturally about social sustainability. So I would say if there's any social benefit, that would be a main one."*

Although the interviewees did not provide explicit evidence for this assertion and it may represent an optimistic viewpoint, a similar assertion was put forth by Beyer and Arnold (2022). They suggest social sustainability may be developing concurrently with the CE but more clearly joining the approaches can ensure

[27] There were instances when I sensed through the paralanguage (e.g. hesitations) an element of discomfort or defensiveness when asked about this aspect, since perhaps this was not something commonly included in their role.

socially orientated outcomes *(ibid*). Generally, there was no consensus on the social dimension of circularity with many of possible implications being suggested and others being inferred[28]. These are discussed below.

4.5.3.1. Changes in consumer culture

Paralleling the literature (Ki et al., 2020) and policy drives (e.g. EC, 2020), there was a persisting notion that a circularity requires demand-side behaviour change (e.g. P2, P4, P8). This was not necessarily explicitly discussed when questioned about 'social' or wider sustainability aspects of circularity, but is considered socially relevant in the literature (Beyer and Arnold, 2022; Schulz et al., 2019). For instance, Schöggl et al. (2020, p.10) discuss consumption as a social issue: *"...while organizational strategies and production are rather environmentally coined, the consumption phase as social and societal issue per sé and its interrelatedness with a functioning CE is increasingly being recognized"*. Hence, this citizen perspective can be deemed relevant.

How fashion is approached and consumed is likely to require significant shifts, which is challenging given the CE is *"being prevented by unfair competition from cheap clothing"* (P22). Participants suggested that citizens are demanding change towards more sustainable practices (P6, P7, P9, P25). A challenge is that constant updating trends remain omnipresent in the industry and consumption is generally encouraged through persuasive marketing. This is typical of any category of pseudo-satisfier, according to Max-Neef et al. (1991). Pseudo-satisfiers usually fail to satisfy the intended need in a meaningful way and are *"generally induced through propaganda, advertising or other means of persuasion"* (*ibid*, p.31). Relying on fashion as a source of *leisure* or *identity* would be interpreted as symptomatic of wider societal issues where artifacts represent status; this proliferating discourse can be considered a collective pathology of consumerism (*ibid*). Clothing or fashion as a satisfier remains constant in current versions of the CE. Hence, the switch from linearity to circularity does not result in a radical cultural shift as framed (since clothing *still* remains a pseudo-satisfier). Ultimately, this culture of consumption is problematic given critique in the literature, for example, Niinimäki et al., (2020, p.198) states that *"consumers must understand fashion as more of a functional product rather than entertainment"* for meaningful transformation. In the following interview extract P18 notes that accepting second-hand clothing is somewhat political, enabling the citizen to liberate themselves from socio-political norms and structures that support high consumption as a means of pseudo-satisfying *identity* needs through adhering to new trends:

> *"…going second-hand is all around freeing yourself from the sort of diktats really of kind of what people want you to buy. So you're freeing yourself from kind of other people profiting from you. And when you do that, it's quite a liberating thing where your kind of identity, say it is around clothes, what you buy, how you buy, who you get to get it from, how you source things, really, really changes, it completely pivots. And it is quite a sort of liberating process. And it's sort of it's a philosophical process, its political, its social, its environmental. It's lots of things."*

It was signalled that citizens must be educated to ensure that they participate effectively yet the language of the CE remains niche and not understood universally, or even across organisations with a circularity strategy (P16, P17, P18, P20, P21). Brands noted their attempts to engage citizens through labelling strategies,

[28] The lack of common themes (in the sense of consistent discussions) is not problematic in constructionist research, as generalisability is not the aim. Some of the

marketing, reporting and other interactions whilst P12 highlighted that they engage their own staff in circularity education. Reflecting existing literature (Leal Filho et al., 2019), citizen culture is aligned with linearity; the public may not know how to effectively participate in circularity. For example, P9 explained:

> *"The thing is we are not in a circular system yet. So if you as a consumer, what do I do with my old clothes other than throw them into one of those bins where nobody really knows what will happen to them, so for we need to start to conceive circular fashion as part of a circular society"*

This assertion mirrors a call for a circular society by Jaeger-Erben et al. (2021). A successful circular FTI likely requires active interactions between different stakeholders, and although there is evidence of collaborations and industry initiatives, these perhaps has yet to be comprehensively explored and integrated into the discourse. The involvement in the CE requires "consumption work" on the part of the citizen (Hobson et al., 2021). From a practical standpoint there are not currently adequate collection or disposal routes for textiles as there are for other waste streams (e.g. plastics, aluminium etc), which can be attributed to underdeveloped local policy, hindering effective circular behaviours. Although Max-Neef et al. (1991) is generally critical of restrictive top-down policy, the lack of government oversight means that the industry instead self-regulates using certifications or held to account by media or consumer activism (Buchel et al., 2022; Dobos and Éltető, 2022), but as explained by P23: *"there is only so much that citizens can do"*. As introduced in Chapter 3, the CE has been of political interest in certain regions, and although there is reference to textiles as a target industry in the EU CE Action Plan (EU, 2020) there are currently few legally enforceable, industry-specific regulations. At the time of writing, the EU Strategy for Textiles, due to be published in 2021, had not been finalised but is expected to include new protocol regarding eco-design requirements; collection and management of textiles; and EPR developments, which would constitute supportive policy. Most broadly, member states have committed to having separate collection of waste textiles by 2025 (EU, 2020, p.13).

4.5.3.2. Resource conservation and reduction of harmful inputs

Preserving raw materials and reducing waste was an expected outcome of circularity (P15, P16, P22). Some participants explicitly referenced this as a social benefit, whilst others did not necessarily link it in this context. Circularity was suggested as essential to staying within limits of the planet (P16), reflecting existing assertions (van den Bergh, 2020). As previously mentioned, some view environmental and social aspects of circularity as separate whereas others drew the link between these two dimensions of sustainability, although sometimes in somewhat passive way. For example, P15 summarised:

> *"...in my mind, it's always quite difficult to separate the environmental from the social benefits in the sense that environmental benefits include things like cleaner water, but clearly these are the basic needs for people. So, if you have a circular system, you are reducing, say the amount of production of textiles and dyeing and all those sort of processes. And therefore, you are reducing that impact on the people who otherwise live with contaminated water."*

The current linear production of fashion in countries with lax regulations mean that effluents and noxious substances have been contaminating environments and endangering humans (P22: *"we* [developed regions] *are literally offshoring our own pollution into mainly Asia to be honest, and increasingly Africa as well")*.

Since circularity is associated with drives for more natural inputs and reduced production (McDonough and Braungart, 2002), then that can subsequently lower the use of highly toxic chemicals, with ameliorated outcomes (P22: *"it's got to be thinking about people's health, you know, peoples' health is impacted by the fashion industry massively"*). This has been stated as a social benefit in relation to worker health by the EMF (2017) since illnesses have been connected to current production methods (Hossain et al., 2018; Rovira and Domingo, 2019). However, whether this actually constitutes a *benefit* is contentious (i.e. does avoidance of a hazardous aspect of work constitute a satisfier per the H-SD?)[29]. P22 advocated for a "toxic free circularity" whereby materials that are circulated should be free from potential human and ecological harm whilst P5 similarly suggested that *"if you leak a natural material into nature it's harmless"* compared with synthetic alternatives. These viewpoints reiterate the aims and associated satisfiers outlined in some of the seminal texts in Chapter 3 (e.g. elimination of crude products per McDonough and Braungart, 2002). Evidence suggests that, at least in the FTI, this is currently unrealistic as synthetic materials and high chemical approaches prevail in light of fashion trends that require synthetic dyes and polymers to meet stylistic requirements.

4.5.3.3. Pricing and affordability

P15 & P16 suggested that circularity was a method to introduce stability, moving away from volatile raw material pricing linked to extractive sectors. Circular resource use is a possible route to *"managing the price of products and materials"* (P15). This was implied as having a social equity component by ensuring low-income groups and nations have access affordable resources. Conversely, it was suggested that circular items will have higher costs since materials will be better quality, entailing increased efficiency (P13, P21, P22). Increased cost of inputs is a potential barrier for brands transitioning to circularity too; commercial teams are unwilling to compromise their competitive positioning by raising prices or circular experimentation that requires investment. Circularity could be unaffordable for some citizens (P11, P17), reflecting concerns raised in the literature regarding whether a CE can deliver positive social justice outcomes (Calisto Friant et al., 2020; Kirchherr, 2021). P17 concluded that the CE is "a bit elite" and needs mainstreaming. P16 summarised the equity conundrum:

> *"But in the context of a just transition, some people can only afford lower cost products, and they're not, they're not necessarily consuming them, using them, in the same way that somebody who's got lots of disposable income who buys 50 items a year and chucks them away because they can. So how do you ensure that if products do get more expensive, that people who can only afford lower cost products are able to still access them?"*

Paralleling the need to move away from disposability towards longevity, it was suggested that customers can buy *less* but buy *higher quality*, which in turn could enable higher wages may be paid to the upstream labour force (P11, P22). This assertion has been previously identified as plausible (Mair et al., 2016), and indeed is one of the social benefits noted by the EMF as they suggest a CE is distributive by design (see "a better deal for employees": EMF, 2017, p.47). Yet, this seems hypothetical given the cost-focused competitive dynamic with a lack of supportive policy or robust oversight. Further, P19 noted that luxury does not necessarily equate to better quality in terms of durability. Literature (e.g. Phau et al., 2015) and disclosure reports (e.g.

[29] In the chapter 7 I discuss this conundrum with reference to further findings of Chapter 5.

Fashion Revolution, 2022) note that premium brands fail to disclose how they engage in better labour practices than mainstream counterparts and may procure from the same factories, countering this assertion[30]. P18 observed this: *"most clothing is made, even if it's luxury label, it's made in bad practices in bad factories"*.

Another outlook is that the second-hand market can improve affordability for the citizen (P13). Second-hand items sold through charity retail activities enables access to quality clothing, including for those from lower income demographics, which can support FHN satisfaction (i.e. clothing as enabling warmth as noted by a 2018 report by WHO, thus satisfying *subsistence* needs, rather than as an object of status). For charities, the social benefit is both for the citizen as a consumer, and for wider causes depending on where the proceeds are used (P17, P18). Previous stigmas associated with second-hand items may be shifting suggesting positive altitudinal changes aligned with circularity (P13, P15) but these are not universal; some still *"associate second-hand things with poverty rather than say 'vintage'"* (P15).

4.5.3.4. Job creation and related socio-economic opportunities?

In harmony with broader CE discourse (Chapter 3), the data suggest job creation is an expected social benefit (P10, P15, P21, P22, P23), although losses are also discussed (P15, P19). New vocational opportunities from collection and sorting, emerging circular services as well as business models were discussed. These may be on a local level due to the "repatriation of certain supply chains" (P21). New innovations or expanded operations relating to circular activities (e.g. collecting, sorting, resale) create opportunities for *participation* in the industry (and thus satisfiers for FHNs). P15 summarises their perspective:

> *"Now, some may say, well, this sort of circular approach may mean fewer jobs and less production. But the way that I would say it is that it's a way of shifting into jobs, which are less harmful. It's way of moving into things which are around reuse, and upcycling and re-manufacture and recycling. So it's not fewer jobs, it's just different jobs. And potentially it is more satisfying creative work."*

New business models illustrated benefits in terms of entrepreneurial opportunities; digitalisation and open-access business models can provide opportunities to people across the world to engage in creating micro-enterprises in a CE (e.g. peer-to-peer resale apps give citizens opportunity to redistribute and monetise unwanted clothing whilst distributed manufacturing supports entrepreneurship generation). P5 explained that their approach seeks to induce effective closed-loop material exchanges where the citizen can return an item to be reused in future production; this could have socio-economic benefits for those involved in the exchange:

> *"For example, because your customer becomes part of the supply-chain so therefore you can allocate resources to reward your customer for material which you would otherwise might buy from an industrial partner. Therefore, the problems and attributes of procurement become a value opportunity for the*

[30]I reached out to a contact at Fashion Revolution, the world's largest fashion activism movement to supplement the interviews, and include their opinion on this point as to whether higher value inputs in a CE would lead to wage increases for garment workers. They suggested this assertion was not necessarily logical because: *"the fabric cost is separate from the labour cost when looking at the cost breakdown of a garment. This can be illustrated by existing practices amongst luxury brands where the lack of living wages in the luxury sector shows that more often than not, a higher cost for fabrics does not imply the payment of living wages to garment workers. In addition, many luxury houses use the same factories as high-street brands and garment workers in these factories are far from earning a living wage... National level minimum wage rises and bargaining have been the primary means of brands paying more for wages. The labour costs are led by national minimum wages, not price points of garments."* (Personal Communication, Fashion Revolution, 2022).

public. Very difficult to understand until you realise that you start writing cheques to the public for the waste. So fundamentally that's a material problem but that has societal benefits."

Stemming from recent manual labour shortages in the UK, it is not clear whether the labour force will be willing to reskill and work in manual roles (e.g. P11: *"But really, there's very few people in the UK that want to be working in a factory now."*). It also might not be appropriate since fabric is not commonly manufactured in the UK (P19). This predicament has hardly been explored yet conflicts the manifesto of Stahel (2010) presented in Chapter 3. In an exception, Burger et al. (2019) (not specific to FTI) find that in the context of the USA "core" CE jobs (e.g. maintenance, rental services) require a lower educational level than the rest of the economy, whereas "enabling" CE jobs (e.g. design, digitalisation roles) require higher education and technical knowhow. Without the correct skills match, CE jobs may not necessarily be appealing or suitable for citizens. P23 noted that in the UK there is discussion about upskilling and green jobs, which is *a "step in the right direction".*

4.5.3.5. Impacts on Global South

Max-Neef et al. (1991) endorses local level activities to support self-reliance and FHN satisfaction. However, this cannot be at the expense of others in the system failing to have their needs also satisfied (*ibid*). Generally, discussions relating to job creation or entrepreneurship were focused on developed regions (where the participants were located), with less consideration of the impacts on current export-heavy regions. This mirrors findings of chapter 3 and of broader literature and practice (Kirchherr, 2021).

In the interviews, upstream labour impacts (e.g. quality of jobs, pay rates) were not generally addressed in circularity strategies. This is somewhat problematic given the production phase is where most negative social impacts occur and linked to the needs' satisfaction of vulnerable workers and local communities (Börjeson and Boström, 2018). Nevertheless, such aspects may be separately addressed through compartmentalised 'social' strategies, so can be considered a feature of responsible business practice (P2, P12). However, there was concern that the circular transition may have adverse impacts on certain communities that rely, for example, on fibre cultivation and manufacturing, especially in developing regions (P11). A shift towards recycled materials may reduce demand for virgin materials. Moreover, it was assumed that moving production to the point of consumption (e.g. to Europe) would reduce concerns associated with poor labour practices due to more stringent regulations (e.g. P10: *"I believe that we have a better chance of providing good jobs and better wages and being able to regulate the supply chain, because they will be closer to home"*). Although this assertion has been made previously (Robinson and Hsieh, 2016), factories can still be exposed to malpractice in the Global North, and there are also factories with high standards in developing regions (P11). This can be illustrated through scandals that emerged during this research relating to garment factories in Leicestershire, UK[31] (Khan and Richards, 2021; Van Buren III and Schrempf-Stirling, 2022).

[31]Here, despite location in the Global North, vulnerable workers faced modern slavery conditions. They were forced to work during COVID-19 national lockdowns with associated exploitative treatment (Khan and Richards, 2021; Stevenson, 2022).

When the desire for localisation strategies is combined with lowered consumption that is required for a circular FTI, then this would theoretically reduce production in absolute terms. Whilst aligned with the environmental goals of the CE the social impacts on upstream workers that, for example, work in garment factories, may be negative. This may be especially heightened when combined with drives for automation that are accompanying the CE (Dantas et al., 2021; Studley, 2021). Although speculative, there are risks of uneven distribution of socio-economic benefits, suggesting CE may not generate favourable distributional justice outcomes. P16 summarised their concerns:

> *"If we don't replace those jobs with something else, they lose a significant revenue stream. For instance, Bangladesh something like 90% of its exports are textiles. So, when we talk about the CE, we go, well, if we're, if we are moving, labour, perhaps, or moving jobs away from a certain area, we need to think about how do we replace those?"*

This predicament has garnered some attention in the literature (Berry et al., 2021; Cecchin et al., 2020; Kirchherr, 2021; Pitkänen et al., 2020; Repp et al., 2021). Indeed, Repp et al. (2021) find in the textiles sector, jobs at the point of production (e.g. South East Asia) are likely to reduce whereas jobs for reuse and recycling activities are expected to increase (e.g. EU). However, Mair et al. (2016, p.67) stipulate that they *"cannot advocate localisation on social grounds",* since global offshoring has resulted in benefits in terms of wage increases in emerging regions. Khan et al. (2020) notes the FTI has been successful in enabling women to enter the workforce, implying gender equity. These benefits cannot be completely overlooked and may indeed contribute to FHN satisfaction for some communities (e.g. *subsistence, participation, freedom*). P5 & P22 suggested that transitions like this are inherent to any industry. P5 presents an alternative view with reference to their business model that supports distributed manufacturing, which enables anyone globally to use their technologies to manufacture:

> *"...a lot of companies take quite a patronising view you know of Asia, like these poor people in developing countries who rely on us rich to give them a living. Like India is a fantastic country where you have a lot of people very aggressively growing great companies. There are great engineers, great software engineers, great garment designers. They have a legitimate market themselves...[ ]... a full flow open-access CE is a fairer economy because it gives everyone equal access and provides everyone with rewards for keeping it flowing..."*

Regardless of the sentiment above, there is currently a form of dependence between consuming and exporting nations, which ultimately can lock citizens into certain occupations without feasible alternatives (Olivares-Aising, 2018). The reuse market also leads to a form of dependence and ethical contradiction. Second-hand items are often exported to developing regions for resale, which has been debated in the literature in terms of its social implications (Leal Filho et al., 2019). Although P19 viewed the export to developing regions in a positive light due to the creation of second-hand economies, P3 expressed concerns for the potentially hazardous working conditions of waste pickers in these regions who sift through discarded clothing from developed countries. P11 & P21 noted that export to low-income regions can undermine local clothing economies (P21: *"they would rather not have like 15 million items of clothing imported every week because it does undermine their own industry"*). P6 commented that their organisation avoids sending clothes to countries where it would erode local textiles economies. However, according to literature (Manieson and Ferrero-Regis, 2022) and media reports (Basser, 2021), the issue seems to be pervasive as poor-quality items unsuitable for

reuse at the point of disposal are the ones that end up in the Global South. These castoffs may end up being dumped in uncontrolled landfills so transferring items may reduce environmental burdens in one location but shift them to another (Manieson and Ferrero-Regis, 2022; Norris, 2015).

The ethical and moral implications of transferring unwanted items abroad have raised questions as to the extent that waste transfer can be considered part of a sustainable global CE (Gregson et al., 2015; Liu et al., 2018; Manieson and Ferrero-Regis, 2022; Norris, 2015). Relying on another country to manage the externality of unwanted clothing 'waste' would constitute an undesirable dependence that prevents self-reliance of both the exporting and importing country (Galtung, 1986; Max-Neef et al., 1991). The importing nation suffers externalities (i.e. pollution causing unfavourable impacts relating to satisfying *subsistence* needs) and may further inhibit, for example, *freedom* and *identity* needs by undermining the ability of local clothing makers to compete in the domestic market. A participant noted an interesting example of a designer in Uganda, called *Buziga Hill*[32], that has taken an activist entrepreneurial approach by upcycling unwanted exports from the Global North, and marketing them *back to the* Global North. This unique case shows an effort by local designers to reclaim the local industry, seeking to reverse or at least highlight, existing hegemonic relations.

4.6. Chapter discussion

When adopting the lens of human needs per the H-SD, it is difficult to firmly establish *if* or *how* human needs are satisfied in a radically different way in a CE than in the linear economy. Various strategies are being adopted in the FTI surrounding materials, new business models and end-of-use solutions, which may have sustainability benefits. Nevertheless, both linear and current circular versions of the FTI can be interpreted as fundamentally misaligned with H-SD principles. Max-Neef et al. (1991) considered "fashion and fads" to be pseudo-satisfiers as the economic good is utilised as an *end* rather than a *means* to satisfy FHNs.

An imbalanced power dynamic between buyer and supplier has been synonymous with the linear FTI (Mair et al., 2016), and this is counter to the principles of the H-SD through the failure to construct organic articulations (Max-Neef et al., 1991). Nevertheless, businesses are dominant implementers of circularity yet are preoccupied with ensuring competitiveness. A desire for volume and price-based competition prevails as brands continue to exert their power by interacting flexibly with multiple suppliers, not altering the underlying dynamic. Abuses are primarily associated with the production phase of textiles and constitute "underemployment" for these communities (*ibid*, p.6). Thus, 'work' in this context can be considered as singular or inhibiting satisfier (e.g. overworking can present satisfaction of *protection, leisure, freedom* needs). Given the lack of engagement in these aspects in the discussions, it seems reasonable to infer that – reflecting the theoretical findings in Chapter 3 - many of these issues are *not automatically* addressed by the mainstream circularity strategies described in the analysis. For instance, taking the findings at face value, if a *virgin* polyester garment is exchanged for a *recycled* polyester garment, this does not necessarily result in worker exploitation being addressed, nor

[32] https://buzigahill.com/

does it question the underlying high production and consumption culture. Issues of responsibility, ethics and morality are largely left out of the discussion or attempted to be addressed separately. This notion has been observed by Keßler et al. (2021, p.5) who argue:

> *"Poor working conditions in textile manufacturing harm people and societies far away from the places where clothing choices are made. Recycling does not and cannot address these issues, as it intervenes at the disposal stage and leaves earlier problems in the service life of textiles untouched."*

Nevertheless, the primary data suggests that many companies are likely tackling social issues concurrently, indicating that circularity is usually embedded in wider sustainability strategies. The question then rehashes discussions in the broader sustainability literature as to whether social and environmental issues are best addressed together in circularity, or whether separately is adequate. Viewing these issues in silos ignores many of the core tenets of sustainable development discourse, including the SDGs, which are intended to be interconnected and systemic (Everard and Longhurst, 2018; Helne and Hirvilammi, 2015).

A positive development is the emergence of approaches that seek to extend the garment lifecycle through reuse, which is environmentally preferable compared to recycle strategies (Sandin and Peters, 2018). However, as observed in the primary data and reflecting the literature (Freudenreich and Schaltegger, 2020), the FTI rarely addresses absolute reductions. In dominant approaches, for example, a company may opt to implement a rental strategy: here a consumer may rent rather than own a garment, with expected environmental benefits through higher utilisation. However, in this case, the garment likely remains an individualistic object of status and hence a pseudo-satisfier. Thus, this intervention ignores querying underlying consumption habits, and still may rely on exploitative practices to produce the garment in the first instance.

Max-Neef et al. (1991) consider bottom-up organisations fundamental to producing positive societal wellbeing outcomes by providing alternatives to top-down political narratives. Much like existing observations in wider CE discourse (Korhonen et al., 2018b; Lazarevic and Valve, 2017; Schulz et al., 2019), the private sector are key implementers (and likely beneficiaries) in the FTI. However, it is worth noting that alternative forms of organization exist, but generally at small scale. This raises the question as to whether the CE in the FTI can result in positive contribution to the SDGs since the current impacts appears to be narrow rather than systemic (Ghosh and Rajan, 2019). A challenge is that activities not deemed to be profitable may be overlooked, and thus circularity only extends to economically viable exchanges linking with a growth agenda (Coscieme et al., 2020; Leipold et al., 2021). For example, in the current low-cost competitive dynamic, a materials approach is favourable whereas other integral - and potentially socially inclusive - activities such as repair and reuse, may be deprioritised (Bradley and Persson, 2022). Instead, as observed by Moreau et al. (2017), local government or NGOs may be responsible for activities that not viable for the private sector (including dealing with externalities of their business activities).

4.7. Chapter conclusion and reflections

4.7.1. Conclusion

The primary data highlight that circularity is increasingly being explored and adopted in the FTI. Existing retailers and new start-ups entering the space have been exploring the commercial opportunities surrounding reuse and resale. Further, actors such as NGOs have essentially been operating in the circularity space for decades. Although participants widely acknowledged the highly unsustainable nature of the linear FTI, the mainstream CE applications likely seem to have limitations in terms of solving economic, environmental and social challenges in equal measure. Currently the topic seems to be too nascent, and social implications are unfamiliar with industry practitioners who tend to focus on the environmental and economic benefits. Social aspects remain based on theoretical discussion rather than empirical evidence. Although this reflects the sentiment of earlier chapters, it seems especially evident in the FTI. The key takeaways are summarised below in *Table 8.*

4.7.2. Reflections on recruitment & Limitations of the participant sample

Participants were generally difficult to recruit for this study (and for the case study in the next chapters). This was something I - perhaps naively - underestimated when designing and planning this study. In hindsight, I echo the sentiment of Kristensen and Ravn (2015, p.725) who comment that the *"recruitment process is emotional work that should not be underestimated"*. In total I contacted over 130 individuals. Although participants are entitled not to respond or decline to take part, there was a significant no response rate. Hence, this could lead to a form of non-response bias (Creswell and Creswell, 2018). Others declined for various reasons, such as a lack of time or too many research requests. There was an unusual instance where a potential participant (a senior management consultant) initially expressed willingness to participate, and then finding out this was not a *paid* interview, ceased to reply. I had not deemed it a good use of limited funds to offer financial incentives given the seniority of the target participants.

There are a variety of possible reasons behind a low-response rate, which I have reflected on. A lack of willingness to reveal the type of information sought in this research could relate to risk management (Alvesson, 2003) – fast fashion companies were notably difficult to recruit despite public-facing marketing language of "circularity". These businesses are under significant scrutiny recently given scandals (e.g. Leicester factory exploitation was the subject of press attention in the UK) and greenwashing concerns. Additionally, there may be a lack of general interest or understanding of the potential value of participating in academic research since, as noted by Crinis (2012, p.176), they may *"not understand why academics would be interested in them"*. This lack of willingness to engage was demotivating, but the literature suggests that this seems to be a common but less discussed challenge for researchers; the recruitment stage receives less methodological attention compared to other aspects of research design (Kristensen and Ravn, 2015; Marks et al., 2017; Negrin et al., 2022).

Even when a participant had agreed to take part in the research, organisational bureaucracy, sometimes seemed to be a persisting hinderance. This was particularly evident for brand participants. For example, participants said they would need to check with legal teams, requested topic guides in advance of the

interviews or asked to review their responses as a condition of participation. This is possibly due to fear of scrutiny since the negative media faced by the FTI in recent years surrounding its social and environmental impacts. This perhaps hints at perceived unequal power imbalances or lack of trust between researcher and participant that must be acknowledged. I had believed that the promise of anonymity would mitigate this, but I am not convinced it always did: sometimes the responses felt like *the party line* of the company they represented, rather than honest opinion (Alvesson, 2003; Berry, 2002). As noted by Alvesson (2003, p.21) interviews that repeat the party line are not necessarily untrue, but they may limit complexity and variation of the findings, since:

> *"It is generally assumed that people want to give a good impression of themselves and also the institutions with which they identify and/or feel they represent."*

There was also an instance where a representative would not answer certain questions due to legal pr privacy concerns. Hence, these aforementioned challenges were a contributing factor in the decision to diversify the sample away from solely focusing on fashion brands as participants to broader stakeholders. Consultants were generally more willing to engage, and provided more critical insights, possibly due to their overview of a spectrum of firms, enabling a more balanced viewpoint than that of a single brand that may feel like they must defend their activities (Alvesson, 2003). Participants from broader stakeholder groups also enabled me to engage with organisations that have often been overlooked in the dominant CE, such as charities. This was a useful addition that aligned with the social narratives being explored in this thesis.

As mentioned earlier, an outcome of a troublesome recruitment process was that some participants were more junior than anticipated. This was not necessarily problematic in itself but it may limit the ability of the participants to disclose their honest opinions due to lack of authoritative strategic insight or due to concerns of repercussions if they express controversial perspectives (despite promise of anonymity). This type of organisational politics cannot be ignored and was sought to be integrated into the analysis (Alvesson, 2003). In the same vein, there were occasions where participants described themselves as a circularity expert, but the level of discussion was not as critical as anticipated. This has been noted as a challenge in the literature (Gläser and Laudel, 2009) since it is not always possible for a researcher to assess the *quality* of experts.

Table 8: Chapter 4 summary.

Chapter question	Key findings	Areas for further exploration
• *How is the CE approached in the FTI & are social impacts considered?*	• Dominant CE strategies in the FTI are at the materials-level or with add-on business strategies. • Reduction is rarely addressed; strategies are often *additional* rather than *instead of.* • Private sector are drivers of circularity, but other actors, including NGOs have been participating for decades, although not under the definition of 'circularity'. • Social impacts of CE in the FTI are not routinely discussed, but may include aspects such as: employment impacts, prices of resources, & citizen culture. These remain tentative & largely underexplored.	• Problematic parts of the supply-chain, namely production, are less discussed when compared to downstream strategies. • Human impacts, in terms of upstream labour, which are typically problematic are not necessarily addressed in CE. This needs attention to avoid reproduction of structural injustices in future FTI.

5. Case Study Part 1: Using a deviant case to identify unique socio-environmental approaches at the micro-level

5.1. Chapter overview

This chapter consists of a case study from the private sector of the FTI, where circularity and social impacts are framed as important to the business model. The H-SD is used as a lens to explore the case and develop insights into how private sector interpretations of circularity could result in satisfaction of needs of employees and wider communities. The chapter begins by presenting the aims and methodology of the study, providing justification for case selection. After, the findings of the case are presented and simultaneously discussed. Chapter 6 continues the case study with an embedded case of one of the unique aspects of the business model: a venture that combines circularity with social inclusion. The chapter finishes with conclusions and reflections.

5.2. Aims and research questions

The purpose of this part of research was to analyse the activities of a manufacturing company with circular attributes through the lens of the H-SD. Social impacts of business activities can be difficult to assess (Redman, 2018), and perhaps more challenging in the realm of the CE as there is a lack of consensus as to exactly what the social benefits of circularity entail (Alaerts et al., 2019; Clube and Tennant, 2020b). Specifically, the concept of human needs is often distanced from business practice as narrow regulatory approaches prevail (Everard and Longhurst, 2018). The case of the FTI is developed using a case study from a Vietnam-based denim manufacturer, representing exploration of the upstream part of the supply-chain that was not comprehensively discussed in Chapter 4, and is generally less explored when compared to downstream phases (Kalmykova et al., 2018). It is worth reiterating that Max-Neef et al. (1991) did not discuss the role of the private sector as the focus was on local level initiatives. However, they infer support for forms of organisation that *"challenge the logic of indiscriminate competition and dependence"* (*ibid*, p.67). Given it is increasingly clear that the role of business in current CE agendas is prominent, then exploring *how* business might induce positive human-centred outcomes for employees and wider society is essential. It should be stressed here that business is not the *only* actor, but the private-sectors dominance suggests that they are likely to be part of an interconnected set of private and public sector organisations, NGOs and civil society in transitioning to a CE (Schröder et al., 2020). The requirement of a balance between actors will be revisited in Chapter 7.

The exploration at the micro-level is necessary as the literature notes that the CE remains under-researched: Franco (2017, p.835) comments *"there is a latent need to systematically investigate the journeys of individual firms navigating the CE"*. This is especially relevant given there are a lack of practical exploration of the FTI in a Global South context. The overall research question for the chapter is:

- *How can a business contribute to satisfaction of human needs for employees and the wider community through circularity strategies?*

The use of the case is to explore the various attributes of the business model that have a focus on circularity or on social impact, or both. Conversely, it is not the aim to report all the technical aspects of the

business model. Given employment prospects have emerged as a commonly stated social benefit of the CE, including in the FTI (EMF, 2017a), this is explored as an important aspect of the social outcomes in terms of FHN satisfaction. In positivist research, the sheer fact that the business offers employment would be celebrated, but it is essential to assess the benefits of employment beyond purely economic aspects (Olivares-Aising, 2018) with more critical and nuanced exploration.

5.3. Method: Case Study approach

A case study methodology was selected and deemed appropriate due to the exploratory nature of the overall thesis topic (Creswell and Creswell, 2018; Rowley, 2002). This is an empirical method which, according to Yin (2018), allows for an in-depth investigation of a contemporary phenomenon in a real-life context, especially when the boundaries between phenomenon and context are not completely clear. They are suitable for complex topics as they can help answer the "how" and "why" questions (Ridder, 2017; Yin, 2017). Case studies can include an array of data sources to develop a rich description and exploration (Dooley, 2002; Yin, 2017) (see *Figure 6*).

A single case study methodology is adopted; one organisation was selected as the central entity to explore. A single case approach is associated with depth of description and analysis (Ridder, 2017). Thus, the method was deemed appropriate given the complex phenomenon being studied (human needs) in the CE context, with a specific focus on manufacturing in the FTI. The focus is to produce understanding of the phenomenon being studied in a complete sense, observing all the variables rather than trying to control certain aspects of the case (Dooley, 2002). Thus, generalising findings is not the goal in single case study approaches nor in the research paradigm associated with this thesis (Crotty, 1998). As such, the context remains part of the investigation, rather than an element for control (as per, in post-/positivist approaches).

5.3.1. Identifying and defining the case

Utilising an appropriate selection criterion for case studies can avoid shortcomings associated with a lack of clear selection strategy which may occur when, for example, a case is selected solely for convenience (Eisenhardt, 1989; Schofield, 2000). Initially identifying a case was challenging: from interactions and *attempted* interactions during the research presented in Chapter 4, it became apparent that the industry is difficult to engage with as an outsider. A company suitable for exploration and willing to engage with the research process was Saitex (or "the Company"). The Company has pioneering manufacturing strategies relating to the CE presenting a diversion from the industry norm, as explored in Chapter 4. Thus, its practices can be seen to depart from business-as-usual and *progressive*. A progressive business model, according to Rendtorff (2019, p.513) is *"a concept of business that combines economic earnings and profits with genuine social and environmental sustainability"*. Hence, the study of this Company is relevant since it can be considered a critical case (Flyvbjerg, 2006). *Figure 6* provides a high-level overview.

Snapshot: Case Description

- Saitex is a privately-held denim manufacturing company, which employees c.4000 people across factories based on an industrial site outside of Ho Chi Minh City, Vietnam (see *Annex f* for country context summary). There has been recent expansions to include a new site in the USA and affiliate operations in Thailand.
- Until 2021, the operations were focused only on the denim manufacturing stage, which includes the cutting, sewing, washing and finishing phases, excluding the upstream cotton cultivation and milling activities. During this research, operations have expanded upstream in line with a vertical integration strategy.
- The products are mid-premium range with retail customers serving European and North American markets. Brands include: GAP, Everlane, G-Star Raw and J-Crew; the factory output in Vietnam is c.18,000 pairs of jeans / day, whereas in the USA the capacity is expected to reach c.2,000 pairs / day.
- Saitex is recognised as having advanced sustainability initiatives, with circularity as an explicit strategy.
- The Company self-refers as *the cleanest denim factory in the world* and is the only scaled manufacturer to obtain B-Corp status in Asia.
- The Founder is still heavily involved in the business and influences the sustainability-focused vision.

Figure 6: Brief case overview.

5.3.2. Scoping and bounding the case

The study was temporally bounded in terms of duration of this research, which was limited by funding and academic deadlines. Therefore, this case study presents a snapshot in time, rather than a longitudinal analysis. Data collection of both secondary and primary sources took place between March 2020 and March 2022. This was longer anticipated as the global COVID-19 pandemic resulted in delays and bottlenecks within this timeframe, including periods where substantial data collection was not conducted (e.g. during the March-July 2020 UK 'lockdown').

The boundaries of the case in the context refer to the parameters that influence the organisations day-to-day running. As with case studies, the complexity of organisations can create vast opportunities for research but also create challenges with scoping. This was clear in this case as there are many components of the business model (see *Annex g*) that are of interest from a social and circularity perspective; these are discussed in the findings. Therefore, discussions with a manager helped establish the scope and span of influence of the organisation. This manager initially acted as a gatekeeper, which can help gain access to participants (Creswell and Creswell, 2018; Lysaght et al., 2016; Negrin et al., 2022); they were supportive of the research, although they left the organisation during the research, causing a bottleneck (section 5.3.5).

Although the scope extends beyond internal actors to consideration of external stakeholders and sphere of influence of the organisation, the focus is on the initiatives that the case has control of within its supply-chain. In terms of the organisation's own operations and initiatives, the main exploration of sub-entities being explored are where there is a circularity focus. One of these was excluded in the analysis as the initiative was in a transitional phase and was dormant (*Annex g*).

5.3.3. Data sources

Although a single case study methodology was employed, multiple data sources are collected to gain insight to the Company. The use of a range of data sources to present a holistic view of the evidence is one of the distinguishing features of a case study methodology (Yin, 2017). The collection can be emergent in the sense that findings may influence subsequent or complimentary data collection by illuminating further areas for exploration (Dooley, 2002). This was demonstrated when one of the initiatives emerged as a particularly unique project from a circular and social perspective, and so was studied greater depth, creating an embedded case explored in Chapter 6. This is because it is an especially unique aspect of the case that may have *"something special to reveal"* (Rowley, 2002, p.21). *Figure 7* provides an overview of the process.

Multiple sources of data were sought to ensure depth of information as well as to enable a level of theoretical saturation to strengthen construct validity of the case (Yin, 2017). The specific methods employed include documentary evidence; interviews; and direct observation. The features of these are summarised in *Table 1*. Maintaining a chain of evidence is an important component for reliability whilst also using multiple sources avoids the pitfalls associated with self-reported nature of data (i.e. collecting evidence only based on voices of certain participants) (*ibid*). Following suggestions in the literature, taking notes and using a database (NVivo) for data management (and subsequent analysis) were used to manage and support the practical organisation of the research, as well as to improve reliability (Creswell and Creswell, 2018; Yin, 2017).

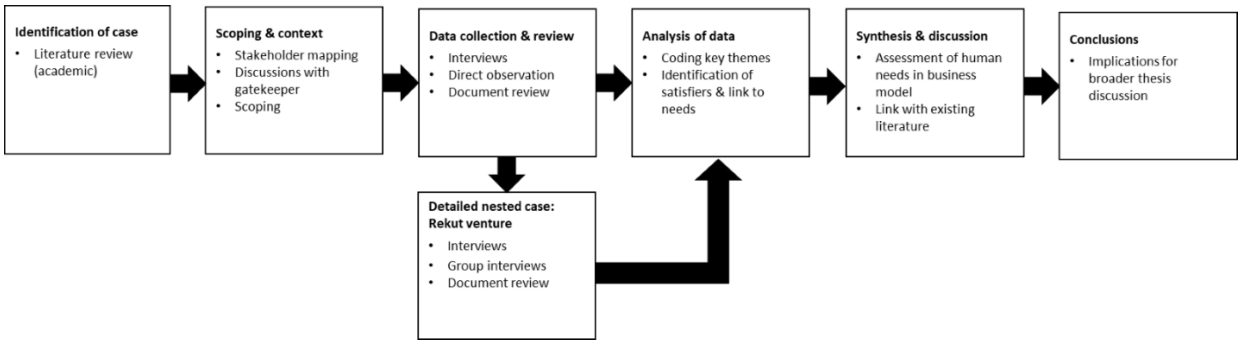


Figure 7: Overview of case study approach (the embedded venture is explored in Chapter 6).

5.3.3.1. Interviews

The use of interviews with management were used to gain context, understand the approach to the CE and assess if or how social considerations were included into the business approach. Interview data supported interpretation of the phenomenon of interest: human needs in the context of the business. An active recruitment strategy was adopted; a range of managers of the organisation were identified, contacted directly and interviewed (Negrin et al., 2022). Three interviews were carried out with partners; this was to obtain an outsider perspective into initiatives that were discussed that also helped with data convergence and reliability, whilst supporting the emergence of deep but diverse insights (Hesse-Biber et al., 2004). Although not expressly used in this study (and not included in the participant list), a one-hour unstructured conversation with a denim

expert was undertaken; this expert was familiar with the case company. Given the importance of context in qualitative approaches (Creswell and Creswell, 2018), this interaction provided some insights into the positioning of company with competitors and supported the claims regarding its superior sustainability status in the industry.

An often-discussed dilemma in interview methodology literature is the challenge of identifying how many interviews are sufficient to provide breadth, depth and saliency to result in authentic analysis and reporting (Saunders and Townsend, 2016). Interviews were organised incrementally, enabling interview topics to build on one another until *rich* and thick description of the case was achieved. As advised by Rowley (2012, p.263) the aim was to achieve *"a sufficient number of people so that people with different roles, experience, backgrounds"* were interviewed. In total 17 interviews with managers or partners were conducted. 14 of these were semi-structured whereas three can be considered unstructured due to the spontaneous nature of them (taking place at a site visit without prior planning). One unstructured interview was not recorded, and instead notes were taken during and after the interview in line with suggested protocol (Knott et al., 2022). *See Annex h* for further details of the interview participants.

Interview protocol

A topic guide was formed in advance of each of the interviews, reflecting their role. It is acknowledged in the literature that often interviews do not go as planned (Crinis, 2012). A semi-structured approach is flexible with regards to how questions are phrased, and in which order the are asked (King and Horrocks, 2010). Although the aim is for the researcher to still maintain the control, semi-structured approaches allow the participant to take the interaction to unanticipated topics (*ibid*). The interviews with a variety of participants – including both internal and external to the organisation - meant that inevitably different topics were raised and discussed depending on their expertise. This can be seen as supporting data convergence as statements were verified between participants.

A conversational approach was taken in the interviews (per Berry, 2002, p.682 describing them as *"casual comfortable conversation"*), as this helped develop rapport and trust with the participants, and often resulted in novel topics and insights, eliciting unexplored avenues to arise. It was also necessary for tailored questions were made for each participant to reflect their role in the organisation. This was an iterative process, as in early interviews it became clear that certain participants would have little explicit knowledge of certain parts of the organisation, and so the topic guide was often of little use. This reflects an observation by Crinis (2012, p.187) that summarises the interview process: *"research is messy and never goes smoothly"*. For instance, on one occasion a technical manager did not equate some of the strategies as being socially beneficial and instead diverted to discussing specific aspects of machinery in much greater detail than relevant to this work, and despite attempts to refocus the interview would revert to their core technical expertise. Nevertheless, this did not mean their role had no social impacts, and the H-SD framework was used to interpret whether activities may have social impacts internally (i.e. for employees) and more broadly (i.e. local communities, wider society).

Interviews varied considerably in length depending on the participant's availability, interest in the subject matter and willingness to engage in the research process (Rowley, 2012). Usually, the interviews lasted approximately 25-70 minutes in duration. In some cases, additional informal conversation or fact checking in person or via electronic means supplemented the interview process. This was usually for confirmatory purposes when conflicting or ambiguous information emerged in the primary and secondary data.

5.3.3.2. Document evidence

The review of secondary document sources can support ensuring that the rich description sought in case study approaches emerges (Bowen, 2009; King and Horrocks, 2010). An initial and ongoing process in the data gathering was applied to evaluate documentary evidence comprehensively and systematically. In this case study, the type of documents can be separated into internal and publicly available documentary evidence (Bowen, 2009). Internal documents included non-public reports and presentations; company protocols; and work-in-progress documentation. The use of publicly available documentation was utilised to a greater extent than intended, due to the COVID-19 pandemic disruption causing a bottleneck (section 5.3.5). As well as Google searches, the newswire search database *Factiva* was utilised to identify articles discussing the organisation. These sources included short press articles and journalistic opinion pieces, which helped contextualise the case and how it is perceived within the industry, as well as certification information. As noted in *Table 1*, the source of the documentation lead to a critical outlook being used, reflecting on the source of the information and objectivity issues (e.g. marketing pieces) (Bowen, 2009). The use of documents illuminated features of the organisation which were not spontaneously mentioned, informing probing into these topics. The documents were rationalised to reduce the burden in terms of volume, as many repeated the same publicly available information. In total 35 documents (Dn) are utilised in the final analysis (*Annex i*).

5.3.3.3. Site visit (direct observation)

Direct observation is a common feature of case study research as it provides an insight into *"the real world setting of a case"* (Yin, 2017, p.121). It has been recognised as a powerful method utilised in case research (Creswell and Creswell, 2018), especially in textiles manufacturing where it is typically difficult to obtain access (Boström and Micheletti, 2016; Crinis, 2012). Observation helps reflexivity and can support convergence of other methods. It provides reliability and richness to studies since the researcher can verify information from other data collection (Yin, 2017).

In original planning, the primary data collection aimed at reaching a broad range of actors with involvement or connection to the organisation, including garment workers through site visits enabling interviews and observation. However, two planned visits to the Vietnam facilities were postponed, and then eventually cancelled, due to the COVID-19 pandemic. Vietnam had extremely strict protocols prohibiting non-citizens from entering the country, which remained in place until Spring 2022. Hence, site visits to the Vietnamese premises were not possible. This hindered the research process and unfortunately lead to cancellation of the planned activities. Managers shared some photographs of certain activities that were utilised as observational evidence. However, it was not possible to interview or interact with garment workers in Vietnam, which is a shortcoming

of this research. Nonetheless, after delays, a site visit to the USA facility took place in November 2021 enabling direct observation of one of the factories, albeit in a casual manner rather than formally (Yin, 2017). This included observing the manufacturing process and technologies (i.e. physical artifacts), seeing how garment workers carried out their roles, and meeting with some management participants face-to-face.

5.3.4. Analysis

Nvivo was utilised to store and analyse both interview data and documents. First, using NVivo's *cases* denoted the part of the business the discussion or documentation related to (e.g. between charity, core operations, LA operations, circularity ventures etc). These divisions are utilised to structure the findings section. The next phase involved identifying possible satisfiers within the data; this was highly interpretive and based on the researchers experience with the concept of FHNs and satisfiers. Given the fact that in some cases technicians were interviewed and focused the discussion on technical elements and processes, then this had to be interpreted in terms of H-SD aspects. For example, a participant did not explicitly state that lower chemical use has safety benefits for employees but rather focused on the environmental impacts, but this is highlighted in the literature and by other participants. Thus, lower chemical use can be interpreted as a satisfier of the need for *protection.* NVivo's annotation function was utilised to record themes and reflections.

5.3.5. Methodological reflection: navigating research in COVID-19

The research process was disrupted due to the COVID-19 pandemic; the original research design and planning was established prior to the global outbreak. This constitutes a "research setback", which was a commonly experienced by many doctoral students during the COVID-19 pandemic, according to Jackman et al. (2022). Since Vietnam had strict lockdown protocols, preventing two originally planned site visits, this caused a major bottleneck in the research. Compounding the situation, the gatekeeper left the company during this time due to the lockdown preventing them from visiting their family oversees. This made navigating the company challenging, and it became clear that the Vietnam lockdown situation might not improve in time to conduct the research. This was a stressful time of uncertainty for me. At one point, I considered trying to find an alternative case study manufacturer. A contact led to me having a conversation with a second manufacturer in 2020 (during the COVID-19 pandemic timeframe). They showed interest in the work, but ultimately declined to allow me to use their company as a case. It was claimed that the cancellation of orders and subsequent impacts on the garment workforce (without benefits such as government Furlow in that developing world national context), resulting from the pandemic had left a hostile environment towards western brands, and so it would not be suitable to have an external western researcher during this time.

The only option left was to navigate the COVID-19 situation by refocusing efforts on studying documentary evidence and speak to whoever was willing to share their insights at the case study organisation. The embedded case in Chapter 6 was conducted during the lockdown, and later when restrictions lifted in the USA, I was able to visit this premises of the case study instead of Vietnam.

5.4. Findings

In this section findings are presented with reference to existing literature. It begins with a brief overview of the case identify the key aspects of the Saitex operations where circularity is applied and note any direct or inferred social implications with reference to the H-SD framing. These are summarised at the end of the section in *Table 9.* The core tenets of the company labour strategy are introduced. Although this does not directly relate to circularity, it can be considered as relevant given the discussion of Chapter 4 that states the importance of addressing both social and environmental aspects concurrently in CE approaches.

5.4.1. Overview

Saitex was first established in 2001 as a sourcing business, with its first factory operations in 2005 (D20, D25). The Company developed its strategy in response to the exploitative FTI with the premise that *"garment manufacturing does not have to cause environmental damage and what we call human slavery"* (IA). Chapter 4 outlined some of the impacts of the FTI, but denim is considered particularly environmentally and socially problematic due to high chemical and water use, as summarised in *Figure 8.* (Periyasamy and Militky, 2017). In 2010, a move from rented to owned facilities to enabled reinvention of the strategy, transitioning from conventional manufacturing model to a recycling model, and then explicitly to circularity (IF, D8).

Denim Snapshot

- Denim is cotton-based fabric and is traditionally considered to be highly durable, hence its early uses were for workwear. However, denim increasingly became an object of fashion and everyday casual wear, influenced by cowboy depictions in Hollywood cinematography (Hobson, 2013; Statista, 2022b). Today, it is considered a staple fashion item, especially in western nations (Statista, 2022b).
- China is the largest exporter of denim, typically focused on volume-based production (Amutha, 2017).
- Denim jeans account for the largest proportion of the global denim market; the market's value was USD$57.3 billion in 2020 and expected to reach USD$87.4 billion in 2027 (Statista, 2022b).
- Denim has high resource demands in terms of water, chemical and energy inputs (Amutha, 2017; Periyasamy and Militky, 2017), and so is associated with resource depletion and pollution concerns (EMF, 2019).
- Denim has been a target of the EMF (2019), who produced an 18-page document titled *The Jeans Redesign Guidelines* laying out strategies for circularity (EMF, 2019). This reiterates the EMF's core principles to: design out waste & pollution; keep products & materials in use; and, regenerate natural systems (*ibid,* p.5).

Figure 8: Denim snapshot*.*

The Founder was frequently associated with the culture of both environmental and social sustainability and is leading a developing circularity agenda; their close attention to sustainability issues was deemed unique (IE, IG, D11, D20, D33). Strong leadership has been noted as an antecedent to a progressive CE agenda (Chiappetta Jabbour et al., 2019; Sousa-Zomer et al., 2018). The sustainability culture has supported the realisation of a positive reputation in the industry with regards to sustainability credentials, which in turn justifies a premium price to be accepted (D11). Positive reputational impacts have been recognised as an advantage of

CE adoption (EMF, 2017a). The Company has explicitly sought to align the strategy using the SDGs (IQ, D7, D24), which is a feature of a progressive business approach (Rendtorff, 2019). It was stated that *"you have legacy to be responsible with where you live, and in your surroundings"* (IQ). CE development is an ongoing process (reflected in extract below from IQ) with participation in initiatives, including certifications and schemes (D10, D26, D29) (*Annex j*).

> *"...being aware of circularity is one thing, but you know, continuously improving is a non-stop process. So, I would say we got aware of it over a period of time, but we've got a path of continuous improvement, because we have to keep on tweaking the model."*

The data suggest the approach can be replicated by others and so sharing expertise and strategies can help the industry progress (IQ, IO, D10). This relates to transparency, which is often interconnected with sustainability (Mol, 2015). For instance, IO explained:

> *"Most people do not share, there are lots of companies like this. We are open, we do not care about that. You can do the same way as us, that is how it will get better."*

Until 2021, Saitex was focused on the denim manufacturing stage, thus excluding the upstream cotton cultivation and textile milling activities. Nevertheless, towards the end of the research process a mill was opened, representing the first move away from denim processing to including upstream activities, such as spinning (section 5.4.9). Circularity is being applied in the main operations through technological approaches that link to cleaner production, with a focus on showcasing the economic appeal of sustainability. Incremental projects are being formed to target problematic operational areas (e.g. pre-consumer waste); in this analysis these are referred to as 'circularity initiatives'. In the core operations in Vietnam, the CE approaches tend to equate to *narrowing loops* strategies but the circularity projects are wider in terms of circularity principles, including *slowing* and *closing* loops (Bocken et al., 2016). Self-regulation approaches are applied through obtaining certifications[33], which can ensure external arbitration of efforts through meeting the required standards, including related to circularity (*Annex j*) (EMF, 2019).

5.4.2. Community impact charity engagement

In conjunction with an ethos for positive impact, the Company have typically engaged with numerous charitable causes and related voluntary efforts that relate to a culture of responsibility. 0.1% of profit is assigned to causes such as nature restoration; water entrepreneurship; supporting disadvantaged communities; and other local charities (IB, IK, D20, D21, D27, D29). The focus of these charitable activities is on *local* engagement in order to positively impact communities in a relevant manner. For instance, Vietnam is facing challenges associated with deforestation (*Annex f*), so Saitex has planted 8000 trees in the industrial area and supports mangrove conservation efforts though a charity partnership (D7). This supports efforts to offset emissions, with aim to achieve a net positive impact (IQ, D31) but it is also framed as improving the environment for local communities

[33] The effectiveness of certifications as a governance mechanism is increasingly being critiqued in the academic literature in light of greenwashing concerns (Dobos and Éltető, 2022). I co-supervised an MSc student thesis exploring the robustness of textile certifications (see Davies, 2022); the findings suggested some certifications may lack substantive potential as they rely on external audits, self-reporting and only focus on certain parts of the supply-chain.

(D7, D29). This hints at a regeneration aspect of the business model by attempting to enrich environments traditionally degraded by conventional industrial approaches.

Charitable activities are traditionally known as CSR (IE) since they are external and donation-focused; Tien et al. (2020) note that CSR is only a recently emerging concept in Vietnam. There has been critique in the literature as to what extend donation-focused corporate activities are effective means of achieving transformative impacts (Sharma et al., 2018). Max-Neef et al. (1991) suggests that charity typically is a pseudo satisfier of *subsistence*, probably because they may fail to encourage self-reliance. However, supporting charities goes beyond solely financial help in this case. Four local orphanages are supported financially but when any of the beneficiaries reach working age, they are offered the opportunity of employment (IA, D9, D32). Hence, this illustrates a longer-term commitment to instilling social value into communities (Rendtorff, 2019), likely supporting satisfaction of FHNs for these vulnerable people. Hence, charity in this instance goes beyond traditional one-way donor relationships to more sustained human development.

5.4.3. Labour strategy

The human-side of business models are often addressed separately to circularity strategies as the CE is generally interpreted as a resource-centric concept (Chapter 4). Nevertheless, this reality is paradoxical to normative assumptions in the CE and wider sustainable development literature. For instance, Chiappetta Jabbour et al. (2019) claims labour issues are socially relevant whilst (Palm and Cornell (2020, p.5) declare that *"environmental resources and their use cannot be completely divorced from their social aspects"*. Chapter 4 suggests that they persist to be 'divorced' in practice, yet the workforce is an essential component of any organisation, especially in labour-intensive garment manufacturing. Saitex employs c.4000 people (D27), so exploring how their workforce is treated is an important aspect of the overall strategy. The data suggests that the Company has sought to reverse the FTI's unethical logic of low labour standards. The Company sought to *prove* that profitability and decent labour strategies are not mutually exclusive (IA):

> *"...we have focused a lot on giving jobs with equal pay and respect because this was something that was missing a lot from the supply chains of garments. This is why Saitex came to Vietnam, because just to give jobs to people where they are treated well. But I mean of course that is not a charity project, but just treating people as they should be treated."*

All employees are referred to as "associates"; this is something embedded into the culture by the founding director to reflect dignity and respect towards the workforce (IG). This conscientious use of language suggests an effort to view workers as individuals, rather than mere factors of production – something Max-Neef et al. (1991, p.77) was highly critical of since it constitutes "reductionism".

The Company appears to have a labour regime that goes beyond the minimum, compliance-focused standards (although there are also various baseline labour and safety policies[34]) (IE, IM, IK). In essence, there is evidence of countering prevailing industry "underemployment" (Max-Neef, 2010; Max-Neef et al., 1991). The

[34] These internal policies cover issues such as non-discrimination, human rights values, anti-harassment, disability etc. Certifications, such as B-Corp, also cover human issues (*Annex j*).

data infer that a living wage rate is paid to the workforce (D5, D7) well beyond the local minimum wage (IK), and reportedly 1.5x the industry standard (D9). The typical working day is 6 days per week 8am-5pm with breaks and, if desired, there is optional paid overtime (IK, IL). Flexibility may be a satisfier of *subsistence, protection* and *freedom*, if not at the expense of satisfying *leisure* or other needs (e.g. by not demanding unfavourably long-hours).

Furthermore, satisfiers can be assumed to link to features such as a superior health insurance package, special bonuses and assistance funds, Fair Trade contributions and other non-financial benefits such as lunch and transportation support are evidence of support beyond the basic pay (IE, IK, D3, D4, D24, D35). The Fair Trade Fund enables customer contributions to go directly to causes decided by the employees themselves (IK, D29, D35). Hence, collectively benefits can internalise some of the costs associated with being in the workplace. These aspects can be assessed as contributing to FHNs, such as *subsistence, protection, leisure* and *freedom*. Engagement with labour advocacy organisations, such as BetterWork[35], signals external arbitration by providing audits and recommendations (IL: *"they will look at health, safety, environment, salary, working time, trade unions*").

Efforts are made to give the workforce procedural participation to communicate requirements and grievances (IK, IL, D33). For example, there is an annual *"*Needs Assessment Survey*"* where employees can put forth suggestions to improve their working experience; this involvement can be a satisfier for *participation* needs (IK, D27, D29). There is an active trade union, which is noteworthy since union representation is typically low or forbidden in the FTI (see Chapter 4). Scholars suggest that trade unions can provide valuable agency, helping to actively shape working conditions and hence supporting a power balance (Khan et al., 2020; Teipen and Mehl, 2022). The Trade Union's role mainly supports the acquisition of more benefits for workers and supporting grievance processes (IK). Objectively speaking, it is difficult as an outsider[36] to assess the extent that union representation impacts the workers' daily lives, but it was stated that: *"Saitex's union is extremely powerful and we always respect the opinions of employees"* (IA). Such participation mechanisms that enable *genuine* agency are compatible with human-centred outcomes; Max-Neef et al. (1991, p.36) explicitly specify that democratic trade unions are a synergic satisfier of *understanding, participation* and *identity* needs.

Although labour benefits and CE seem to be compartmentalised with limited direction to environmental aspects, there are internal strategies that support education of sustainability issues for the workforce. For example, the Company hosts weekly "Environment Days"[37] where employees are invited to learn about projects, such as visiting the Company farms (section 5.4.5) (IK: *"we want people to learn what we are doing in our sustainability projects"*). Educational aspects can be conducive with CE approaches that extend beyond the typical technocratic narrative, as noted by Morrow and Davies (2022). Diversity and inclusion are

[35] Associated with the ILO (introduced in Chapter 1) - https://betterwork.org/

[36] As explained in the Chapter methodology, direct interactions with factory workers were not possible. However, even the fact that the case was *willing* to have an academic researcher visit the premises can be interpreted indicates that the company is not concerned by external visitors whereas scholars such as have noted that FTI factories are generally difficult to engage with due to fear of scrutiny re labour standards (Crinis, 2012).

[37] These were paused during the COVID-19 pandemic but are planned to restart.

another emerging focus[38], which is somewhat unusual in the industrial sector in Vietnam (IE). The Company has publicly pledged to have 20% of the workforce consisting of persons with disabilities or from vulnerable backgrounds by 2025 (IG, D13, D23, D32). This inclusive outlook is being diffused into the company culture through proactive recruitment strategies and supporting mainstreaming through offering sign language classes and developing inclusive training (IG, D14, D15, D32). In theory, educational activities can contribute to satisfying needs such as *participation* and *understanding*. This aligns with calls by Chiappetta Jabbour et al. (2019, p.797) for "eco-focused employee empowerment" and an "ecological organisational culture" to support CE strategies.

5.4.4. Circularity: Core Operations

5.4.4.1. Energy use

Energy conservation and the use of alternative energy sources, including solar, wind and biomass, are utilised which minimises fossil fuel derived sources (D1, D3, D27). This aligns with core CE principles to prioritise renewable resources outlined in Chapter 3 and are focus areas for the FTI given persisting high emissions (EMF, 2017a). The use of alternative energy sources can support transitioning to a safe and clean environment (McDonough and Braungart, 2002); unpolluted, clean air has been described as a universal satisfier of *subsistence* and *protection* needs (as it contributes to good health) (Costanza et al., 2007; Kobayashi et al., 2019; Rao and Min, 2018). Approximately 40% of energy is generated from onsite solar panels. To reduce other energy-needs, low technology approaches have been designed into infrastructure (certified through LEED, *Annex j*). For example, the factory was built to prioritise use of natural light sources, reducing electricity requirements (D3) but also improving the working environment for employees. Usually drying denim is energy intensive. However, overhead air-drying techniques are adopted with a short machine-drying finishing process (IA, D25, D27), which is an unconventional low technology approach. This saves up to 85% of the energy needs for drying and so is environmentally and economically beneficial (IA, D18, D25, D27). Furthermore, boiler steam generation is typically fossil fuel dependent, but a 100% biomass approach is adopted, utilising wood scrap waste from the furniture industry or agricultural wastes (D6, D11, D24). The use of a by-product from other sectors contributes to closing loops via open-loop recycling.

5.4.4.2. Water recycling

Water demands are high in denim processing (*Figure 8*), and ecosystem pollution relating to contaminated water discharged in the typical linear approaches are well-documented (Amutha, 2017; Franco, 2017). This is a local challenge as effluent from factories frequently enters waterways despite regulation (IB):

> *"So now it is about 60% of the factories in Vietnam in the industrial zones will just discharge the wastewater directly into the water, into the rivers and ecosystems completely untreated. Like full of pesticides, heavy metals, everything you can imagine goes back into the traditional water sources..."*

Efficient washing approaches and closed-loop water recycling are adopted (IM, D18), which reduces inputs of freshwater. An onsite effluent treatment plant enables the Company to *"perfectly clean all the water*

[38] This extends beyond gender equality, although the Company has c.55:45 female to male share (D33).

we use and put it back in the system and this allows us to use much less water than on average" (IA). Through reverse osmosis and nanofiltration cleaner production techniques, 98% of water is cleaned, removing indigo dyes and other chemicals, and recycled, with 2% being naturally lost due to evaporation (D22). Low-technology approaches, such as rainwater harvesting, are also applied in the factory (D25). Although the exact figures vary depending on the product finish, document evidence suggests that jeans can be produced with 1-1.5L of water/ item compared to an industry norm of 80L/ item (D11, D34). The literature notes that upfront technology costs are a barrier to instigating circular manufacturing techniques, since investment requirements required are often significant (Govindan and Hasanagic, 2018; Kazancoglu et al., 2022). However, an initial investment of c.$2,000,000 for the closed-loop water system has positive economic impacts by reducing the water bill by c.US$350,000/ year (D9, D10, D25). The EMF (2017) notes the financial advantages of such technologies.

Reducing water use is an environmental requirement, but also a moral imperative for Saitex (D22[39]. Clean water has been described as a synergic satisfier in other H-SD studies and is an important resource for (et al., 2019; Kobayashi et al., 2019). Efforts to reduce water use have benefits in terms of efficiency and hence profitability, but are also socially preferable.

The circular water conservation strategies applied by the Company prevent over-abstraction and contamination of vital water sources for local communities and the aquatic environment (IA, D7, D18). This can thus be interpreted as supporting satisfaction of FHNs for local communities, or at the very least not contributing to furthering pollution as commonplace (D6). Water reduction is thus interdependent in terms of realising economic, social and environmental goals.

5.4.4.3. Reduction in chemical use

Typically, hazardous chemicals are pervasive in the FTI despite attempts to eliminate the use of the most dangerous across the industry (e.g. silicon, potassium permanganate)[40] (Hobson, 2013; Periyasamy and Militky, 2017). A lack of enforced global regulation has been noted as problematic, so in the absence of this it can be argued that *"the use of such chemicals becomes a moral issue"* (Börjeson and Boström, 2018, p.235). Chemicals can harm workers through direct contact during tasks or spillage accidents, and wider communities by indirect exposure through drinking and other points (e.g. through wearing clothes, contact with contaminated water etc) (EMF, 2017a; WHO, 2018). Therefore, circular strategies that reduce chemical use or prevent exposure can lower risks associated with their application.

A precautionary approach to chemicals is applied at Saitex by utilising certified safer chemicals. The Company is a certified BlueSign laundry, which is a certification scheme (D1, D7, D10). Dieketl et al. (2021, p.6)

[39] The founder was quoted in a BBC article (D22), implying that the focus on water is not only economic and environmental, but also moral: "*Morally it pushed us to start looking at water as a very valuable resource.*"

[40] Potassium Permanganate is often recognised as the most dangerous chemical traditionally applied. Saitex phased out its use through enzyme substitution, laser and technological approaches. Exposure is directly linked to a variety of health issues, explained by Periyasamy and Militky (2017, p.184): *"When the skin is in direct contact with potassium permanganate it may cause irritation or burning, redness, pain and itching. In the case of eyes it may cause damage or permanent loss of vision. Exposure may irritate the respiratory tract and ingestion may cause nausea, diarrhoea, and other gastrointestinal issues. Doses of 10g may cause severe health problems such as cardiovascular collapse, irritation in the nose and lungs, and kidney damage, or may cause death."*

claim that BlueSign is "*considered to be one of the strictest ecolabels regarding chemical use*" whereas Fontana et al. (2019) classify it as *medium* in terms of ease of implementation. The Company adheres to various other certifications and standards (*Annex j*). Nevertheless, the legitimacy of certifications in terms of their ability to demonstrate truly transformative change is an increasing point of discussion (Davies, 2022; Dobos and Éltető, 2022). For example, Dobos and Éltető (2022) note that despite the increasing growing number of certifications focused on the FTI (>100 claimed in the article) *"their effectiveness is questionable"* since many may represent *weak* self-regulation.

Regardless, improving the health of workers has been recognised a social benefit of CE (Mies and Gold, 2021. The WHO (2018) specify chemical management as an area with an explicit link between CE and health. Specifically for denim, the EMF (2019) highlight that reducing chemical use is essential from an environmental and human health standpoint, but also to improve the likelihood of recyclability at end-of-use (a barrier noted in Chapter 4). At Saitex, water and chemical usage are further reduced by applying laser technologies and ozone treatments to imitate 'washed look' denim finishes artificially (IO, D7, D25), rather than rely on traditional cheaper but hazardous approaches such as sandblasting that have been directly linked to deadly disease (e.g. silicosis) (Amutha, 2017; EMF, 2019; Hobson, 2013). Alternatively, scholars note that laser technology is best practice for the environment and society (Nayak et al., 2022). For workers it can reduce tedious tasks and reduced risks of chemical exposure whilst it is ecologically preferable through eliminating water and chemical inputs (*ibid*). The secondary (D7) and primary data notes this advantage as IO stated:

> *"The best way on the sustainability everyone knows about, that is the laser. The laser can the reduce and remove many chemicals and can reduce the manpower, energy etc. So this is why focusing on the laser is so important."*

Robotics with four 'arms' spray four pairs of jeans per minute, whereas manually a worker would take one minute per pair (IO). Hence, although this prevents chemical exposure, it also completely reduces human input, which may have tricky ethical implications (Studley, 2021). Robotic spraying enables more precision with chemical use, minimising inputs[41]. At the same time, robotics ensure consistent quality as a "master" sprayers movement is digitally stored and simulated, reducing the need for many highly skilled sprayers that can be difficult to recruit (IO). Workforce risks can be lowered by reducing exposure to potentially harmful chemicals (IO: *"the workers do not come directly into contact with this* [hazardous chemicals]*, this is the robotic system is the solver for this problem"*).

Ultimately, technological strategies can be interpreted as enhancing safety related to hazardous chemicals (IO: *"Saitex invests in the technology to overcome these concerns"*) and may contribute to satisfying *protection* needs of workers (D7)[42], but also, of final users (D18). As identified in Chapter 4, hazardous chemicals potentially cause unintended harm to citizens when they wear or dispose of clothing (IO) and result in additional chemical leakage into the environment (Bosman et al., 2020; EMF, 2019; Rovira and Domingo, 2019).

[41] The website of the technology manufacturer suggests that robotic spraying can save up to 40% chemical use and provides an ecological closed-system alternative.
[42] It should be noted that technologies, such as laser, are not inherently free from hazards but the infrastructure has safeguards.

5.4.4.4. Waste reduction and revalorisation

Waste products include water, chemicals, sludge and fabrics, and strategies are ongoing to manage these by-products (IM, D10). For instance, testing took place to use sludge from the wastewater treatment as an input for brickmaking for local affordable housing. Although this is not an ongoing project (IQ) it demonstrates the desire to experiment with waste revalorisation, including for social value.

Different digital applications are being utilised at the design phase (IO, D7), including in the through eco-design to reduce physical sampling needs (i.e. dematerialisation) that can be wasteful and time-consuming, which has been noted in the literature as critical to CE objectives (Franco, 2017; Lieder and Rashid, 2016). Technologies such as robotics and semi-automation improve efficiency and reduce wastage due to human errors (D26). Semi-automatic sewing machines are utilised, enabling speed and consistency. The literature suggests these technologies can also free workers from arduous tasks, whilst potentially reducing repetitive strain injuries (e.g. Periyasamy and Militky, 2017 suggest 70% of sewing workers using a manual foot pedal report back pain). Hence, this technology can reduce wastage whilst improving the experience of the worker simultaneously.

A recent focus has been on addressing pre-consumer (production) waste. This waste is by-product of the manufacturing process and includes textiles from the cutting phase of manufacturing, such as offcuts and end of fabric rolls, as well as rejected garments (e.g. due to quality issues); the margin for manual error must also be incorporated in the fabric order (IC). Pre-consumer waste is pervasive in the FTI (Dahlbo et al., 2017; Shirvanimoghaddam et al., 2020). Managing this waste responsibly typically incurs a cost that is usually the onus of the manufacturer as brands will not account for this since it is often contractually the manufacturers liability[43] (D2). IA stated that *"unfortunately brands do not take responsibility over even just the fabric waste that comes from their production here"*. This reiterates the power imbalance between buyer and supplier (Chapter 4), but also implies that brands fail to fully manage the negative impacts of their own production , commonly shifting responsibilities upstream. Due to the onus being placed on suppliers, cost pressures can result in these pre-consumer textiles being irresponsibly managed by incinerating, landfilling, or dumping this material in the ocean or waterways (IP). Saitex had stored this material over the years, pre-empting the desire to revalorise it in the future. Currently, two *closing loops* strategies have been adopted to tackle the pre-consumer waste challenge (see sections 5.4.6 & 5.4.7, further explored in Chapter 6). These both counter the prevailing CE strategies of *downcycling* by focusing on *upcycling* (McDonough and Braungart, 2002; Sandin and Peters, 2018). The forementioned activities cannot be assumed to *directly* induce FHN satisfiers, but could be argued to lead to community or broader system level benefits as implied by IA:

> *"...all surrounding communities will benefit from us shifting to a more CE strategy. For example us using waste as an input to the factory this will reduce how much will have to be disposed of in incinerators and landfill, and help the wider environment. This is part of a bigger system."*

[43] Although not raised in Chapter 4, in a discussion an interviewee from that Chapter's study noted that the "pre-customer stock is still blackhole of no information" (P19). Visibility about how much pre-consumer waste is generated is difficult to ascertain in the public realm. Niinimäki et al. (2020) note that study estimates suggest as much as 10-30% of fabric is wasted.

Such assertions have been made in the literature; for example, Leonas (2017) notes that it can reduce toxic emissions from landfills whilst both the WHO (2018) and Govindan and Hasanagic (2018) connect such aspects to improved public health outcomes. However, these seem to be more indirect in nature since without all other factories in the region aligning their strategies either voluntarily or through more robust legislative requirements, then the impacts will be insignificant.

There was recognition of problematic post-consumer waste but the span of activities or influence as a manufacturer does not extend beyond the factory (IA, IQ, D2). This is not addressed in the current business model (IA, IQ). Although unscaled and under development, a premium upcycling brand has been acquired focused on post-use[44] and, more generally aspires to further address post-consumer waste in the future (IQ).

5.4.5. Circular Initiative: Saitex Farms

Saitex supports its workforce to be well-nourished with all employees receiving lunch onsite daily (IK, D24). This positively responds to concerns in the literature as Prentice et al. (2018) identify that factories fail to encompass broader health and wellbeing issues, such as affordability of nutritious food, and instead focusing on narrow compliance approaches (e.g. basic safety measures). Developing this pursuit of supporting employee wellbeing, onsite farming was introduced: this is not typical of a textiles manufacturer but is considered part of the "circular mindset" (IA, D26) as the farm is run with circular principles (IK). The initiative is non-commercial and *"has a vision to give back"* (IF). There are currently four fulltime employees, and the wider workforce is linked to the project in terms of accessing the produce (*subsistence*), which uses minimal chemical input (*protection*) and enhancing the local surroundings (*leisure*) and learning opportunities during Environment Day visits (*understanding, participation*). IF explained that onsite farming activities can be connected to various SDGs[45].

The farm consists of 3 hydroponics containers[46], a greenhouse, and open-air planting (D27). The farm produces a range of food including various fruits (e.g. tomatoes, melons, mangos), vegetables (e.g. kale, salads, chard) and herbs (e.g. oregano, basil, mint). The produce is sold internally to employees at affordable prices and donated to staff that need it the most, supporting *subsistence* needs (IF, IK). An ultimate ambition was highlighted as being able to supply the canteen with produce, which, if eventually achieved, would help ensure self-reliance. Donations are prioritised for pregnant employees (IF, IK, D27, D29) (e.g. according to D27, 50% of produce in 2019 was donated). This implies a level of intergenerational responsibility with an ethic of care (Pla-Julian and Guevara, 2019) that can be interpreted as further satisfying *freedom* needs. This was acknowledged by IF: "*We have to take this earth from one generation to the next generation so we have to do something good for them...*".

[44] A premium US based operation that upcycles denim garments: https://atelierandrepairs.com/

[45] These SDGs include: SDG2 (Zero Hunger); 3 (Good Health & Well-being); 12 (Responsible Production & Consumption); and 13 (Climate Action).

[46] The original container was initially part of a funded project by a buyer. Although the partner was not interviewed for the research, documentary evidence gave some insights for the reasoning behind the initiative (D12), suggesting current agriculture practices can violate FHNs (e.g. *subsistence, protection*): *"…addresses the rampant use of unregulated pesticides in Vietnam, which has severely degraded soil health and water quality. As a result, existing sources of local agriculture leave Saitex's employees at risk to exposure to dangerous chemicals."*

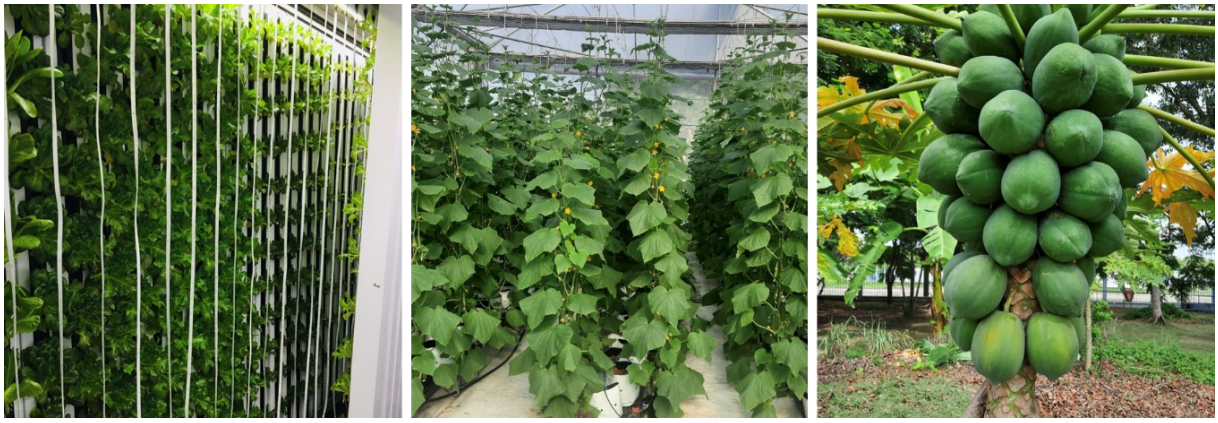
Circular approaches linked with bioeconomy techniques are applied (IF). Crops are grown vertically in a highly controlled environment using LED lighting without soil (*Images 1*). Hydroponics systems are space-efficient whilst crops are not exposed to variable climatic conditions (Schneider et al., 2021). Closed-loop water systems are used in the containers; approximately 500 litres of water are used per month for circa 2500 plants, whilst drip-irrigation is used in the greenhouses in line with water conservation strategies. Water savings were considered a social benefit (IF); water is a scarce resource relevant to food security (Padilla-Rivera et al., 2021). Thus, it can be connected to ensuring satisfaction of *subsistence* and *protection* needs.

Energy requirements can be high in container hydroponics; currently they are run on conventional electricity sources but with plans to shift to renewable sources. Experimentation using plant stalks as a substrate; applying local cow dung; and vermiculture have been carried out successfully to ensure supply of nutrient-rich compost, enabling self-sufficiency in terms of inputs (IF, D29). They are also self-sufficient in seeds, having preserved them from previous harvests (IF). Furthermore, existing resources are utilised to avoid chemical fertilisers in line with organic principles, countering excessive pesticide use in the country (MarketLine, 2021). A frugal circular mindset has enabled experimentation to minimise chemical use (IF):

> *"If I say we do not use anything for resisting those insects then I would be wrong, we definitely use things to spray on the plants but here the CE comes into play - we have a lot of rice which we throw away from the canteen, but I make sure that we do not throw it away. I get it from the canteen, ferment it for 21-25 days and make rice alcohol from it and use it and spray it on the plant and the plants have absolutely no insects or fungus on them."*

Surrounding areas of the factory are being used to cultivate edible and non-edible shrubs and trees, which can provide spaces for employees that may satisfy *leisure* needs (IK: *"any available space to create something nice for our employees"*) (*images 1*). It was suggested that it is important to think ahead, so trees with long lifespans are selected (IF: *"If I am not here, the plants will continue to grow so I make sure I plant trees that will grow for maybe 60, 70, 100 years"*). This implies a level of intergenerational responsibility as benefits will be reaped by future employees. Attention to conservation in this context addresses some of the shortcomings of the dominant CE narrative identified by Buchmann-Duck and Beazley (2020).

At the time of writing, the farming capacity is expanding significantly at the new mill site (section 5.4.8), with 10 acres allocated for farming (D17), some of which will be dedicated to experimenting with organic cotton cultivation (IF, IK). There are plans to hire up to c.15 additional farm associates from vulnerable backgrounds. Also, there are plans to further expand the food offering by opening an onsite bakery to make gluten-free bread and other products to sell internally (IC, IK, D14). This will also hire and train personnel from disadvantaged backgrounds. This project is not yet operating but is under development (IC).



Images 1: Examples of cultivations: lettuce in hydroponics container (left); cucumbers in greenhouse (middle); and papayas grown outdoors (right) (personal communication, 2022).

5.4.6. Circular Initiative: STELAPOP

STELAPOP is an acronym for *Save Trees, Eliminate Landfills, And Protect Our Planet* (D7, D8). The partner enterprise was established to utilise pre-consumer textiles that are problematic for Saitex and the wider industry (see Chapter 4) to create versatile material for the furniture and design industry. It is currently Thailand-based, employing 30 people. There are aspirations to expand to other regions, including close to the point of consumption (D8). Through innovation, STELAPOP is patenting a new material, which captures and revalorises pre-consumer waste by binding it with a polymer-based agent. Currently, the material can be used for household products (e.g. coasters, storage boxes), furniture (e.g. chairs, tables) and retail fit out (e.g. signage, clothes hangers) (*Images 2*). The material eventually could be further developed for more diverse uses (D2, D8), including those that are (potentially) socially useful, reducing the need for virgin materials (IP):

> *"We want to make this material to be a very comparable to wood material. So then we can build a house from our materials, so means to be able to make a house I mean, the material has to be strong, durable and things like that. So that's our goal, our path."*

Currently STELAPOP uses only pre-consumer waste as it is straightforward to obtain from manufacturers (IP). Post-consumer waste *could* be used as there are no major technical barriers. Rather, sorting can be time-consuming and problematic so pre-consumer waste is easier logistically, and there is significant supply (IP). As recognised by EMF (2019) certain design features are obstacles to recycling; problematic aspects of the waste include zippers[47] and buttons, and thus this is a bottleneck as it is time-consuming and manual to disassemble (IP, D2, D8). In the future, post-consumer waste could also be integrated into the model, enabling collaboration with brands to recapture their denim (IQ; D8) (IP: "...*at the end, we pick up your waste and then we hope that we can be a starting point for the brand retail to use our material and bring it up front...").* Encompassing post-consumer waste relies on active citizen involvement, which is challenging given the lack of

[47] Interesting, in a previous study I conducted into garment rental in the FTI, zippers were problematic due to risk of breakage hindering extending use effectively. This limited the number of rentals. From a systemic circular perspective, eliminating such features could have the dual effect of improving durability whilst increasing recyclability. However, this likely is in tension with mono-material strategies as a stretch fabric would be the obvious alternative. This illustrates the complex practical obstacles to CE in garments.

policy and existing social practices (Chapter 4). For example, under the Edwin USA brand, of which Saitex is the licensee (section 5.4.8), a takeback scheme was implemented. However, a manager expressed disappointment since at the time of the research as only a couple of pairs had been returned (although the scheme had been running for <1 year). This reiterates the findings of Chapter 4, and the literature that takebacks can produce negligible returns when compared to volumes being produced (Kant Hvass and Pedersen, 2019; Stal and Jansson, 2017).

Burden-shifting can be problematic in the FTI (see Chapter 4). There remains the tension of whether the process causes burden shifting through CO_2 emissions (IP: *"the only question is, we are asked by a lot of parties and we have to do ourselves is how much carbon footprint we create for the whole entire process"*). The venture aims to be carbon neutral by 2023 and is expanding to reach capacity of transforming 200 tons of waste/year (IP). A sustainability mindset is being embedded into the venture's culture, mirroring some of the core Saitex strategies with potential to induce FHNs satisfiers for the workforce and more widely (IP):

> *"Every company or organization, we have to look at ourselves as a small society first, our own people that they have to, of course live well, work well, be economically well, that we have to align ourselves with that. Make sure that you know, our own small society is feeling good first, before we go outside and make contribution in the bigger and larger way. Yeah, that's how we raised our people, you know, and our company has really focused on you know, food, we try to make our own soil here in our factory, we have a small lab, we have fruit, organic fruit in our factory. We have banana, mango, jackfruit, here that people, you know, seasonally, we have food for people..."*



Images 2: Examples of STELAPOP products. Outdoor furniture (left); retail accessories (middle); and, indoor furniture (right) (personal communication, 2022).

5.4.7. Circular Initiative: Rekut

The Rekut initiative was launched in 2019 to provide direct social impact whilst tackling pre-consumer waste (D13). The initiative was set up to employ persons with disabilities and repurpose approximately 600,000 pieces of stock fabric that had been stored over the years (ID). The venture is commercial in nature, seeking to upcycle the stored rejected garments and excess fabrics into new products for sale under the "Rekut" brand as well as for other brands and retailers (D13, D23, D29, D32). The approach is described as "slow fashion" (IG, D13), which suggests effort to counter the mainstream fast fashion logic (Fletcher, 2010). Products include face masks, cushion covers and tote bags. Defected products are disassembled, cut, resewn and embroidered, which can be considered an upcycling strategy (Sandin and Peters, 2018).

This venture was assessed as highly unique by employing persons with disabilities, and thus a more in-depth study involving employee interviews was carried out in Chapter 6. Ultimately, this can contribute to satisfying FHNs (see Chapter 6) aligning with SDG calls for "*full and productive"* employment for persons with disabilities (UN, 2015, p.19).

5.4.8. Saitex USA

Saitex opened a high-technology factory in 2021 in downtown Los Angeles ("LA") in the City of Vernon, USA. This move responded to trends for localised production (D13, D15); which - as introduced in earlier chapters - is often linked with circularity (Buchel et al., 2022; Walker et al., 2021). Localisation in this context involves manufacturing at the point of consumption, which could be argued as aligning with H-SD desires for a local, self-reliant approach (Max-Neef, 2010). This responds to buyer drives for "Made in USA" due to both logistical (i.e. speed and agility) and marketing preferences (D13, D15, D31). It was conceded that the demand is *"Not from sustainability, right now"* (IQ) but stemming from supply-chain risks that were further heightened during COVID-19 (Studley, 2021). Within this operation Saitex has become licensee for a brand (II), meaning that they now directly design and market products to citizens under the Edwin USA label[48].

The factory has a target capacity of 2000 units/ day (D13) and is committed to maintaining the same product quality and sustainability as in Vietnam (IQ: *"we will be mirroring everything"*). In Vietnam each stage of the manufacturing process is carried out in separate buildings whereas this happens under one roof in LA (IM, IQ). This may have environmental benefits stemming from efficiencies, and thus waste reduction, as errors can be more easily identified and rectified whereas in Vietnam these may take longer to pinpoint (IM). Further development and acquisition of Industry 4.0 technologies will enable further integration of systems, and thus improve efficiency further. It was claimed that being closer to the market can reduce transport-based emissions (IM, II, D7). However, the extent of the impact is unclear since the fabric is currently still shipped to LA from Asia and elsewhere.

Sustainability constraints were also identified. For example, the factory space is currently rented, and so onsite solar panel installation has not been possible and some technology-intensive processes (e.g. laser) could increase energy requirements (IM, IQ). Similarly, space and infrastructure constraints prevent air-drying approaches (IM). Water-conservative manufacturing is imperative since California is water-scarce (IJ); US government data suggest that 100% of LA residents are impacted by drought (NIDIS, 2022). Thus, applying circularity principles to water use is not only an operational and economic preference but a legislative requirement (IM) and, ultimately, a necessity for longevity of local manufacturing. A smaller-scale water recycling system meets operational requirements whilst maintaining a high metric of 95-98% closed-loop recycling before being cleaned, safely discharged and replenished on a monthly basis (IJ):

[48] Within this brand, circular principles are being explored such as designing for disassembly, takeback and repair schemes (II, D7).

"...to save the water it is beneficial socially and environmentally but also financially too because when we talk about water - it is not free. But then since we are recycling, financially the price of the budget and balancing wages etc it helps out in that sense"

In terms of labour, the operation employs c.200 personnel, including skilled and semi-skilled factory, technical, office and design roles, but the longer-term vision is to expand elsewhere in the USA (IQ). Saitex is committed to providing a competitive wage[49] for factory workers (above minimum wage at time of study): labour is a substantial cost in LA, being 8-10x higher than in Vietnam (IM). Creating local jobs using established knowhow and sustainability principles may have positive social impacts (IM):

"...opening a factory here, from my point of view, we are helping to create jobs here. I am not talking about closing a factory in Vietnam and opening one here, but in addition. Reopening one, like one additional factory, I'd say so, for sure this helps provide new jobs. And you also have to bring back some skill, let's say or some knowledge. LA was very known for producing denim and jeans before and now it has been largely lost."

Most of the factory workforce have more than 10 years' experience in the industry (IJ); LA has heritage in premium denim production (D16, D34). In a sense, this re-engages a workforce that declined due to offshoring strategies (IM, D31). In summative work, Max-Neef (2010, p.203) was highly critical of corporates achieving comparative advantages through offshoring since *"such a process generates unemployment in the place of origin, and underemployment in the country of arrival".* Returning work opportunities to LA can be interpreted as socially beneficial since it can induce self-reliance - albeit in terms of consumption as jeans are produced locally for local consumption - whilst maintaining employment (i.e. inducing associated satisfiers such as *subsistence, participation* etc). Reengaging a workforce therefore may be a form of justice for those that previously suffered job losses from offshoring activities, supporting satisfaction of *identity needs.* This stems from observations that prolonged financial and emotional impacts have been highlighted as long-lasting for these communities (Rocha, 2001). This reflects warnings about the negative impacts on FHN satisfaction of extended periods of unemployment (Max-Neef et al., 1991). From a global perspective, local production occurs *in addition* to Vietnam production[50] (IM, IQ, D15). This *dual-location* approach could theoretically counter the concerns raised in Chapter 4 regarding localisation inducing job losses in export-based regions, which suggests more balance (and hence equity) in terms of distribution of production. Job creation can occur in another country without negatively impacting the other. IQ argues:

"...there's so many opportunities to live in an interconnected world, for example, a US facility can just be a developments facility, which, you know, does chase orders or nest orders and the bulk orders can be done at the back end [ie. In Vietnam]*. So, for us, it's an interconnected model. Not being exclusive. It's very inclusive."*

[49] In the first year of operating in the USA, a landmark bill (SB62) was passed preventing garment workers' being paid based on output (i.e. piece-rate pay). Piece-rate approaches were previously common and resulted in exploitative contracts, which intensified in impact during the COVID-19 pandemic (Sainato, 2021). SB62 ensures California garment workers are paid at least minimum wage, not solely on output. The Bill was passed in 2021 but came into operation in January 2022 (California Gov, 2022). Saitex never paid based on piece rate, and publicly supported the campaign for the Bill (D16).

[50] Cannibalisation of sales is not expected as the factories have different price points, minimum order quantities, marketing appeals and lead times.

A distinction is that, in theory, the LA factory can process small order quantities (IJ, IM, IO, D34), even as low as 200 units whereas most factories have a large minimum order quantity (e.g. the Vietnam factory minimum is c.5,000-10,000 units). Hence, this contrasts with the industry norm of requiring high-volumes due to production based on economies of scale (although it should be noted that the lack of capacity for higher volumes was also framed as a constraint by IJ). Low minimum orders may enable smaller incumbents to enter the market, which can be interpreted as enabling wider participation in the industry (II). Hence, such strategies could support satisfaction of *participation* and *creation* needs for individual designers or small-scale brands since high order volume requirements can cause financial and logistical barriers whilst inducing high waste (Kozlowski et al., 2018). Despite this speculative assertion, the Vietnam factory still produces c.18,000 units/ day, so this must be viewed critically from an absolute systems standpoint as the industry logic of high production persists (Freudenreich and Schaltegger, 2020; Palm et al., 2021b).

The technical approaches established in Vietnam are applied in a more technology-intensive manner in LA (IM, D13, D31), which counteracts higher wages (IM: *"efficiency is important here because of the cost of the labour*"). Improved quality is connected to high-technology approaches and is important for cost control ("*if we have too many defects it means we have too much repair, it then increases our unit cost"*). Reflecting suggestions in the literature (Dantas et al., 2021; Rosa et al., 2020), Industry 4.0[51] approaches that support process optimisation including automation, systems integration and harvesting data will support efficiency drives aligned with CE aspirations of reduced waste (IM, IO)[52]. A novel technology being utilised is matrix laser-cutter technology – the first of its kind globally – that can apply laser and cutting simultaneously.

Given the industry's domestic decline, acquiring future labour may be challenging since it is a "tough business" (IQ). The COVID-19 pandemic led to further exodus of personnel due to lockdown closures[53]. This generally reflects the sentiment expressed in Chapter 4 that manufacturing jobs may not be appealing to citizens in developed regions. However, *"you have to attract the right talent and give them reason to be involved in this business"* (IQ). The sentiment of the data suggests that a greater focus on automated or hybrid technology means increasing the share of technical-focused labour, which is noted as a potential outcome of Industry 4.0 adoption in the literature (Stock et al., 2018). In fact, upon opening the operation managers spent time in the Vietnam factory to learn how to use the technologies so skillsets can be transferred across geographies, which can be a satisfier for *understanding* needs.

5.4.9. Expansion: Vertical Integration through Mill

During the course of the research, the Company expanded operations upstream by opening a mill, which represents a move towards vertical integration (Stock et al., 2018). This enables control over the cradle-to-gate phases and oversight from "seed-to-shelf" (IQ), which is imperative from a CE perspective (IK, IO, D17). This

[51] Industry 4.0 is an umbrella to describe technologies such as cyber-physical systems, additive manufacturing, automated machinery, simulations, big data and analytics (Rosa et al., 2020).
[52] Data could be shared between factories: simulations could be shared and transferred between factories in USA and Vietnam.
[53] Before opening the factory Saitex benefited from a large garment manufacturer in the vicinity moving production to Mexico. This left an experienced workforce that was partially absorbed, overcoming recruitment challenges (IJ).

operation is not studied in-depth due to the research timeline, but it was framed as fundamental to the long-term vision, countering the logic of fragmentation and supplier complexity that is synonymous with oversight challenges (Niinimäki et al., 2020). High technology will be applied in the mill combined with industrial symbiosis and renewable energy strategies (IN, D11, D17). It is expected to create up to 600 new jobs, of which some will be skilled (D11) and hence reflects shifting labour trends as the country develops (D13). Vietnam is not traditionally known for producing high quality textiles, so this could induce skill transfer (D11) that can be interpreted as contributing to satisfying *understanding* needs.

60% of production cost is for the material. Operating a mill improves cost control, supporting competitiveness given – reflective of the overall FTI dynamic - the power still is heavily skewed towards the buyer (IO:*"...we do not yet have that power in the Saitex in terms of price, the customer's always bring to the table a certain price that we need to do it"*). From a social perspective, ownership of a mill enables greater traceability and transparency and is environmentally relevant since the fabric choice determines the chemicals, fibres and other inputs (IN, IQ, D11, D17, D26). As noted in Chapter 4, this in turn influences the end-of-life recyclability (Sandin and Peters, 2018). Upstream social benefits may emerge through direct relationships with organic cotton farmers (IQ, D13). This can be supplemented with distributed ledger technologies (e.g. blockchain) of which Saitex has interests in, to enhance traceability (D10).

Table 9: *Summary of Saitex strategies & initiatives and links to both CE & social outcomes.*

Approach	Brief description	Links with CE principles	Anticipated social benefits for identified actor(s) viewed through H-SD lens (***FHNs satisfied***)
Charity	• Frequent donations to local charitable causes aligned with traditional CSR practices. • Both environmental (e.g. regeneration projects) & social (e.g. orphanages) charities. • Ongoing relationships with certain charities (e.g. orphanages) enabling Company to provide job opportunities to vulnerable people.	• Limited connections with CE. • Some charitable causes may have links with CE principles.	• Local beneficiaries receive financial + non-financial support from charitable activities (*subsistence, protection*). • Vulnerable young persons from charitable partners are offered jobs when they reach working age (*subsistence, protection, participation, understanding etc*). • Workforce may have opportunity to visit/ volunteer/ learn about charitable partnerships (*participation, understanding*).
Labour	• Aim to treat workforce with respect, including through living wage rates, financial (e.g. bonuses) & non-financial benefits (e.g. complimentary lunch). • Certifications & best practice consultations. • Trade union & other arbitration mechanisms so workforce are represented in decision-making. • Developing diversity & inclusion agenda; actively recruit vulnerable persons.	• Limited connection with CE. • Ongoing top-down commitment to educating workforce on sustainability initiatives, including knowledge relating to CE (e.g. circular farming, upcycling activities etc).	• Workforce benefits from fair wage rates (*subsistence*) & financial /non-financial benefits (*subsistence, protection, leisure, freedom*). • Workforce benefits from union membership & other modes of engagement (*understanding, participation, identity*). • Workforce benefits from educational opportunities (*participation, understanding*).

Energy	• Adoption of renewable energy, including onsite solar, wind & biomass to reduce dependence on fossil fuels. • Use of natural light sources. • Low-technology denim air-drying.	• Renewable & cleaner production principles. • Industrial symbiosis applied using other industry (furniture) by-products (wood) for steam generation. • Passive design to lower electricity needs.	• Local communities less impacted by industrial pollution (*subsistence, protection*). • Workforce have safer & improved factory environment (*protection*).
Water	• Aim to significantly cut the water requirements that are typically high in denim. • Technologies such as water recycling using reverse osmosis & nano-filtration techniques.	• Closed-loop water cycling to reduce freshwater use. • Reduced waste (effluent discharge).	• Local communities suffer fewer impacts from high water abstraction & reduced effluent discharge (*subsistence, protection*).
Chemicals	• Aim to eliminate & reduce hazardous chemicals, which are traditionally applied in denim industry. • Innovative technologies, such as laser, ozone & robotics, applied.	• Cleaner production principles & technologies to replace & reduce chemical inputs.	• Workforce are less exposed to chemicals (*protection*). • Local communities suffer fewer impacts from chemical effluent pollution (*protection*). • Consumers & wider citizenry have reduced risk of chemical exposure via wearing & laundering (*protection*).
Waste	• Aim to reduce waste throughout the production process. • Technologies such as semi-automatic sewing machines, digital eco-design etc seek to increase efficiency & lower waste.	• Technology enables efficiency & reduced wastage. • Dematerialisation through digitalisation. • Waste used as an input.	• Workforce benefit from semi-automated approaches through fewer arduous tasks & reduced injury risks (*protection*). • Wider communities can benefit from less pollution of environment (*protection*). • Local citizens benefit from new job creation from using waste as a resource (*subsistence, participation*).
Farming	• Non-commercial onsite farming activities (hydroponic containers, greenhouses & open-air) to produce organic fruit & vegetable produce. • Focus on self-sustaining as an embedded initiative that provides job opportunities to vulnerable persons.	• Resource conservation through closing, slowing, narrowing loops of water, inputs & nutrients (e.g. waste from canteen operations utilised as an input for pesticides). • Sufficiency of inputs (e.g. seeds, fertilizer).	• Vulnerable persons benefit from inclusive job opportunities (*subsistence, protection, participation, understanding*). • Workforce accesses affordable & healthy produce (*subsistence, protection*). • Pregnant & vulnerable employees receive produce donations (*subsistence, protection, freedom).* • Employees benefit from a cleaner, enhanced factory environment (*leisure*).
STELAPOP	• Commercial affiliate based in Thailand that utilises waste denim to create durable home products. • Strategies re labour etc reflect wider Saitex approach.	• Manufacturing textile waste utilised as a resource using upcycling principles.	• Wider communities can benefit from reduced use of virgin resources & pollution of environment (*protection*). • Local citizens benefit from new job creation from using waste as a resource (*subsistence, participation*).
Rekut	• Commercial that utilises waste & deadstock denim to create new garments & fabric accessories.	• Manufacturing textile waste utilised as a resource using upcycling principles.	• Vulnerable persons provided with decent employment opportunities are the main beneficiaries, linked to potential to deliver wide-ranging FHN satisfiers (see Chapter 6).

Saitex USA	• High-technology micro-factory based in Los Angeles that produces denim using iterations of the Saitex VN model at a smaller, more agile scale. • Additional automation & high-technology enables cost-viable USA-based manufacturing for a local market.	• Semi-automatic, automatic, robotic & high technology approaches improve efficiency. • Water recycling onsite.	• Local, small designers can engage in industry due to low minimum order quantities (*participation, creation*). • Local citizens benefit from new job creation for a legacy industry that has faced shrinkage due to offshoring (*subsistence, participation*). • Workforce benefits from knowledge sharing between Saitex USA and VN (*understanding*).
Saitex Mill	• Recent expansion of operations to extend upstream to milling activities, representing a step towards vertical integration & increased sustainability across supply-chain.	• High-technology approaches for efficiency & waste minimisation. • Renewable energy. • Water recycling. • Industrial symbiosis & cleaner production principles.	• Local citizens benefit from additional job creation opportunities in a new industry sub-sector (milling), enabling skill transfer (s*ubsistence, participation, understanding*). • Local citizens & workforce are maintain ability to work in a heritage industry (*identity*).

5.5. Chapter Discussion

The case provides insights into a private-sector organisation with an ambitious CE strategy that seeks to overcome the socially and environmentally destructive nature of typical garment manufacturing. Progressive features, such as seeking to align approaches with the SDGs, demonstrates a concerted effort to extend objectives beyond solely a profit motive (Rendtorff, 2019). The case highlights how the adoption of unique sustainability strategies, often based on CE principles, can result in various FHNs being satisfied for different actors, most directly the workforce, but also local communities and wider citizenry. When exploring the case from an H-SD perspective, it must be stressed that Max-Neef et al. (1991, p.78) were generally critical of *"the hierarchical organization of work dictated by capitalism"* as well as of "taylorist-type" (p.35) factory production. Taylorist-type work was framed as an *inhibiting satisfier* since although intending to satisfy *subsistence* needs it can consequently impair satisfaction of u*nderstanding, participation, creation, identity, production* and *freedom* needs (*ibid*). Whilst indeed the work in the case consists of factory production with features of mainstream market activities, the case shows efforts to extend beyond typical production regimes that often entail exploitative conditions (where 'work' constitutes as an *inhibiting or singular* satisfier).

There is value in exploring this case as industrial manufacturing organisations are an inevitable feature of the current and future economic landscape so ignoring their presence or labelling them 'unsustainable' without thorough exploration would be out of touch with reality. Hence, it is valuable to understand how best practice industrial approaches can be developed to embrace circularity and social impact to disrupt industry norms. In this case, on top of satisfying *subsistence* needs for the workforce through financial means, there is evidence of contribution to FHNs of *protection, participation, understanding, identity* and *freedom* through satisfiers, such as superior insurance, access to nutrition, safe work practices, opportunities to share opinions and work-life balance. Initiatives that are peripheral from the core manufacturing business model further highlight the potential to maximise satisfiers that extend beyond the realms of typical industrial organisations.

There appears to be a continued appetite to tackle externalities of operating through experimentation of different initiatives. This aligns with Börjeson and Boström (2018) suggestion that proactive exploration to solve environmental bottlenecks illustrates "reflexive responsibility". For example, producing fresh vegetables onsite is unique and as such, Saitex likely enables satisfiers of FHNs more broadly than the usual business logic in the FTI, which is based almost exclusively on achieving the lowest cost output (Van Buren III and Schrempf-Stirling, 2022). The efforts that extend to focusing on marginalised communities are especially unique; these are discussed in more depth in the proceeding Chapter 6.

5.5.1. CE on a foundation of robust labour standards

The findings indicate that various human resources strategies (e.g. fair pay, respected workforce, work-life balance) and charitable strategies, are not necessarily linked directly to the CE (and vice versa) (see *Table 9*). This is not surprising given CE has its boundaries as a resource-centric framework; circularity cannot be expected to link to *every* aspect of a commercial industry strategy. However, attention to labour and CSR issues are foundational, and show that CE approaches at Saitex are developed upon a strategy encompassing robust social minimums that appear to significantly exceed the industry norm.

The analysis also identified that efficiency through various circularity technologies has delivered cost-reductions (e.g. water recycling lowering water bills). The commercial appeal is further amplified by the fact that circularity has supported Saitex to achieve a positive reputation for sustainability, enabling and justifying a premium priced product. These features reveal a connection between CE efficiency strategies and fair pay; efficiency *can* improve operating margins, ultimately creating a business model that can sustain fair, living wage rates. In Chapter 4, an expert was sceptical of this assertion since it is not *guaranteed* that cost savings are utilised to improve the welfare and pay of low-income workers in the typical competitive and exploitative market dynamic. However, in this case a link was identified demonstrating that - with commitment and top-down leadership to ensure fair, decent labour - efficiency through circularity can enable this goal.

5.5.2. Circularity and FHN satisfaction

It can be argued that both direct and indirect social benefits can be connected to the CE strategies and initiatives implemented by Saitex. When viewing *Table 9,* many of the positive associations between CE strategies and social value – considered in terms of FHN satisfaction potential - appear to be for the workforce through the satisfaction of *protection* needs. This stems from strategies that apply cleaner production, high-technology and circular innovation approaches. For example, the analysis identifies how the elimination of certain problematic chemicals in denim processing can reduce the risks associated with exposure and hazards, with the main beneficiary being the workforce. In essence, the job becomes safer as a result of circular technology adoption, enabling workers to satisfy their need for *protection* whilst making a living (*subsistence*). Chemical reduction has been recognised as a core principle of the CE to ensure safer material, processes and additive choices (McDonough and Braungart, 2002; WHO, 2018). It can be argued that these benefits also extend to the final end-user, since – as noted in Chapter 4 - chemicals can contaminate humans through skin contact when wearing clothes or via water contamination from laundry (De Falco et al., 2018; Rovira and Domingo, 2019). In fact,

Padilla-Rivera et al. (2021, p.106) found "consumer health and safety" to be the most important social CE indicator amongst experts, and so chemical reduction contributes to this goal.

5.5.3. Circular technologies can have positive social impacts, but introduce other social tensions

Despite the advantages of high technology circular approaches demonstrated within the analysis, it must be acknowledged that technologies associated with Industry 4.0. applied by Saitex, are often perceived as riddled with social tensions. For example, there are long-discussed concerns regarding whether automation induces unemployment as robotics replace humans (Dantas et al., 2021; Stock et al., 2018; Studley, 2021).

Stock et al. (2018, p.263) suggest that work regimes will change due to technological advancements, however, they note the unpredictability of outcomes since *"technological developments rarely take place as predicted".* Through the H-SD lens, a technological outlook fail may to construct organic articulations between humans and technology by disproportionately relying on technical solutions (Max-Neef et al., 1991). However, in this case there is demonstration that technology can replace hazardous tasks, satisfying *protection* needs of workers. Hence, by adopting the perspective that taylorist factory work production is inherently unfavourable from a FHNs standpoint, as suggested by Max-Neef et al. (1991), then reducing these tasks through technology can be argued as preferable[54]. The sentiment in the findings is that technology adoption can reduce such undesirable tasks and lead to the creation of more skilled roles, reflecting observations in the literature. Stock et al. (2018, p.265) suggest that the *"role of the human might also evolve more and more from a simple worker into the role of an expert, decision-maker, and coordinator"*. This aligns with long-term development perspectives as Vietnam moves to an economy less centred on manufacturing. This is an area ripe for further discussion in the interconnected Industry 4.0 and CE.

Furthermore, there are concerns that a high technology approach undermines normative requirements of the need to *reduce* in a CE. For instance, 18,000 pairs of jeans are produced each day at the case company, despite applying laudable CE strategies to reduce unit-based impacts. A common argument put forth was that as a manufacturer they are not responsible for direct marketing of the end-product and so not directly influencing the high-mindset citizen culture, rather fulfilling the demand of the brand. Hence, this goes back to the question as to how consumption norms can be altered. On top of this, the newly inaugurated USA promised agility, smaller batch viability and shorter lead times in response to market demands using novel technological approaches. Despite these advantages, shorter lead times could be perceived as consistent with perpetual style changes, which could paradoxically reinforce the prevailing high-volume citizen mindset. This conflicts with the radical change that scholars claim is required, where consumption *wants* must be reduced in absolute, rather than relative terms (Fletcher, 2010; Palm et al., 2021).

[54] Stock et al. (2018, p.264) discuss how automation could lead to reduction of so-called "3D" tasks – those that are *dirty, dangerous* and *demanding.*

5.5.4. Dual-location manufacturing could support distributional justice

An emerging body of scholarship has expressed concerns about the possible negative impacts on garment producing, in terms of job losses, relating to the CE transition (Dantas et al., 2021; Kirchherr, 2021; Repp et al., 2021). Hence this raises concern of uneven development and distributional justice issues (noted in Chapter 4). The dual-location manufacturing strategy applied in the case could present a route to more *just* outcomes in the CE transition. Workforces in different locations can participate in the industry, supporting equitable needs satisfaction for different communities. Production simultaneously in the Global North and Global South could counter this distributional justice concern whilst also providing renewal of a legacy industry in the USA, benefiting those workers that previously lost out due to offshoring trends. If these jobs are considered desirable, then the renewal of an industry will produce satisfiers – notably of *subsistence, protection* and *participation* - for communities that have been marginalised due to globalisation trends. This can help support industrial heritage and reinvigorate a local skillset (e.g. supporting *identity, understanding* needs).

Nevertheless, it still begs the question as to whether garment sector factory employment is a desirable vocation that constitutes *decent work*, per the SDGs and ILO (ILO, 2017). For example, Berry et al. (2022) notes *"a marked inattention to the quality of jobs associated with CE, which is especially important as the US continues to struggle with numerous job openings."* Further, Clarke-Sather and Cobb (2019) find that when comparing USA to Sri Lanka production, that USA holds sustainability advantages relating to environmental and social goals over Sri Lanka. Nevertheless, in terms of economic sustainability advantages, they are significant in Sri Lankan production given these workers receive middle-income wages, which contrasts US workers where the pay is considered low (*ibid*). Hence, there is an ongoing question around the *legitimacy* of job creation to represent a compelling social benefit by raising tensions regarding the extent that these jobs can be considered part of a socially desirable and inclusive CE.

5.6. Chapter conclusion and reflections

5.6.1. Conclusion

This Chapter consists of the first part of the case study and is summarised in *Table 10*. The case demonstrates features of a progressive business approach focused on the upstream part of the supply-chain that seeks to incorporate environmental and social value whilst pursuing a CE strategy. High technology approaches can reduce potentially harmful processes, hence can be connected to improving satisfaction of *protection* needs for the workforce. This appears to be a core benefit for the workforce, although more passive community benefits may be realised through pollution prevention and reduction from circularity approaches. This is in contrast with mainstream manufacturers that fail to safely manage waste and chemical resources stemming from their operations. Although not directly related to CE, the Company is building circularity on foundations of responsible and ethical labour practices, enabling satisfiers of *subsistence* and broader FHN satisfaction to occur in a way that counters the exploitative logic of the industry. Relating to trends in localisation, the Company's inaugural factory in USA demonstrates that a dual-location approach to manufacturing potentially reduces concerns

related to labour shifts that were identified in the previous chapter. Hence, such strategies could be argued to contribute to ameliorated distributive justice outcomes in the CE transition.

It should be noted that these findings require more validation. Direct contact with the factory workforce was not possible, it cannot be assumed that these impacts are felt by the workers in the same way as perceived in this analysis – this is a limitation worthy of acknowledging.

5.6.2. Reflection: Does less factory pollution *really* improve the local community?

It is frequently recognised that local communities suffer from the environmental impacts of linear industrial approaches (e.g. pollution, depletion of natural resources etc) (EMF, 2017a; Rovira and Domingo, 2019; Shirvanimoghaddam et al., 2020). As I noted in this Chapter and in Chapter 5, this likely results in violation of FHNs for those beyond those directly involved in the industrial operations (i.e. beyond the management, buyers, workforce etc). For instance, water may be unsafe to drink and air quality may cause respiratory hazards, preventing satisfaction of *subsistence* and *protection* needs whilst local surroundings become unsuitable for playing or relaxing, thus inhibiting satisfaction of *leisure* needs. Thus, those removed from the production and transaction in an economic sense can have their needs system upset.

Conversely, it was inferred that CE cleaner production approaches can reduce the externalities of textiles processing, and hence induce benefits for the local community. This sentiment also emerges in the literature, for example Nayak et al. (2022, p.4) note that laser technologies can have positive social impacts as "*the society is free from the issues relating to environmental pollution".* Undoubtedly, eliminating chemical effluent into water ways is positive when compared to other factories that continue to pollute. However, with reflection as an individual company, if all other factories in the area continue to pollute then the tangible impact in terms of changes to FHN satisfaction is likely to be negligible. I revert to earlier sentiments that a transformative CE in terms of environmental and social impacts likely requires systems level change, and involvement of a wide stakeholder base, rather than individual company efforts. This reflects an assertion by Sousa-Zomer et al. (2018, p.747) who note that large-scale adoption is required in industrial systems for *"truly impacting society at the macro-level"*. Hence, what is clearly missing in this industry is *scale* of change. In the absence of global textile regulation, then the efforts of individual organisations are unlikely to be felt at the community or global levels. Nevertheless, I still believe this case is a critical example of how manufacturers can viably adopt circularity whilst reversing the typical low-cost logic.

5.6.3. Reflection: Can a manufacturer of a pseudo-satisfier ever be considered sustainable?

Upon reflection, a further paradox exists with concern to when the product being manufactured is itself a "pseudo-satisfier", such as in the FTI. The jeans in the case study are manufactured for fashion, so when a citizen buys these for fashion purposes rather than durability (as per their original use in workwear), then the garment likely constitutes a pseudo-satisfying good. Applying a critical viewpoint, what does this mean for the process of making that product: can production of a pseudo-satisfier *ever* be sustainable? A similar predicament was briefly posited by Clift (2003, p.246) who suggested that:

"…there might still be an argument that they are sustainable if purchase by the end user creates activity along a supply chain which helps to satisfy the needs of others, most obviously by employment which is rewarding in both the economic and personal senses."

Nevertheless, Clift's (2003) argument seemingly assumes that the work in question can in fact produce diverse satisfiers (i.e. decent in line with SDGs). This is contention with the fact that in the FTI many manufacturing jobs are plagued with exploitation (Chapter 4). Since the case study demonstrates features of a decent employment regime, countering this exploitative logic, then the argument of Clift (2003) is possibly credible. However, as acknowledged by Everard and Longhurst (2018), there are evidently trade-offs in sustainability transitions that must be more comprehensively explored. Trade-offs between satisfiers are an inherent complexity in the H-SD proposal (Max-Neef et al., 1991) and this represents just one example but there will be countless more. For instance, this reflection leads to further questions with regards to whether society is willing to accept a level of externality associated with the circular manufacture of pseudo-satisfiers if they prevent job loss or create *decent* work in vulnerable regions (i.e. conducive to a *just* transition). This has not been explored in the literature comprehensively, and hence presents an area for future research.

Table 10: Chapter 5 Summary.

Chapter question(s)	Key findings	Areas for further exploration
• *How can a business contribute to satisfaction of human needs for employees & the wider community through circularity strategies?*	• The case demonstrates effort to overturn s prevailing logic of exploitation & ecological impact. • The factory has applied non-conventional approaches to improving the lives of workers, including through an onsite farming initiative. • Circularity is primarily realised through technological approaches targeting water, chemical use & energy reduction. This is framed as beneficial for workers & wider community. • A dual approach to manufacturing in both developing (Vietnam) and developed (USA) regions may be a route to supporting a 'just' version of localisation in a CE.	• Whether the avoidance of a harm (e.g. reduction of pollution) constitutes a satisfier remains unclear. This is an area ripe for further research. • The connections between Industry 4.0 trends & CE require further nuanced discussion relating to social impacts. • Dual manufacturing could counter the concerns of Chapter 5 relating to negative distributive justice impacts on export-intensive regions. However, whether manufacturing jobs in Global North regions can be 'decent' requires further exploration.

6. Case Study Part 2, the Rekut Venture (embedded case)

"People who are vulnerable must be empowered"
(UN, 2015, p.7)

6.1. Chapter overview

This chapter supplements the core case study presented in the previous chapter. It explores the *Rekut* venture, which represents an embedded case since it was deemed to be particularly socially impactful and based on circularity principles. The Chapter begins with presenting the aims, followed by providing supplementary literature on persons with disabilities and development. Then the methodology is introduced, which is in addition to the data collection of Chapter 5. The findings of this chapter suggest that involvement in the workplace for persons with disabilities can be particularly beneficial. Themes of satisfiers relating to inclusion, safety, skills development, financial independence, work-life balance and development of social contacts emerged. It is demonstrated that conscientious deployment of resources can result in circularity that contributes to FHN satisfaction of a marginalised community. The chapter finishes with conclusions and reflections. The core findings of this chapter have previously been published in *Business Strategy and Development* journal (Clube and Tennant, 2021).

6.2. Chapter aims and research questions

As introduced in Chapter 1 the CE literature is especially lacking focus on complex social issues, such as social equity (inter- and intra- generational), human rights, distributional justice, well-being and the inclusion of marginalised populations, which are all essential for sustainable development (Millar et al., 2019; Moreau et al., 2017; Murray et al., 2017). It is rarely addressed explicitly as to how the CE can promote equity and justice although general reference to diversity or equal opportunities may be included in social assessments (Padilla-Rivera et al., 2021). The inclusion of marginalised communities can be interpreted as aligning with the values of the H-SD proposal, which ultimately outlines the need to ensure communities are self-reliant and inclusive, *"capable of generating and encouraging satisfiers for the needs of every man and woman as integral beings"* (Max-Neef et al., 1991, p.30). In the context of the private sector CE drive, this has rarely been explored, but Schröder et al. (2020, p.6) suggest research is needed into understanding *"which CE business models promote social inclusion and decent work and reduce their impacts on local communities?".* Through the embedded case, this chapter aims to contribute to addressing this knowledge gap by specifically focusing on a business initiative that combines circularity with social impact. Persons with disabilities are the target population for employment in a circular business venture, complementing the broader initiatives identified in Chapter 5, including the desire to have 20% of employees from vulnerable backgrounds by 2025. Using the lens of the H-SD, this critical embedded-case (Flyvbjerg, 2006) is approached with the following research question:

- *How can a CE initiative contribute to needs satisfaction of persons with disabilities in the workplace?*

This chapter begins with providing some supplementary literature specifically on persons with disabilities to help contextualise the following methodology, findings and discussion.

6.3. Literature background: Supplementary literature

6.3.1. Persons with Disabilities

It is estimated that more than 1 billion people worldwide have some form of disability, 80% of whom live in the Global South (Groce, 2018; Niewohner et al., 2020; WHO, 2011). According to the UN (2006, p.3), persons with disabilities can be broadly defined as those who have *"long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others"*.

People with disabilities are at risk of facing social injustices (Hocking, 2017) as poverty and systematic exclusion of persons with disabilities are pervasive (Niewohner et al., 2020). Improving the livelihoods of disabled populations can be viewed as a development challenge since poverty and disability are interlinked: they are both a cause and consequence of the other (Braithwaite and Mont, 2009; UN, 2019; WHO, 2011). The costs of living can be higher for persons with disabilities (Minh et al., 2015). The economic costs are both direct (e.g. higher healthcare expenses, adaption costs) and indirect (e.g. loss of earning from care givers) (Palmer et al., 2015). Disabled populations in low-income countries have been shown to experience disproportionately high levels of multidimensional poverty[55] (UN, 2019). According to Minh et al. (2015, p.78) *"eliminating world poverty is unlikely to be achieved unless the rights and needs of people with disabilities are taken into account".* A failure to adequately consider persons with disabilities in the MDGs was rectified in the 2015 SDGs with 7 references at target and 11 at indicator level (Groce, 2018). Despite greater inclusion in official SDG documentation, the details or expected outcomes were not substantiated until 2018 when the UN produced their inaugural report on realising the SDGs and persons with disabilities (UN, 2019). Here it is identified that despite progress for these individuals, numerous barriers still exist to full inclusion in the workplace. For example, challenges relating to a lack of accessibility, prejudice and lack of opportunity persist (*ibid*).

Bogenschutz et al. (2016, p.2) note that "a society's inclusion of people with disabilities is often gauged by how they are integrated into educational and employment opportunities". Thus, employment represents a key aspect for persons with disabilities and inclusion in the workplace can be a signal of social progress. In the literature, prolonged occupational deprivation or marginalisation has been signalled as a form of occupational injustice (Hocking, 2017; Olivares-Aising, 2018). Occupational justice relates to social justice and is a concept, which can bridge the gap between well-being and harmful social conditions that can be restrictive in terms of employment (Hocking, 2017, p. 29). Although Max-Neef et al. (1991) do not expressly discuss persons with disabilities, it was highlighted that prolonged unemployment can lead to multiple needs being inadequately satisfied. This relates to the fact that – beyond financial advantages - research suggests that inclusion in the workforce can have non-financial advantages in terms of self-efficacy, alleviating isolation and skills development (Schur, 2002; UN, 2019). Thus, although employment is generally viewed positively it *"may play an especially positive role for members of minority groups who have been socially marginalized and often denied*

[55] Multidimensional poverty consists of multiple deprivations such as non-employment, low educational attainment, social isolation and poor psychological well-being (UN, 2019); in a sense this terminology reflects Max-Neef et al. (1991) view that insufficient satisfaction of any need is a form of poverty.

access to jobs" (Schur, 2002, p.339). Therefore, the private sector can have a more active role to play in supporting inclusive business practices to overcome structural and attitudinal barriers.

6.3.2. Vietnam and Disability

Modern industrialisation in Vietnam has left marginalised populations, including persons with disabilities, disproportionately living in poverty (Bogenschutz et al., 2016; Bogenschutz et al., 2020; ILO, 2013; MarketLine, 2021). According to the 2009 census, 7.8% of the population is registered as disabled but estimates suggest that this figure could be as high as 15.3% (ILO, 2013). High disability rates have can stem from a plethora of causes, but there have been links to birth defects and injury relating to the USA-Vietnam conflict where both ordnance (landmines) and chemical warfare (e.g. Agent Orange) caused lasting health challenges (Bogenschutz et al., 2021; Palmer et al., 2015). One in five households classified as *poor* in Vietnam contains a disabled inhabitant (MarketLine, 2021), reiterating the poverty-disability relationship (Braithwaite and Mont, 2009; UN, 2019). The impact of disability on livelihoods in this national context have been reported (Bogenschutz et al., 2016; Palmer et al., 2015). Palmer et al. (2015) highlighted the barriers to entering the formal labour market in Vietnam, causing people to instead engage with low-skilled and unstable roles in the informal sector (e.g. masseuse, labourer). Woman may be especially vulnerable to instability through lack of employment; it is reported that 32% of women with disabilities in Vietnam work unpaid (UN, 2019). The lack of working opportunity is likely linked to - and exacerbated by - a failure to complete education (Nguyen, 2013). The UN (2019) suggests that Vietnam has one of the largest education gaps in the world between youths with and without disabilities at 63% versus 98%. Moreover, reflecting the global outlook, various workplace barriers such as discrimination and societal stigmas are prevalent, which can reinforce the concerns of family members that persons with disabilities cannot be self-reliant (Palmer et al., 2015). Bogenschutz et al. (2016) identified elements that are conducive to *living a good life* for those with disabilities in Vietnam: self-sufficiency; the ability to attend education or work; the opportunity to develop typical relationships; and freedom from stigma, were important goals.

Vietnam has been making strong progress to include persons with disabilities in policy agenda, including through the 2010 Disability Law, the ratification of the United Nations Convention on the Rights of Persons with Disabilities in 2015 (Bogenschutz et al., 2021; ILO, 2013; Minh et al., 2015) and more recent updates to the Labour Code. Banks et al. (2019) find that there are various social protection policies in place (dependent on the degree of disability), such as monthly financial contributions, insurance, education and training support as well as transportation discounts. However, the uptake of certain benefits is limited due to factors including: low awareness regarding some of the support available (especially related to education and travel discounts); logistical and financial travel burdens as administrative centres may be far to reach; and, bias in assessment criteria amongst programme staff (Banks et al., 2019; Bogenschutz et al., 2021). Moreover, Luu (2019) concedes that regulatory efforts have had a modest impact in terms of application at the private-sector level in human resources practices.

6.3.3. CE and disabilities?

The CE literature has rarely discussed persons with disabilities reflecting the wider neglect of vulnerable and marginalised populations in circularity discussions (Murray et al., 2017; Schröder et al., 2020). When there is a mention of this community, then it tends to be peripheral and unsubstantiated reference. For example, Droege et al. (2021) include persons with disabilities as a social indicator for equal opportunities in their CE framework for the public sector whilst Walker et al. (2021) similarly note this in a private sector context. Lee (2020) notes that social solidarity circular economies are a valuable space for persons with disabilities, as organisations may target vulnerable groups for employment or recreational activities. Veleva and Bodkin (2018) identify a US-based company (*Circular Blu*) that employs persons with disabilities to upcycle plastic waste into tote bags, but they do not study the impacts on disabled persons' livelihoods or specific features of the business model. It appears that no study in the academic literature has – at the time of writing - sought to explore the two concepts together with any reasonable level of depth, especially in a private-sector context. Notably, the combination of business models and persons with disabilities is sparse in general (Dwertmann, 2016), but especially in a Global South context. There are hardly *any* exceptions in the Vietnam context. For example, Nguyen (2013) provides two cases of companies in Vietnam explicitly employing persons with disabilities, highlighting that the private-sector can expand their role beyond solely profit-seeking.

6.4. Data Collection

6.4.1. Interviews: Management and employee

Five of the interviews (*Annex h)* from case study part 1 (Chapter 5) covered topics that included the Rekut venture and some of the documentation (*Annex i*) also covers Rekut, and thus the same categorisations as the previous chapter refer to those data. Please refer to Chapter 5 for the approach to interviewing managers and explanation of the use of document analysis.

Additional data collection for this chapter consists of group interviews with employees with disabilities. Since the overarching topic surrounds social components of the CE, such as well-being, social equity and opportunity, engaging with the employees directly facilitates an approach for understanding and interpreting social meaning (Hesse-Biber et al., 2004). According to Boxall et al. (2016), when exploring well-being in the workplace, the employees themselves represents the most authentic respondents. When the research concerns the experiences of people with disabilities, the involvement of persons with disabilities in the research process strengthens the data quality and relevance (Dwertmann, 2016; Gilbert, 2004). This also presents a unique outlook as persons with disabilities are often not the focus of academic research in the context of employment as it is a hard-to-reach population (Dwertmann, 2016; Lysaght et al., 2016).

6.4.1.1. Employee interview protocol

Although the original intention was to conduct the research in person, the global COVID-19 pandemic presented a bottleneck. Instead, video conferencing software was used as the next best alternative (Microsoft Teams) (Lobe et al., 2020). In total 18 participants were interviewed in six groups in late 2020 and early 2021; these are referred to as "GI" in the analysis. The interviews were organised following an interview guide to enable the employees to discuss a range of topics. The topic guides were formed to produce various points of question around the human needs of the H-SD matrix. Rather than explicitly referring to the nine needs of the matrix, questions sought to create fluid discussion around topics that relate to well-being in the workplace. The topic guide was altered during the research process, as gaps or challenges with the questions iteratively emerged. In line with recommendations from the literature about engaging with persons with disabilities a gatekeeper familiar with the employees and their disabilities (Lysaght et al., 2016) reviewed the topic guide to ensure the level of questioning was intellectually accessible to the participants (Gilbert, 2004). After the first group interview, the topic guide was altered, as many of the participants were quieter than anticipated and generally gave succinct responses, so the questions were further simplified to ensure the topics were accessible to participants. Examples of questions include:

- *Is this your first job?*
- *What do you do each day at work?*
- *What new skills have you learnt since you started the job?*
- *How do you spend your wage?*

Each group interview lasted approximately 45min-1hour in duration and conducted in Vietnamese. The gatekeeper was present during the focus groups to support the data collection process, as well as acting as a translator. The gatekeeper had fluency in both English and Vietnamese, and experiences visual impairment themselves. When the participants were hearing impaired, there was additionally a sign language interpreter present. There is a limitation in the fact that the gatekeeper was not a professional translator and sometimes summarised discussion rather than reported verbatim. Hence, this was not an ideal situation in terms of reliability as perhaps more trust was instilled in the gatekeeper than would usually be preferred. Moreover, the presence of the gatekeeper could have prevented the participants from providing their honest view, due to social desirability bias. However, the gatekeeper seemed to have a good relationship with the participants. The gatekeeper has a disability themselves so this may have helped in terms of trust and transparency. Although the original plan was to hire an independent interpreter[56], this was not possible due to the external circumstances as there was strict protocol in place in Vietnam due to COVID-19, and it was preferable not to have outside persons in the building. In one group interview where two participants were hearing impaired, a participant supported the process by translating sign language. It should be noted that the language translator at times summarised the responses of some of the employees with disabilities, and thus responses may not be verbatim.

[56] Before the COVID-19 pandemic created a bottleneck, the gatekeeper had helped research how to employ a local interpreter and the associated costings. Thus, the willingness on the side of the organisation to have an independent interpreter was evident.

6.4.2. Analysis

The recordings of the interviews were transcribed to enable content analysis. Satisfiers were identified, coded, and then linked with the nine FHNs of the H-SD matrix (Max-Neef et al., 1991). As noted in earlier chapters, retrospective approaches to identifying and analysing satisfiers have been used in previous H-SD studies (e.g. Gimelli et al., 2019; Jolibert et al., 2011). By identifying satisfiers and linking them to FHNs it can help understand how social settings (in this case, the working environment) can enhance wellbeing outcomes (Cruz et al., 2009). The satisfiers identified were then summarised in *Matrix 6.* Five key themes were identified around satisfiers to structure the findings and concurrent discussion.

6.4.3. Special ethical considerations and methodological challenges

Special ethical protocol was applied in line with suggestions from the literature (Creswell and Creswell, 2018) and Imperial College Research Ethics Committee. As this research involved a vulnerable population, mitigating ethical risks was discussed with the committee panel. Regarding informed consent, special circumstances were applied when working with employees with disabilities; extra care was given to ensure the participants were understanding of the study's purpose. As the participants had likely not interacted with an external researcher before, simplified participant information sheets were explained by the gatekeeper, and were signed to signal their permission. As with all the research in this thesis, participants had the opportunity to answer questions prior to the study. On one occasion the gatekeeper forgot to print the form so written consent occurred afterwards, but the study and its aims were explained before. In all instances, the participants had opportunity to ask any questions before the interview began, which helps build transparency and trust between researcher and participants that may be especially important for vulnerable populations (Dwertmann, 2016).

When interviewing certain stakeholders, power dynamics can present an ethical issue (Chapter 1). In the case of supply-chain factory workers, existing literature highlights that unequal power dynamics between the researcher and the participants can pose a challenge (Braun and Clarke, 2013; King and Horrocks, 2010). However, the research was designed to mitigate against this as much as possible. Rather than one-to-one interviews, group interviews with three participants and a gatekeeper were utilised to support a less intimidating atmosphere for participants who may feel intimidated by the presence of an external researcher. Furthermore, working with a gatekeeper helped to mitigate ethical issues as they had familiarity with the employees and their disabilities. When the research was originally planned to take place in person, it was anticipated that the researcher would share a small non-monetary gift with the participants as a sign of appreciation (e.g. UK tea and biscuits) in line with suggestions in the literature (Creswell and Creswell, 2018). Unfortunately, since the research took place remotely due to the COVID-19 pandemic, this was not possible.

In terms of data quality, many of the participants with disabilities were not familiar with a group interview setting, so their responses at times were not as detailed as expected. Despite this possible shortcoming, the inclusion of the population remains crucial for data relevance. This was mitigated through clarification questions as well as convergence with the management interview findings and secondary data. Despite these challenges, the study can still provide a comprehensive and reliable snapshot of a critical case.

6.5. Findings

The findings of the interviews with employees with disabilities, supplemented with reference to five of the earlier management interviews and documentary literature is presented below. Adopting the lens of the H-SD, a range of satisfiers that stem from the initiative are identified. For illustrative purposes these satisfiers have been connected to the corresponding FHN whilst highlighting the enabling factors of the unique CE business model. *Matrix 6* summarises the satisfiers and the corresponding need(s) on the H-SD matrix. Throughout this section, reference to existing literature and the core business model are also presented.

Matrix 6: Summary of satisfiers identified in the analysis (adapted from Clube and Tennant, 2021).

	BEING	**HAVING**	**DOING**	**INTERACTING**
SUBSISTENCE	Financially independent; healthy	Fair wage; stable income; lunch provided	Formal work; eating	Work environment; home environment
PROTECTION	Financially independent; respected	Accessibility; fair wage; stable income; work-life balance; laws for safe workplaces	Formal work; manageable working hours	(Safe) work environment; (safe) transport
AFFECTION	Sociable; included; respected	Breaktimes; colleagues/ friends; work-life balance	Socialising with colleagues; manageable working hours	Breaktimes as social setting
UNDERSTANDING	Trained with new skills; sociable	Training/ learning opportunities; colleagues/ friends	Learning; disability appropriate tasks; peer support; learning new skills	Work environment
PARTICIPATION	Included; trained with new skills; sociable; confident	Inclusive workplace; accessibility; training/ learning opportunities; transport provision	Learning; disability appropriate tasks; learning new skills; communication	(Safe) work environment; breaktimes as social setting; transport
LEISURE	Sociable; included	Breaktimes; colleagues/ friends; work-life balance	Socialising with colleagues; manageable working hours	Breaktimes as social setting
CREATION	Trained with new skills	Training/ learning opportunities; new skills	Learning new skills; using new skills at home	Work environment; home environment
IDENTITY	Included; confident; respected; trained with new skills; financially independent; sociable	Inclusive workplace; training/ learning opportunities; fair wage; colleagues/ friends	Socialising with colleagues; learning new skills; formal work; communication	Breaktimes as social setting;
FREEDOM	Included; respected; financially independent	Inclusive workplace; fair wage; work-life balance; equity	Formal work; manageable working hours	Work environment

6.5.1. Inclusion

Persons with disabilities were identified by the organisation as having difficulties entering the workforce, and so the venture was set up with specific aim to employ this community that experience various of physical, mental, sensory conditions (IA, IC, D19). The venture goes beyond typical CSR strategies and has some human rights responsibility attached to it (IE). ID summarised that the initiative aimed to work to repurpose approximately 600,000 pieces of stock fabric by employing persons with disabilities, which *"give these people an opportunity to really have a regular life and to be more independent"*. Thus, the combination of inclusion and ecological value is consistent with calls in the literature for circular business models aligned with social justice (Schröder et al., 2020). IE, who represents an external expert, observed that *"they* [case] *were really the only kind of industrial business, the only one in industry in manufacturing that had made this commitment to diversity and inclusion, so they are quite rare."*

The Company has a mission to be *truly* inclusive, and this desire and commitment to social inclusion, reflecting the broader sustainability strategies, is driven by top management throughout the organisation (ID, IE, IG, D20, D33). This reflects the findings of Luu (2019) who identifies a strong leadership culture supportive of inclusion supports attitudinal acceptance of persons with disabilities in organisations. The theme of inclusion emerged in the data (D20, D32, D33) whilst interviews with employees mentioned that they felt comfortable and included in the workplace (GI4, GI5). A participant (GI3) described Rekut as their "second home" [translated]. Satisfiers stemming from inclusion were identified contributing to FHNs of *participation, freedom, affection, leisure, identity* and *freedom* needs. For some of the employees this was their first formal job (GI1, GI2, GI3) as consistent with the literature, many of the participants had faced barriers to formal employment because of their disabilities (ILO, 2013; Mizunoya et al., 2016; UN, 2019). Reflecting the literature (Nguyen, 2013; Palmer et al., 2015), supporting families with domestic chores or participating in the informal economy is common for persons with disabilities in Vietnam (IE). The informal jobs previously held by participants included babysitting, selling lottery tickets on the street, selling goods online, motorbike deliveries or helping at home (GI2, GI3). The interviews illuminated that accessing formal employment had been unexpected for some participants. One participant commented (GI2) that they had surprised their relatives by getting a job as *"none of them believed that any company would ever dare to recruit* [me]"[translated] because of their disability. Therefore, satisfiers such as confidence (GI2, GI5, GI6, D20) result from inclusion, which may satisfy the FHN of *identity*.

As per existing literature highlighting the need for accessible workspaces (Groggins and Ryan, 2013), workplaces may be unsuitable for persons with disabilities due to a lack of facilities to accommodate certain disability-related requirements. Advice was sought from external organisations (e.g. relevant NGOs) and investments were made to ensure the buildings were accessible with the necessary adjustments to the workspace (IA, IE, IG, D7, D14, D20, D29, D32). Correspondingly, it was identified that (ID, D32) some physical disabilities can make it challenging to use standard equipment (e.g. sewing machines). Thus, in the design process the disabilities were considered to ensure the products could be made with ease or that the jobs allocated are suitable for each individual (ID, D32). The investment in adaptive equipment was essential for many

with physical disabilities to enable them to carry out the required tasks (ID). In these instances, the adaptive machinery is an economic good corresponding to accessibility that contributing to the FHN satisfaction of *participation*. However, at times disabilities still prevented participation in certain aspects (e.g. severe leg injury preventing sewing machine use as noted in GI4 and D32) and so may still constitute a barrier to certain activities. Another finding related to accessibility was that the company offered transportation each day for the employees with disabilities (GI2, IE, D33). Previous research indicates that distance to the place of work can present an obstacle to joining the workplace for persons with disabilities (Bogenschutz et al., 2021), so inclusive transportation to the premises can satisfy *participation* and *protection* needs.

6.5.2. Physical and psychological safety

The theme of physical and psychological safety emerged with related satisfiers (e.g. health, inclusion, safe working environment) of multiple FHNs (e.g. *protection, participation, subsistence*). Health and upliftment are interconnected with the concept of wellbeing (Chambers, 2005). Some of the participants had previously been employed in factories, which is unsurprising given Vietnam's large manufacturing sector. For those who previously had jobs, discrimination can been problematic (D32), reflecting the literature (Bogenschutz et al., 2016; Mizunoya et al., 2016). Discrimination can be interpreted as a *violator* given it can prevent multiple needs being satisfied (Max-Neef et al., 1991). IA commented that at the beginning *"some were scared that a big company would treat them the wrong way"*. Saitex has made effort to ensure the supervisors are trained and that all employees are treated respectfully (D28, D32, D33). When comparing past jobs to their current role, it was referenced that the workplace environment was much more comfortable, dignifying and accepting at Rekut (e.g. GI5: *"everyone is more accepting here"* [translated]). Some commented that the work was less labour intensive than other factories, and thus more suitable for their disabilities (GI5: "*The tasks here are much more relaxing and easy"* [translated]). A participant noted that fabric is an easier material to work with than others, such as wood, which they had worked with in a previous job (GI6).

It emerged that although integration with the mainstream factory employees was an eventual objective, but that most of the employees are shy and may be intimidated when first joining the workplace (IA, GI1). For example, one participant who had suffered an accident causing them to stop working some years before said that prior to joining they were *"very shy and always stayed at home"* [translated] (GI6). It was suggested that starting the venture in a segregated facility was gauged as the most appropriate by managers for the initial phase; a safe environment has been highlighted as an essential component to foster diversity (Groggins and Ryan, 2013) and can be evaluated as a satisfier for *protection* and *participation* needs.

It was stated that the venture is *"providing very serious employment opportunities for people and doing so in a very safe way"* (IE). Special considerations are required in terms of physical safety when working with persons with disabilities (UN, 2019; WHO, 2011). This includes complying with local legislation, namely the Labour Code (updated in 2019 and enforced in January 2021) as well as adhering to buyer requirements[57] (IC).

[57] It was identified that some buyers may view the integration of vulnerable communities as somewhat risky given regulations, including relating to certifications, may be underdeveloped leading to ambiguity.

For example, the Labour Code and its supporting guidelines have generally prohibited the use of heavy machinery or toxic chemicals for persons with disabilities (*section 4, article 160*), or enabled them under strict and ambiguous conditions. Such laws can be challenging to interpret because they are non-specific to the industry (IG: *"...but the problem is when you talk about heavy machinery that category is pretty wide. So what does it mean?"*). By taking a conservative view of the legislation this would encompass many textile operations of the main production (IC). Nevertheless, the initiative can overcome these legislative barriers through industrial symbiosis and *closing* loops principles, using waste by-product fabrics from core production, thus avoiding restricted industrial processes. This highlights how inclusivity and circularity can be coupled to overcome regulatory barriers.

6.5.3. Training and skills development

The employees held numerous roles, such as: cutting and dismantling fabrics, operating the sewing machines, hand embroidery, ironing, packing finished goods and general support roles to make a range of upcycled items including cushion covers, tote bags and small accessories (GI1-6, ID, D13). Training and inclusive education are important to ensure employees with disabilities have successful experiences in the workplace (UN, 2019). Nevertheless, sometimes *"those with mild disabilities may not be sent to school or receive education"* (IA), which reflects observations in the literature (Bogenschutz et al., 2021; Palmer et al., 2015; UN, 2019). Upon joining the workplace, the employees were given training, which varied in length from a few days to weeks depending on individual circumstances relating to their disability (IA, IE, D7, D29). Training can be evaluated as a satisfier for the need for *understanding* and *participation,* since they may not have been involved in such work before. Thus, this can be interpreted as integral for ensuring success at carrying out the demands of the job and reiterates the importance of vocational training opportunities for persons with disabilities (UN, 2019).

It emerged that numerous special considerations exist which impact design and production practicalities (ID, D23, D28). For instance, the designer must consider the disabilities when planning the product range to ensure the designs can be made without difficulty (ID), and hence enabling satisfaction of the FHN for *participation*. At times the disability still resulted in challenges carrying out certain tasks; for example, hand embroidery may not be suitable for some who has certain physical disabilities. Some employees may not have considered themselves capable of some of the skills they learnt before joining the project but IA commented that *"we were so impressed to see how fast they were learning and it was just absolutely amazing"*. Self-efficacy issues have previously been noted in the literature as a barrier to joining the workforce for persons with disabilities (Ali et al., 2011). However, through training some of the participants were able to develop skills, and thus satisfying the need of *understanding*. For example, during the interviews some participants showed their progress in the hand embroidery skill: from beginning with simple patterns to the creation of complex designs (GI5). The hand embroidery is an integral component to the upcycling. Skill acquisition may induce positive impacts in terms of confidence (GI2: *"...knowing how to do hand embroidery has helped [me] be more confident"* [translated]) that can relate to FHN satisfaction (e.g. *identity*). One participant commented that they now utilise their newly acquired skill of sewing at home to help family fix their clothes (GI2). This hints at the potential of training and skills to embed circular behaviours in daily lives.

A unique skill being embedded into the venture is ensuring managers and employees can communicate with one another regardless of their disability (GI1, D29, D32, D33). As some workers are hearing impaired, there is specific time allocated for sign language lessons since *"not all of the Rekut members speak like sign language"* (IG). Furthermore, there is effort to support the development of broader life skills through dedicated training (D29, D32, D33). These skills can be interpreted as satisfiers of *participation* and *understanding* needs.

6.5.4. Wage and financial independence

Working and having a stable income was consistently acknowledged as a benefit of being involved in the workplace (GI1, GI4, GI5). Whilst reducing poverty, a stable income can be assessed as a satisfier of *subsistence* and *protection* needs, but potentially broader for those previously lacking inclusion (e.g. *freedom*). One of the reasons for establishing Rekut was the importance of enabling this community to earn a fair, stable income (D20); IE observed that they are *"going above and beyond what's expected them in terms of the paying minimum wage"*. Many of the participants had previously not held a stable income and relied on family or informal jobs to support their living expenses (D32). Informal jobs can lack financial stability for persons with disabilities, leading to basic economic needs not being fulfilled (Palmer et al., 2015; UN, 2019). The wage enables the purchase of essential material goods; food, gasoline and baby formula were examples provided (GI4, GI5, GI6). A stable wage can enable access to material goods that support need satisfaction. Hence, the venture can have positive benefits at the family or even community level (IG, D32); IA noted that *"employing people with disabilities it doesn't just benefit them directly but also their families and everyone around them".* Since some of the employees have not worked before, the initiative provides administrative support upon joining, such as setting up bank accounts and obtaining a health disability assessment (IC, D20, D33). This can support satisfaction of needs, such as *participation* and *freedom*.

The participants revealed the wage was commonly shared with family (GI1-6), often parents, which is commonplace in Vietnamese culture (IC). The wage therefore enabled contribution to family expenses, which satisfies *subsistence* and *protection* needs, as well as possibly *identity* and *freedom* needs resulting from positive self-image associated with contributing a share to elders (noted as a benefit by Lamichhane, 2015, p.21). For others, having a stable income can be assessed as a satisfier of the need for *freedom* since it enables a level of independence. For example, an employee interviewed had relocated from another area of the country for the job (GI4). For a participant in GI6, they had only worked for a month after five years at home after an accident, so spent their first payment *"inviting friends to eat out",* suggesting that the wage can be a satisfier for *leisure* and *affection* needs.

6.5.5. Development of friendships and social contacts

Social interaction and forming friendships were a reason for enjoying going to work (GI1-6, D32) (e.g. GI2: *"have a chance to meet other people*" [translated]). This supports previous studies that highlight the benefits of employment emanating from alleviating social isolation amongst the disabled population (Ali et al., 2011; Lamichhane, 2015; Schur, 2002). For example, previously a participant's (GI5) *"family didn't allow [them] to go*

to work, they wanted [them] to just stay home" [translated]. Bogenschutz et al. (2016) recognised forming typical relationships as an important component for persons with disabilities to *live a good life* in Vietnam[58]. Socialising and forming social contacts can be interpreted as a satisfier of *affection* needs as well as *leisure, participation* and *identity* needs. A participant (GI1), noted that meeting other people was a skill, which links to the fact that social interaction may have been limited due to not working and spending time at home (GI4, GI5). Being able to meet others with disabilities had a positive impact. For example, a participant (GI3) commented that they feel happy because they have *"the chance to meet people who face the same circumstances"* [translated]. Both the lunchbreak and breaktimes were opportunities to socialise with one another; and so breaktimes can be evaluated as a satisfier for *leisure* needs. It was described how they sit in a around and chat (GI2, GI3, GI4, GI5). Some have developed friendships that extend outside the workplace.

6.5.6. Work-life balance

It seemed that the work environment was not stressful (e.g. GI6: *"doesn't have any pressure from work and bring it home"* [translated]), and thus manageable for persons with disabilities. The group interviews revealed satisfiers relating to having a positive work-life balance as contributing to *protection, leisure, affection* and *freedom* needs. IE noted that *"the working hours are adapted to what they can do"*, which has been noted as important in other studies (Nguyen, 2013). A participant in GI5 also noted that when they had to go for a hospital appointment, the manager was supportive and allowed them to take half a day off.

During the workday, the mandatory one-hour lunch break was identified as an opportunity to eat, socialise and relax (GI1-6). The workday prescribed at Rekut was indicated as assisting a work life balance as it was raised that the working hours in other factories were too long (GI4, GI5), often requiring working until 9 or 10pm in the evening or different shifts (GI6: *"...the job here is less labour intensive"* [translated]). The mandatory long-working hours associated with other factory jobs can be interpreted as inhibiting satisfaction of *leisure, protection* and *freedom* needs. This reiterates findings in the literature which identify that persons with disabilities often perceive full-time employment as inflexible or too stressful for their requirements, including scheduling issues, such as accounting for extra time to reach the workplace and other personal needs (Lamichhane, 2015). In contrast, as recommended by Vietnamese Labour Code (*Section 4, article 160*), the venture has a seven-hour workday as standard, six days per week supporting a balanced lifestyle. Some participants with children pointed out that in this job they were able to still drop their children off at school and be home in time for the evening meal (GI6).

6.6. Discussion of embedded case

The case showcases the unique efforts to include a vulnerable community into the workplace, aligning with an overall vision to have 20% of the workforce from vulnerable backgrounds by 2025. This strategy is highly compatible with overarching calls in the SDGs to *leave no one behind* (UN, 2015). The case clearly contributes to

[58] Max-Neef et al. (1991) noted that paternalistic approaches constitute *inhibiting* satisfiers, since they intend to satisfy the need for protection but overprotection inhibits the satisfaction of other needs. For this community, staying at home may have been an attempt to ensure safety but may reduce social contact, hence leaving other needs inadequately satisfied.

conceptual and practical gaps in the literature surrounding the conundrum that the CE has thus far failed to radically demonstrate how social inclusion can be embedded into private-sector strategies (Schröder et al., 2020). This case illuminates the potential positive FHN impacts for persons with disabilities whilst responding for calls for equity and justice in CE visions (Johansson and Henriksson, 2020; Millar et al., 2019).

The analysis shows that the case's objectives are well-aligned with many of the principles of the H-SD and conducive to the notion of decent work (ILO, 2013; UN, 2019, 2015). The benefits of formal employment for this community go beyond simply providing a wage - thus satisfying more than just *subsistence* needs, and therefore have synergic impacts. It seems that the satisfier of *employment* is a gateway to numerous other satisfiers for this previously marginalised community; this could be assessed as representing a distinct, novel category of satisfier (*gateway* satisfier) that builds on Max-Neef et al. (1991) existing categorisation (discussed in section 6.7.2). Essentially, employment also rectifies some of the *poverties* likely previously experienced by persons with disabilities since "*extended unemployment will totally upset a person's fundamental needs system"* (Max-Neef et al., 1991, p.19) (e.g. difficulty entering the workplace inducing poverties of multiple FHNs). Employment enhances wellbeing for this community since it contributes to producing satisfiers such as skill development, inclusion, social contact as well as enabling financial-related benefits. Thus, the business model approach helps address prevailing occupational and structural injustices (Berkey, 2021; Olivares-Aising, 2018). Furthermore, the approach aligns with the principles of the H-SD when it comes to ensuring self-reliance (at the individual, Eigenwelt level) (*ibid*). This directly contributes to overcoming the obstacle of self-sufficiency as Bogenschutz et al. (2016, p.2) observed that there are *"exceptional challenges in obtaining self-sufficiency for many people with disabilities in Vietnam, as their access to education and employment are restricte*d*".*

Job creation in the embedded counters the reductive logic of typical CE social claims, which focus on *quantity* of jobs rather than deeply exploring the nuances of employment assertions or how strategies can be extended to be of social value (Padilla-Rivera et al., 2021; Walker et al., 2021). The support of a strong leadership culture of sustainability is likely to have given the Company legitimacy when carrying out such an ambitious and transformative initiative (Luu, 2019). This reflects suggestions of Tien et al. (2020, p.702) that enterprises must be considered *"trustworthy for internal staff and credible for external partners"* before embarking on important social missions. However, there is still research to be done relating to whether these types of activities can be viably and safely replicated in a heavily competitive sectoral dynamic. At a systems level, the satisfiers identified in this analysis can be interpreted as having environmentally preferrable properties when compared to a model that relies on virgin resources. This stems from the fact existing resources that are by-products of the core production are leveraged, addressing the challenge of high pre-consumer waste and internalising some of the environmental impacts of the FTI (Dahlbo et al., 2017; Niinimäki et al., 2020; Shirvanimoghaddam et al., 2020). This could be seen as a form of self-reliance – in an organisational sense - since the Company is attempting to utilise its own waste, preventing the burden being passed to others.

It is worth reflecting that this embedded case also significantly deviates from the approach of the core business model illustrated in Chapter 5, as the logic of technology and efficiency is exchanged for attributes associated with *slow* fashion, which *"professes a heightened state of awareness of the design process and its*

impacts on resource flows, workers, communities, and ecosystems" (Fletcher, 2010, p.264). Hence, the case demonstrates that business can be an enabler of human needs satisfaction when conscientiously approached, as argued by Everard and Longhurst (2018). It must be highlighted that a desire to be socially inclusive was conscientiously designed into a circular business model, supported by committed top management buy-in. This suggests that *truly* radical social impacts are unlikely to be passively realised but must be actively pursued. Ultimately, this type of business model is broadly aligned with H-SD principles and provides a case for managerial learning and supportive policy development (*Annex k* contains a list of managerial recommendations).

6.7. Chapter conclusion and reflections

6.7.1. Conclusion

As summarised on *Table 11,* this chapter has provided a much-needed concrete example of how a business initiative can successfully contribute to broad sustainability missions relating to social justice, inclusion and equity of vulnerable communities in CE transitions (Kirchherr, 2021; Merli et al., 2018). This is a particularly unique aspect of the overall case presented in Chapter 5, supporting the assertion that Saitex represents a progressive business model aligned with some SDG principles (Rendtorff, 2019). Issues of justice have been a persisting oversight in CE agendas until now, yet these rectifying this omission essential to address in CE visions to ensure human needs are met for *all*, in line with the SDG pledge to leave no one behind (UN, 2015). In this case, a private-sector organisation has shown it is possible with careful deployment of resources and top-down support to ensure inclusion of persons with disabilities into a CE business model. The case shows that circularity strategies, such as upcycling, can enable persons with disabilities to successfully participate in the workforce. The Company was able to conscientiously design a business model to avoid hazardous and inaccessible tasks and instead focusing on inclusive circular production strategy. More widely, the findings suggest that for persons with disabilities being involved in the workplace has positive impacts in terms of satisfaction of a range of FHNs. This indicates that a satisfier such as employment can induce subsequent satisfaction of a range of needs, which may be classified as a *"gateway satisfier"* at the individual level.

6.7.2. Reflection: An additional category of satisfier?

As introduced in Chapter 2, Max-Neef et al. (1991) postulate five categories of satisfier (*synergic, singular, inhibiting, pseudo, violating*) of FHN (*Table 3*). Synergic satisfiers consist of those that simultaneously meet more than one need at once. Hence, they are preferable from an environmental standpoint (Guillen-Royo, 2016). For example, having a fair wage can satisfy *subsistence* (e.g. supporting purchase of essential goods)*, protection* (e.g. supporting financial security) and *freedom* (e.g. enabling choices) needs simultaneously. In this case, for vulnerable communities *having a job* can indeed be recognised as a synergic satisfier. However, the definition of synergic does not encompass the cascading, and sometimes temporal, unlocking dynamic of certain satisfiers. For example, *having a decent job* can be described as a gateway satisfier since it simultaneously unlocks a range of additional satisfiers, that extend far beyond the initial satisfier and/or need. In this embedded case having a job had a cascading gateway effect for persons with disabilities, since it enabled financial independence, improved confidence and increased social contact. Hence, the impacts are not simultaneous but unlocking in

nature. Another example could be *quality education*, which is a synergic satisfier but could also be classified as a *gateway satisfier* as it likely results in the realisation of a variety of other satisfiers (e.g. access to decent work, valuable skills & knowledge, financial stability etc).

I propose that this additional categorisation of satisfier – the *gateway satisfier* - can complement the existing five types. This additional satisfier could be particularly useful in the policy planning space by identifying how the realisation of a satisfier can cause subsequent positive cascading impacts. For example, in the urban design policy space, having efficient public transportation could *unlock,* hence act as a gateway to, a variety of additional satisfiers (e.g. access to employment, access to leisure, less congestion etc).

Table 11: Chapter 6 summary.

Chapter question(s)	Key findings	Areas for further exploration
• *How can a CE initiative contribute to needs fulfilment of persons with disabilities in the workforce?*	• Circularity and social impact can be combined through conscientious redeployment of resources & ambitious inclusion strategies. • Involving persons with disabilities in the workplace in a safe, inclusive way is likely to induce satisfaction of FHNs for this community. These satisfiers can extend beyond financial in nature (e.g. extending to skills development & forming of social contacts). • This type of strategy is conducive to aspects of sustainable development including the crosscutting objective of the SDGs to leave no one behind.	• From a practical perspective requirement to identify how these radical social strategies can be replicated beyond the case organisation (e.g. supportive policy). • Further exploration of the concept of *gateway* satisfiers in CE context & more generally.

7. Discussion

7.1. Chapter overview

As Chapters 3, 4, 5 and 6 each had a contained discussion within the chapters, this chapter seeks to synthesise together the key findings, rather than be repetitive of previous discussions. The Chapter discusses key themes that emerged throughout, whilst referring to existing literature and the original research questions; these are listed below as a reminder for the reader.

> RQ1: *What are, or could be, the positive social impacts of a CE?*
> RQ2*: How does the dominant narrative address social concerns in the CE?*
> RQ3: *What is the role of the private sector in adopting circularity to deliver transformative social outcomes?*

The discussion is structured by discussing the findings in themes whilst subsequently offering a normative proposition as to what a radical reframing based on a Social CE might look like stemming from the findings and reflections of this thesis. The principles of the *Social CE* are based on the three components of the H-SD (human need satisfaction, self-reliance, construction of organic articulations) by reflecting on how the dominant CE currently addresses these components (see *Table 12*). Given that the empirical evidence in this thesis suggests that dominant aspects of circularity fail to encompass radical social outlooks and instead focus on incremental improvements, then the summative discussion proposes what a socially transformative vision *ought* to look like.

7.2. Discussion: The need for a radical reframing

"Earth provides enough to satisfy every man's needs, but not every man's greed."
Mahatma Gandhi, nd.

This thesis was developed from the premise that the social dimension of the CE is ambiguous, contested and uncertain. Therefore, the first of the original questions (RQ1) was to explore how to view the CE's social impacts, and hence assess whether social value is embedded into seminal visions and contemporary applications. Following observations in the literature, if the role of the economy is to fulfil societal needs (Guillen-Royo, 2016; Helne and Hirvilammi, 2015), then it was posited that normatively speaking a CE should as well seek to satisfy societal needs. The H-SD was identified a useful lens to explore and analyse CE theory and practice, since it expands the concept of *wellbeing* beyond prevailing neoclassical economic outlooks with a clear distinction between *needs* and *satisfiers* (Max-Neef et al., 1991). The use of this human needs framing is novel in the context of the CE, but links to suggestions of Alaerts et al. (2019) who explain that human needs could be a possible indicator for monitoring CE progress. It also corresponds to calls for human development to be integrated into circularity by Schroder et al. (2020). Given ambiguity relating to the link between the CE and sustainable development (Millar et al., 2019), connecting *needs* to circularity aligns with development narratives (Everard and Longhurst, 2018; WCED, 1987). If *needs* are met in a socially and environmentally desirable manner, through circularity strategies, then this theoretically implies greater convergence between the CE concept and

sustainable development. Throughout this thesis, there has been critical exploration as to *if* or *how* needs are satisfied in a CE, and whether this presents a contrast from the traditional linear approach.

The exploratory nature of the research of this thesis enabled the H-SD to be applied as a means for analysis but potentially provides opportunity for reframing the CE based on human-centred principles. Indeed, Creswell and Creswell (2018, p.18) identify that qualitative inquiry often entails a suggestive aspect, which *"creates an agenda for change or reform".* Thus, in the following sections I intertwine an overall discussion with a proposition for an alternative *Social CE,* based on the observations and knowledge generated throughout this thesis. Given each chapter contained its own individual, but interrelated discussion sections, the aim of this Chapter is to summarise, synthesise and provide a conceptual contribution based on the overall reflections and findings presented throughout this thesis.

An aspect built upon relates to on one of the unknowns that upon reflection should be acknowledged: in my analysis, I interpreted the avoidance of a harm as a form of satisfier. For example, the reduction of chemicals in the case study (Chapter 5) was interpreted as a satisfier for *protection* needs (e.g. safe work, health). However, this begs the question: *Can an avoidance of a violator constitute a satisfier?* This is relevant as the avoidance of harms/ violators appears to be the core representation of RQ2 in practice. For example, in the context of the FTI, is being less bad a social benefit for workers and the wider community, or is this simply reversing an unsustainable *norm* of exploitation that exists within the industry? At the very least the avoidance of a harm can perhaps contribute to a better balance of impacts as currently low-income regions are disproportionally burdened with the impacts of global north consumption (e.g. through pollution of natural resources, water dumping etc). However, reverting back to McDonough and Braungart's (2002) distinction (discussed in Chapter 2), it appears that currently eco-efficiency appears more than eco-effectiveness, and so the social and environmental impacts of the CE are currently limited. On this basis, the proposal for a *Social CE* seeks to rectify this conundrum by exploring where benefits are extended beyond avoidance of harms and constitute transformative outcomes consistent to the normative goal of achieving the *good life.* The envisioned Social CE contains features of the H-SD, and the focus on satisfying FHNs in this vision is well aligned with the SDG agenda (*Figure 9*). This conceptually contributes to the latter, normative, part of one RQ1. Many of the components of the *Social CE* vision stem from the concerns identified relating to 'dominant' narratives and build on features of other proposals in the literature (including but not limited to: Bradley and Persson, 2022; Lemille 2020; Lekan et al., 2021; Schroder et al., 2020). Aspects of the discussion and the proposition have previously been published in the *Journal of Cleaner Production* (Clube and Tennant, 2023).

Table 12 provides a synthesis of the analysis and preceding Social CE proposal; the contents of the table contain the core features of the empirical and theoretical contribution of this thesis.

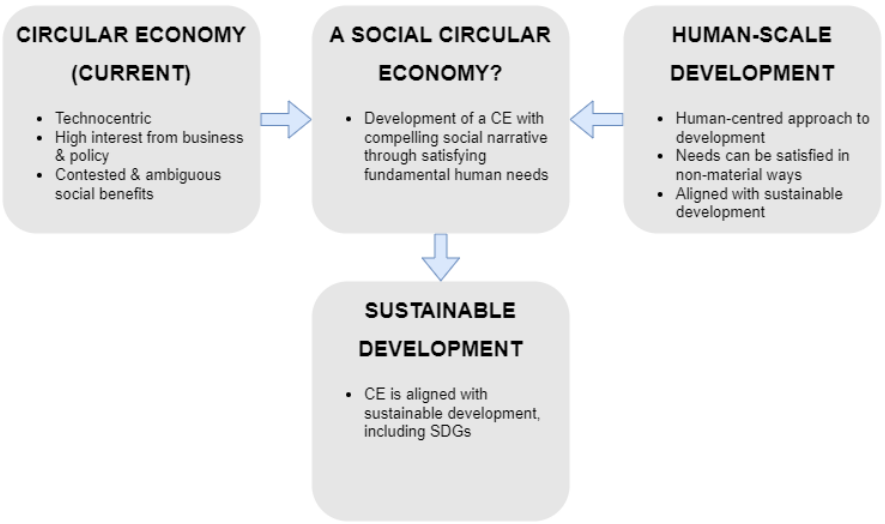


***Figure 9**: Reconciling the CE with a human needs perspective to produce a compelling societal narrative.*

7.2.1. Dominant CE: *Wants* over *needs*

- **Key finding:** The dominant CE narrative focuses on maintaining existing societal norms linked to the acquisition of material goods, most often with attention on the Global North as beneficiaries. As such, there is a prevailing focus on fulfilling material wants rather than satisfying FHNs.
- **Key finding:** A focus on *wants* rather than *needs* means that reduction strategies are rare so mainstream actors may develop CE strategies that exist *in addition* to linear activities (e.g. rental *in addition to* conventional ownership).
- **Key finding:** The impacts of circularity strategies across the globe may be unevenly distributed, highlighting justice and equity concerns.

The findings and reflections presented throughout the chapters suggest that the type of satisfiers that exist in current dominant interpretations may not radically differ from those in the persisting linear economy. This is because, even though Chapter 3 demonstrated that some CE imaginaries have potential to satisfy FHNs in a radically different way than the linear economy, the dominant approaches are limited since they apply a narrow perspective that focuses on fulfilling *wants* rather than *needs*.

The theoretical and empirical findings collectively suggest that although acceptance of the need to *reduce* is evident, in practice the most adopted strategies tend to focus on commercially viable reuse, recycling and efficiency directions (Chapter 4, 5). This notion implies a clear gap between ideology and practice as the more familiar and implementable aspects of circularity that fit with existing lifestyles and political goals are those that emerge. For example, practitioners in Chapter 4 noted that *reduction* is necessary for the FTI, but dominant strategies focus on efficiency and changing *how* one consumes rather than deeply questioning *why* one consumes. As such, conspicuous consumption remains commonplace and somewhat encouraged if through 'circular' means (e.g. renting, reusing). In fact, this is framed as a social benefit according to the EMF (2017a) who highlight that expanded choice and associated customer satisfaction are advantages of a CE. This inference

may be valid in the current materialistic culture where goods are viewed as an end goal rather than as a means for FHN satisfaction (Max-Neef et al., 1991), but does not represent a radical diversion from the consumption culture of the prevailing linear economy. As such, material goods remain a central focus in the current CE agenda. Viewing expanded choice as a societal benefit is clearly in contention with the goal of reduction whilst reinforcing the neoclassical worldview of the citizen as a passive, economically rational agent in market-based exchanges (Hobson and Lynch, 2016). Relating this to the foundations of the H-SD, Max-Neef et al. (1991, p.59) considers this perspective to be reductionist, and highlights the shortcomings of societies where the citizen is viewed foremost as a consumer:

> *"...there are many models that postpone social development in the name of consumer sovereignty, while overlooking the fact that reducing a person to the mere category of a consumer also impairs the possibilities of personal development."*

It is therefore possible that a CE in the FTI will fail to reduce consumption. The sentiment overwhelmingly supports the observations of Velenturf and Purnell (2021) who noted that the CE literature is devoid of critical discussion surrounding the differences between wants and needs, leaving the current narrative uncontroversial when it comes to consumption and lifestyles. This links to broader, general CE critique identified in chapter 3: the current outlook remains tied to an ecological modernisation thesis characterised by the *greening* of existing embedded ways of living rather than fundamentally querying societal values (Dryzek, 2013; York and Rosa, 2003).

The gap between normative, transformative visions of a CE and what occurs in dominant mainstream practice reduces the social potential of circularity in terms of FHNs. Both the seminal texts and case study explorations highlights that the CE, depending on the ontological perspective applied, can have very diverse outcomes in terms of FHN satisfaction. Some visions can potentially fulfil needs with wide-ranging satisfiers (e.g. demonstrated in Chapters 3, 5, 6), whereas the dominant industrial interpretations (e.g. illustrated in Chapter 4) are more consistent with ensuring *wants* of consumers are fulfilled. This is often at the expense of satisfying the *needs* of others, such as exploited workforces. On the other hand, Chapter 3 demonstrated that some seminal visions that are referred to as influential to the CE's development (e.g. BE, RD) had potential to significantly reshape how needs are met, encompassing visions of ways of living that were not focused on acquiring material goods or interpretations of wellbeing based on high consumption. In particular, RD did not focus on commercial consumption and production *at all* but envisioned a progressive reversal of unsustainable ways of living featuring diverse non-material satisfiers.

High resource use and consumption are not generated equally across the globe with many developed countries using significantly more resources on a per capita basis than many low-income nations (Hickel et al., 2022). This has been a persistent in the linear economy, but as demonstrated through nuanced discussions in this thesis, this appears unchanged in the dominant CE approach. The ongoing pursuit of *wants* of Global North citizens rather than universal satisfaction of *needs* for all means that structural injustices are not rectified. This was illustrated in Chapter 4 through primary and secondary data. It was identified that in the FTI there is systematic exploitation of garment workers as well as widespread negative externalities of production impacting

local communities in the Global South. It was found that these issues are not automatically rectified in a CE, countering expectations that a CE can result in improved wellbeing in a general sense. This means that socially harmful features that inhibit needs satisfaction may persist in a CE unless proactively addressed to account for these social deficits. The deviant case in Chapters 5 demonstrated that a CE strategy does not automatically lead to overcoming exploitative conditions – although some linkages can be drawn (e.g. between increased efficiency and ability to pay decent wages). However, the case demonstrates that a CE strategy should be developed from a responsible business ethic where social minimums are exceeded; this enables further improvements of the work environment to emerge from circularity (e.g. reduced hazards from cleaner production). Ultimately a comprehensive, holistic and progressive approach can improve both social and environmental outcomes of production processes.

Throughout, there were inferences that job creation is an important, and expected, social impact of the CE. However, it remains contested as to the extent to which the vocations of Chapter 5 or others created in the CE (e.g. recycling, repurpose etc) are considered decent (per ILO and SDG). As reflected on in Chapter 5, although the case demonstrates improved practices from the status quo, it could be argued that any large-scale taylorist manufacturing work is inherently undesirable (Max-Neef et al., 1991). Hence, how needs are satisfied for workers may remain unremarkable if underlying economic activities remain based on capitalistic, or arguably neoliberal, logic. It goes without saying that this notion deeply conflicts the H-SD, which stresses that the economic rationale should encompass *"a refusal to turn some people into instruments of others and some countries into instruments of others"* (Max-Neef et al., 1991, p.64). A perceived satisfier for an individual that prevents adequate satisfaction of another individual or community's needs is inherently undesirable. Yet, it seems that a Global North focused agenda could undermine the potential for the CE to address sustainable development due to a neglect of justice and equity concerns (Clarke-Sather and Cobb, 2019; Kirchherr, 2021; Repp et al., 2021; Murray et al., 2017).

Moreover, Chapter 4 hinted that CE strategies have uncertain outcomes in terms of the distribution of job opportunities deriving from the circular shift[59]. The dual-location manufacturing approach described in Chapter 5 is a unique case study contribution to the literature in this respect; such a circular localisation strategy has potential to create jobs at the point of consumption without undermining the opportunities in existing export-based economies. This could counter uneven development concerns, such as those that may emerge between export-dependent countries and Global North consumers, such as in the FTI (see Repp et al., 2021).

[59] These findings have been noted as potentially problematic in other industries, such as electronics (Kirchherr, 2021).

7.2.2. Social CE: Transitioning from *wants* to *needs*

- **Proposition:** a needs-based Social CE would focus on ensuring needs are satisfied for all, requiring significant social and culture shifts away from pseudo-satisfaction of FHNs through unlimited wants. This would enable the claims of CE being a tool to reach sustainable development more aligned.

Given a focus on material goods in the dominant CE, there is a necessity to transition away from a culture of limitless consumption based on *wants* and to rethink what material necessities are required for positive well-being outcomes for the whole spectrum of society (Velenturf and Purnell, 2021). The challenge here is that business models seem to be reconfigured to try and address consumer wants in a circular way rather than starting with human needs. This is because, despite contrary evidence outlined in Chapter 2, there remains the persisting implicit assumption that the acquisition of material goods results in improved well-being (Easterlin, 1995; Guillen-Royo, 2010; Jackson, 2013). Exploration of narratives of the EMFs (2017) vision for a circular fashion industry indeed point out that expanded consumption choices represents a social benefit, which is contrary to H-SD and wider eudaimonic well-being perspectives.

Bimpizas-Pinis et al. (2021, p.2) pertinently note that *"ultimately, the key aim of an ambitious CE is to meet societal needs in the context of what is actually needed with reference to material use*". Identifying what this means in practice is of course open to debate but this topic warrants further investigation. Works in related fields can help identify what this might look like in relation to resource use. For instance, Vogel et al. (2021) suggest that meeting human needs is possible in low-energy use scenarios if other provisioning factors are present (e.g. high public services availability, income equality). Their findings counter the focus on economic growth as a route to universal needs satisfaction but highlight the requirement for a systems perspective.

Since *"development is about people and not about objects"* (Max-Neef et al., 1991, p.16), then societies should be focused on reorienting from material goods as a source of pseudo-satisfaction to valuing non-material satisfiers (Van den bergh, 2009). Per the H-SD (Max-Neef et al., 1991), the development of organic articulations between humans and nature is essential, recognising biophysical limits of the Earth's carrying capacity that cannot sustain perpetual growth underlined by high material consumption (Büchs and Koch, 2019). Hence, living well must be realigned with valuing collective goods (e.g. green space, clean air) rather than individual materialistic artifacts. Importantly, a *needs* rather than *wants* based CE does not need to reduce quality of life as low materialism is compatible with improved well-being outcomes (Max-Neef et al., 1991). The findings support Everard and Longhurst's (2018) suggestion that business can be a source of human need satisfaction, so there must be a focus on identifying and scaling activities that produce the most socially useful satisfiers. For example, the embedded case of Chapter 6 illuminated that being involved in the workplace for a vulnerable group had unlocking properties: these were hypothesised as representing an additional category of satisfier (*gateway* satisfiers), that are preferable alongside *synergic* satisfiers. Hence, circularity approaches should be prioritised to maximise *gateway* and synergic FHN satisfiers.

A Social CE must aim to universally satisfy subsistence *needs* for all, in both Global North and Global South regions, ensuring inclusion of vulnerable groups across the globe as per the SDGs (UN, 2015). Following

Max-Neef et al. (1991) outlook, one groups' needs should not be violated in the pursuit of needs satisfaction of another group. As demonstrated through the FTI exploration within this thesis, clearly industries continue to engage in exploitative practices that Max-Neef et al. (1991) would view as a *pathology* of a society obsessed with productivity. Focusing on circularity using H-SD principles to provide satisfiers of *subsistence*, such as nourishment, shelter, health, is critical. Strategies cannot be homogeneous, and will vary dependent on local conditions (e.g. developed versus developing regions, urban versus local). They might include, for instance, enabling community-level satisfaction of *subsistence* needs using circular principles, such as warmth and cooling through distributive renewable energy systems or nourishment through community circular farming infrastructures, reminiscent of the seminal visions of Lyle (1994) and Pauli (2010). For instance, Chapter 4 highlights that circularity entails repairability of items in line with goals of reduction, and this provides opportunities for citizens to reduce reliance or need for new clothing paralleling a cultural shift away from fast fashion towards longevity and care. These activities currently remain peripheral as citizens may be devoid of power when it comes to partaking in the CE. There may be institutional structures or deliberate introduction of barriers (e.g. corporate servicing agreements, planned obsolescence), which discourage participation in activities that potentially induce self-reliance (e.g. local repair) (Malinauskaite and Erdem, 2021).

Appropriate government interventions must be supportive of initiatives that induce sustainable FHN in a Social CE (e.g. robust and socially-relevant EPR schemes). Local interventions are well placed to support satisfaction of a range of needs in the process of meeting circular goals (e.g. *subsistence, protection, participation, understanding*) whilst aligned with inspiring citizen reflexivity regarding human-nature relations, as noted in Chapter 3. Comparable benefits have been identified in practice in recent studies into community composting in New York City by Morrow and Davies (2022) and in community repair by Bradley and Persson, (2022), where synergic social and ecological impacts are realised in the process. Bradley and Persson, (2022), where synergic social and ecological impacts are realised in the process. This is resonant with Max-Neef et al. (1991, p.53) who suggests that needs should be satisfied in the *process* of satisfying needs, rather than only focusing on the end point:

> *"...the difference with respect to the prevailing development styles lies in considering the aims of development not only as points of arrival, but as components of the process itself. In other words, fundamental human needs can and must be realized from the outset and throughout the entire process of development. In this manner the realization of needs becomes, instead of a goal, the motor of development itself. This is possible only in as much as the development strategy proves to be capable of stimulating the permanent generation of synergic satisfiers."*

7.2.3. Dominant CE: An efficiency focus

- **Key finding:** A focus on efficiency is commonplace in CE strategies, which suggests that the dominant approach is conducive to *relative* rather than *absolute* decoupling. This undermines the importance of sufficiency (i.e. *reduce*) by favouring strategies of reuse and recycling.
- **Key finding:** In this efficiency outlook, technology is over-emphasised as a solution, which prevents the construction of organic articulations amongst system components (e.g. between people, nature and

technology). There are, however, opportunities for more conscientious socially transformative versions of the CE to develop – including with *sufficiency* principles - which can satisfy FHN in a way that significantly deviates from the status quo.

The findings provide evidence that the CE agenda has a strong efficiency focus. An efficiency-based CE conflicts with the ideas that are foundational to the H-SD and wider eudaimonic wellbeing literature: Max-Neef et al. (1991, p.35) were critical of efficiency narratives since they pertain to an *"obsessive productivity with a bias to efficiency"* at the expense of social progress. This sentiment reflects the dominant technocentric circularity agendas based on enhancing corporate performance, often through efficiency and recycling strategies, which is hardly surprising since from a private-sector perspective as *efficiency* is preferable to *sufficiency* reflecting the current capitalist agenda (Bimpizas-Pinis et al., 2021; Lazarevic and Valve, 2017; Payne, 2019; Skene, 2018).

Chapter 4 provides an FTI-specific empirical contribution to support this notion. For example, dominant FTI companies may focus on material substitutions as a means of applying circularity (e.g. increasing recycled fibre content). Here unit-based efficiency is framed as an end goal, overlooking the macro-level requirements of applying a more systemic perspective, including through questioning the social-political norms around how needs are satisfied (section 7.2.1.). This reiterates concerns of Palm et al. (2021, p.658) who observe that in the FTI "*the responses are too often framed only in terms of material flows and improved textile and fibre production*", ignoring wider socio-ecological system considerations. With this outlook, there is a misleading premise that consumption and production can continue if certain circular behaviours, materials and business strategies are adopted. Moreover, many strategies identified in Chapter 4 adopted by retailers were revealed to take place *in addition to* rather than *instead of* (i.e. second-hand resale on top of existing sales). This is reminiscent of Stahel's (2010) seminal vision of a PE identified in Chapter 3, whereby it was acknowledged that performance-based activities will emerge in addition to the manufacturing economy. However, the analysis of the PE shows that such an interpretation of CE fails to transform how needs are met, and thus likely to have limited potential to deliver transformative social impacts. A CE that fails to incorporate absolute reductions means that rebound effects are inevitable (Johansson and Henriksson, 2020; York and Rosa, 2003; Zink and Geyer, 2017).

The empirical and theoretical findings raise the concern that a focus on technological solutionism can create imbalances in terms of human-technology-nature relations. This was clear in the perspective of Stahel's PE (2010) identified in Chapter 3 and similarly emerged in the sentiment of Chapter 4. Here, certain technology gaps were framed as a hindering advancement of the CE from a practitioner perspective (e.g. re lack of scaled fibre-to-fibre recycling technologies), reflecting the literature (Leal Filho et al., 2019). In agreement, Chapter 5 indeed demonstrated that technology was an important facilitator to *narrow* resource loops and achieve efficiency in a manufacturing setting. Nevertheless, these assertions need to be considered alongside the conundrum that some of these technologies potentially replace labour needs (Chapter 4, 5). Max-Neef et al. (1991) was critical of an indiscriminate use of technology since it can undermine the role of humans in the system. This is a concern associated with high technology approaches but adds an additional tension when considering the social implications of a circular shift (Schroder et al., 2020). However, in Chapter 5, technology

was demonstrated to support satisfaction of FHNs – particularly *protection* needs - through reduced exposure to workplace hazards (e.g. chemicals), whilst a potential linkage was identified between efficiency, cost reductions and fair wages. Despite these micro-level benefits, these impacts must still be examined critically since technology and efficiency can be used to justify volume-based production, resulting in absolute decoupling being untenable (Freudenreich and Schaltegger, 2020; Giampietro and Funtowicz, 2020; Mair et al., 2016). The findings point to the fact that in the FTI - despite some laudable efforts to reduce impacts, such as those demonstrated in the case study - there is an ongoing failure to query the "growth obsessed" industry trajectory, as unlimited wants are enabled through unlimited production (Fletcher 2010, p.262). Taking a sceptical perspective, this may be the very reason for the high interest in technical approaches to circularity, since this may enable the FTI to continue in its pursuit of growth (Payne, 2019).

A notable exception to the high technology, efficiency approach to circularity was demonstrated in Chapter 6's exploration of an innovative circular strategy whereby existing waste material is utilised to create products, which has features conducive to *sufficiency*. This was especially unique since social impact was maximised through a specific policy to recruit persons with disabilities, supporting FHN satisfaction for a group often experiencing marginalisation. This overturns the dominant efficiency-based strategies and illustrates how a mainstream industrial actor can harness transformative social strategies whilst retaining commercial viability. These novel examples have not been widely shared in the CE case study literature (Schroder et al., 2020), so this case presents a novel and progressive approach to value creation (Rendtorff, 2019).

In essence, the findings point that relying *purely* on technological fixes may suggest that human and nature remain subordinate to industrial activities. This common outcome links to the fact the political agenda remains focused on economic growth, and without political shifts it is unlikely the dominant CE will yield remarkable outcomes as a preoccupation with efficiency will remain elevated (Folke et al., 2021; Inigo and Blok, 2019). The theoretical exploration of Chapter 3 reflected this notion in the PE where circularity seemed to only extend to the economic system, whereas nature remains commodified. Here, it was posited that the PE is highly influential in the dominant visions of the CE, especially the EMF vision. Without addressing the elevation of efficiency strategies, it inevitably will lead to a failure to re-construct organic articulations between people, technology and natural components since people and nature are marginalised when compared to technology. Balance between these core tenets are prerequisites for human-centred societies in the H-SD (Max-Neef et al., 1991). This thesis therefore substantiates the concern that the CE, unless reframed, may fail to prevent further planetary boundary overshoot due to failure to construct organic articulations within the system (Buchmann-Duck and Beazley, 2020; Desing et al., 2020).

7.2.4. Social CE: Moving from efficiency to sufficiency

- **Proposition:** A radical Social CE requires transition from efficiency to sufficiency, hence requiring absolute reductions to ensure absolute decoupling scenarios are realised. This will support a version of the CE conducive to preventing further planetary boundary overshoot.

Countering the efficiency narrative, Genovese and Pansera (2020) suggest that a CE can be reformulated to take into account social and ecological limits to growth. In line with this, a Social CE would significantly diverge from current industrial and social practices, with deep institutional and political shifts to realise radical changes in how resources are viewed and used. A Social CE requires remarkable interventions to transform society from one focused on *efficiency* to *sufficiency* (aligning with the transition from *wants* to *needs*). This includes supportive top-down political shifts as well as bottom-up changes. Within this, the role of technology must not be overstated, and hence the downcycling and recycling strategies that persist must be deprioritised in exchange for absolute reductions. Relatedly, unlike dominant CE interpretations that tend to be focused on ensuring perpetual economic growth, a *Social CE* based on sufficiency would be conducive to preventing further planetary boundary overshoot, respecting the finite nature of the planet's resources (Desing et al., 2020). A focus on radical ecological improvement hardly featured in the empirical findings, despite the EMF (2017, p.22) claim that a CE is underpinned by aims to be *"restorative and regenerative"*. Therefore, regeneration must be in a sense *reclaimed* in a Social CE, as central to the early visions of RD (Lyle, 1996) (Chapter 3). If this perspective of regeneration was reinvigorated in a Social CE, then this would intrinsically embed an intergenerational outlook, supporting needs satisfaction of future generations (WCED, 1987). This would realign the CE with sustainable development ambitions.

In line with Max-Neef et al. (1991) desire for grassroots approaches, active public participation, educational programmes (e.g. embedding into educational circular and public campaigns) and reflexive processes must be embedded into society to support transition to a citizen culture conducive to circular behaviours, including absolute reductions (Hobson, 2020). If these occur at a local level then this may further ensure self-reliance is embedded into the communities, which aligns with the visions of the H-SD (Max-Neef et al., 1991). This can fundamentally support a rebalance between human and nature relations, as the environment becomes a satisfier for human needs in itself (e.g. through enjoyment for nature, providing community spaces), not simply for its monetary value as a resource input.

Consumption is socially constructed (Brand-Correa et al., 2020; Fellner and Goehmann, 2020) yet reducing material wants poses a major political and cultural challenge because it is now heavily embedded into social norms. In the short-term, such a transition would inevitably be unfavourable to many businesses (even for those claiming to be transitioning to a CE approach, such as those in the FTI) and conflict political agendas focused on economic growth. For instance, these shortcomings will be felt businesses focused on extractive industries; linear mass-manufacturing; and generally, for those stakeholders that exploit structural injustices (e.g. for those manufacturers engaged in flexible supplier relations enabling frequent supplier switching based on labour costs). This includes those in the FTI per Chapter 4 where the industry appears to thrive on uneven power dynamics. Ultimately, this shift is major, but required if the CE is to deliver outcomes conducive to

inclusive sustainable development within planetary boundaries. Transitioning towards circularity based on sufficiency should be managed so it does not have a sustained negative impact on low-income nations that currently rely on extractive or volume-based export industries. In a Social CE, a *just* transition would ensure these countries become more self-reliant[60] through the development of local circular economies, aligning with Kirchherr's (2021) call for c*ircular justice.* Chapter 5 revealed the possible social, economic and environmental benefits of novel dual-nation manufacturing strategies that are supported by high technology approaches. These represent a potential avenue to realise a more 'just' circular transition, by balancing benefits and impacts across regions. These approaches are rare, but their emergence offers opportunities for future research.

As highlighted, a Social CE must be underpinned by a focus on maximising FHN satisfaction in non-material ways. When material goods or services are necessary to support needs satisfaction (e.g. for *subsistence*), then this should be approached in a distributive, equitable and circular manner. Focusing on developing satisfiers that can fulfil collective *needs* (e.g. through satisfiers such as access to nutrition through socially valuable enterprises) rather than *wants* of the individual must be prioritised. This requires system-wide interventions to induce radical shifts in outlook (Velenturf and Purnell, 2021). Inevitably, the transition away from individualistic cultures based on materialism will not be instantaneous and will take time to emerge. Max-Neef et al. (1991) posits that the type of satisfiers that exist in a society have developed over time and are influenced by political and social rhythms. In the same way that satisfiers have developed, it is possible to *change* the satisfiers with appropriate interventions and cultural shifts (Brand-Correa et al., 2020; Fellner and Goehmann, 2020; Max-Neef et al., 1991). However, *sufficiency* should not be implemented through inflexible policy in a Social CE. Absolute limits of consumption *could* be implemented through aggressive top-down legal and fiscal interventions. However, this would constitute a violator according to Max-Neef et al. (1991) perspective since it would demonstrate a paternalistic approach that inhibits citizen agency. Strict, restrictive policy can violate certain FHN (i.e. the need for *freedom*). Rather, there is need for supportive policy to encourage progressive approaches, and so research into the most effective measures and points of intervention for different social phenomena are required. For example, Morrow and Davies (2022) illustrate the importance of public funding to support non-market spaces.

[60] It is of course not possible to be completely self-reliant given local conditions limit feasibility etc. However, recent events such as the Russia-Ukraine war & COVID-19 have highlighted the economic pressures that arise from supply-chain shocks. Hence, per Galtung (1986, 1976) and Max-Neef et al. (1991) it is desirable (at the very least) to reduce this exposure. Strategies aligned with the CE such as renewable energy generation and local food production can reduce vulnerabilities to, for example, rising crude oil prices.

7.2.5. Dominant CE: Business elite as key actors

- **Key finding:** The current CE is highly focused on elite business actors as key drivers of the concept. However, this fails to reposition the citizen as required for human-centred outcomes as top-down actors remain dominant.
- **Key finding:** A CE based on private-sector activities is unlikely to redistribute power or encourage bottom-up initiatives, although some innovative exceptions were illustrated (e.g. the nested case in Chapter 6). Rather, the role of top-down actors is to provide consumption opportunities and jobs for citizens.

In the FTI, Chapter 4 raised the concern that alternative forms of exchange or activities deemed to be without financial appeal are marginalised or passed onto NGOs to manage. Hence, private sector efforts to internalise environmental and social impacts of activities may only extend to when it is profitable to do so (Moreau et al., 2017).

A focus on elite actors emerged in the theoretical and empirical findings; these actors are dominant in the contemporary CE agendas. However, revisiting the seminal texts in Chapter 3 was revealing in so far as neither Lyle's RD or Pauli's BE framed elite actors as important, but rather were focused on community development and bottom-up processes. It therefore seems contentious that proponents, including EMF, suggest that RD and BE are central influences of the CE concept given the narrative is highly influenced by commercial and political actors. As such, in reality the EMF and other corporate institutions are more resonant with the PE perspective in terms of leading actors, where financial and scientific elites were framed as integral. However, as the novel analysis of Chapter 3 suggested that the PE narrative was not conducive to systemic satisfaction of FHNs. Conversely, since the analysis shows that the RD have features that are well-aligned with H-SD, if these were more strongly evident in the developing CE narrative then perhaps more of the satisfiers identified in Chapter 3 could emerge. However, these radical visions have been lost in the conceptual development as the citizen is reduced to either a consumer or a worker. This is problematic as the citizen has a role in facilitating a CE beyond simply those based on consumption alone (Hobson et al., 2021; Pla-Julian and Guevara, 2019), which was recognised by practitioners in Chapter 4 and 5.

Chapters 3 and 4 demonstrate that a preoccupation with a corporate elite-style CE is misaligned with H-SD principles, in part due to a lack of diversity of actors and a focus on top-down approaches. Rather the H-SD stresses the importance of alternative forms of organisation, such as grassroots movements and micro-enterprises, to induce self-reliance with aim to prevent further entrenchment of elite interests (Max-Neef et al., 1991). The findings indicate that non-commercial actors, such as NGOs, are essential facilitators of circularity. This was demonstrated in the FTI (Chapter 4), where NGOs enable and encourage mass *reuse* of garments, yet the private sector receive disproportionately high attention in the dominant CE agenda.

The empirical findings point to the potential for socially inclusive aspects of the CE to emerge in the FTI. Chapter 4, for example, identifies opportunities to realise social benefits of circular FTI innovations, such as digital reselling apps and open-access technologies. These innovations have the potential to democratise

transactions and alter the power dynamics of the FTI. Hence, this hints at the ability of circularity to potentially diversity from traditional capitalist exchange into alternative transactions (Gibson-Graham, 2008). Nevertheless, it is still necessary to recognise that in the context of the FTI these innovations still share an underlying aim of facilitating the availability of pseudo-satisfying material *wants*. In other industries where the underlying good can be considered essential (e.g. food/ nutrition to satisfy subsistence needs) then perhaps synergic social benefits would be more clearcut. Then, these technologies underpinned by circular principles could enable fairer access, sharing and exchange of essential economic goods whilst reshaping the power differentials between elite and citizen actors (Leipold et al. 2021; Moreau et al., 2017).

The job impacts of circularity are currently framed as a social benefit since new vocations and expanded business opportunities are championed. As alluded in the discussions throughout this thesis, this is an identified positive impact of the CE, outlined in both seminal visions and contemporary agendas (e.g. EU policy, EMF documentation etc). However, whether this sentiment is *legitimate* has been a recurring theme throughout the theoretical (Chapter 3) and empirical (Chapters 4, 5, 6) findings. The seminal text analysis in Chapter 3 demonstrated a sparsely discussed predicament: jobs are not equal in terms of FHN satisfaction. Upon reflection, it seems that dominant policy and practitioner visions (e.g. demonstrated in Accenture, 2014; EMF, 2013; EU, 2015) can be interpreted as aligned with the earlier PE visions (Stahel, 2010) where there is focus on the *quantity* of jobs and associated wealth generation, rather than *quality* of employment (e.g. as better articulated in a BE per Pauli, 2010). Yet critical reflection and analysis of Chapter 4 and 5 further adds weight to the assertion that *having a job* does not automatically result in broad and diverse satisfiers of FHNs. Some jobs can be *violating* or *inhibiting* in terms of FHN satisfaction, whereas others have *synergic* or *gateway* properties. The latter was demonstrated through the nested case (Chapter 6), where persons with disabilities were able to realise a plethora of other satisfiers by being involved in the workplace. Nevertheless, the dominant CE outlook and neoclassical economic focused positivist literature tends to oversimplify these aspects. For example, Aguilar-Hernandez et al. (2021) claims a win-win-win sustainability scenario in a CE when the social dimension is based on macroeconomic job creation indicators.

Moreover, the findings of Chapter 5 imply that a more technological interpretation of the CE based on digitalisation and Industry 4.0 could produce more appealing roles in an industrial setting by reducing hazardous and arduous tasks. Nonetheless concerns remain, supporting those noted by Burger et al. (2019), that concede there is a lack of research into whether the right skillsets exist to make this assumption a workable reality. In fact, it is worth highlighting that in the context of the EU Action Plan, they caveat that the transition will be positive *"provided that workers acquire the skills required by the green transition"* (EU, 2020, p.19). The exploration of such aspects was out of scope of this thesis, but industrial and educational agendas will require alignment to future skills needs. The findings point to the fact that the quality, distribution and appropriateness of employment opportunities emerging from the developing CE require more nuanced research.

7.2.6. Social CE: Expansion to include a diverse range of actors

- **Proposition:** A diverse range of actors must participate and interact in a Social CE to reframe the citizen from a passive consumer to an active participant. This would induce greater self-reliance and opportunity for FHN satisfaction when transitioning to a circular society.

Ultimately, the theoretical and empirical findings point to a need for broader stakeholder involvement to ensure circularity is successful in its application whilst inclusive in its impacts. Currently the dominant technocratic visions are unlikely to remarkably redistribute power or enable self-reliance at the individual or local level given the persisting role of powerful corporations. A Social CE, therefore, must extend interactions beyond market-based exchanges. Within this, as discussed by Jaegar-Erben et al. (2021), awareness and engagement are essential to develop a circular society. This extends the CE beyond a production and consumption model to one encompassing broad aspects of life across all stakeholder groups. This is essential as a Social CE requires *active* participation from all actors in the system, not just amongst existing powerful actors. Otherwise, CE at an industry-level is unlikely to be transformative as noted in the context of the FTI where citizens must be prepared to engage in alternative modes of consumption whilst correctly managing resources. Reflecting broader sustainability ideals (Folke et al., 2021), a Social CE would be one with improved trust, co-operation and collaboration (e.g. strategies such as co-production per Cuomo, 2022) and democratic decision-making, often at the local level, to support positive collective outcomes (Moreau et al., 2017).

As demonstrated throughout this thesis, clearly business currently plays an important role in resource interactions and delivering solutions. The private sector will remain an important actor in a Social CE, providing vocational opportunities that are socially useful and overturning exploitative labour regimes. For example, the case study in Chapter 5 demonstrates how the private sector can support broader FHN satisfaction of a factory workforce by producing food onsite, providing nutrition, which is a satisfier not usually associated with factory work. However, the activities carried out by the private sector should be balanced with involvement of other actors in the system, such as micro-enterprises and citizen-led movements, per Max-Neef et al. (1991). This would help create the construction of organic articulations between different actors (*ibid*) rather than further entrenching the interests of elite actors focused on perpetual economic growth. Although paradoxical to the prevailing growth focused logic, there is need for the business community to encompass broader goals beyond solely maximising financial performance. This presents a major systemic challenge given the ongoing dominance of GDP growth as a metric for socioeconomic progress (Lorek and Fuchs, 2013; Max-Neef, 2010). Regulatory reform is required in this sense but also the concept of progressive models (Rendtorff, 2019), as noted in Chapter 5, can also provide a starting point for businesses to reorient their activities towards delivering social and ecological value. Alongside this, the private sector has a role to play in fostering a *sufficiency* mindset, not overstating the benefits of end-of-pipe interventions (e.g. recycling as a panacea, as suggested in Chapter 4). Circular business models can support shifting of consumption norms whilst ensuring societal needs are met through designing for longevity and repairability, rather than for fashion and short lifecycles (Malinauskaite and Erdem, 2021; van den Bergh, 2020).

As illustrated in the case study of Chapter 5, approaches should seek to overturn existing injustices and include decent pay (beyond the living wage), safety and meaningful work, but should go further by implementing targeted strategies that meet local needs or specific social challenges. The embedded case (Chapter 6) illuminates the potential of the latter to produce transformative outcomes when explicitly targeting a specific social cause (in this case, the inclusion of persons with disabilities), directly contributing to addressing RQ3. This demonstrated an approach beyond the technocratic outlook commonplace in the dominant CE narratives which have so far failed to put human wellbeing as central (Bridgens et al., 2018; Merli et al., 2018). The case adds to the limited scholarship on both persons with disabilities and social inclusion in the context of the CE. It is illustrated that well-designed, conscientious CE strategies can produce transformative social value aligned with sustainable development, contributing to filling an empirical void in this respect (Millar et al., 2019; Murray et al., 2017; Schröder et al., 2020).

A Social CE requires more social-embeddedness for citizen empowerment at the local level (Jaeger-Erben et al., 2021; Max-Neef, 2010; Velenturf and Purnell, 2021). This follows Schröder et al. (2020) suggestion that - based on their alternative framing around human development principles - community level involvement is essential to the success of a CE, including by strengthening local cohesion and resilience. To ensure self-reliance and a balance between stakeholders, there is need for investigation of circular pathways beyond solely those which are cost-effective and implemented by business actors (Genovese and Pansera, 2021; Hobson, 2020). This is essential given Chapter 4 show that the private sector is typically only concerned with profitable approaches and may neglect others, even if they are potentially socially and environmentally useful. A social CE must encompass grassroots strategies including non-monetary exchange (Lekan et al., 2021; Moreau et al., 2017), informal structures (Hartmann et al., 2022) and unpaid labour (Barford and Ahmad, 2021; Pla-Julian and Guevara, 2019). The work of other scholars can provide further avenues for exploration as to what these interactions and exchanges could look like (e.g. the previously mentioned diverse economies[61] per Gibson-Graham, 2008) and what macro-strategies may be adopted to facilitate these outcomes (e.g. likely building on existing debates re CE and degrowth or steady-state economic perspectives) (Bimpizas-Pinis et al., 2021; Büchs and Koch, 2019; Suárez-Eiroa et al., 2019). Strategies can support citizen engagement whilst enabling FHN satisfaction through diverse interactions and opportunities for participation, including for marginalised groups. As suggested by Bradley and Persson (2022, p.2) “consumers” should become “citizen-consumers” to encompass the hybrid role of the consumer beyond that of simply a self-interested individual. This goes further than the EMF (2013, 2017) narrative that suggests consumers should become users, which seems to only extend to business-related contexts. Within this, education, participation and thus reflexivity would be ingrained into local circular systems (per seminal visions of the BE noted in Chapter 3) and provide an avenue for needs satisfaction within these activities.

[61] The notion of a Diverse Economy looks beyond mainstream neoclassical economic views of what constitutes economic behaviour. The framework highlights non-market and alternative market activities, in addition to mainstream exchange, which is considered as contributing to a sustainable, more equitable society (Gibson-Graham, 2008).

Table 12: Summary of key features of H-SD in comparison with dominant CE narrative, and avenues for reconciliation (Clube and Tennant, 2023).

Pillars of the H-SD	**H-SD approach** (Chapter 2)	**Current CE** (Chapters 3, 4, 5)	**A social CE?**
Needs fulfilment	• Satisfaction of FHN, rather than focus on material goods. • Preference for satisfaction of needs in non-material ways with exception of goods linked to satisfying *subsistence* needs. • Low materialism is compatible with positive well-being outcomes through focus on synergic satisfiers of FHNs.	• Needs are not satisfied in a radically different way in a CE than a linear economy. • Focus on fulfilling *wants* rather than *needs*: underlying consumption habits often endorsed, as long as through business models based on circular principles (e.g. rental, recycle) and efficiency (Chapter 3, 4, 5). • Focus is on satisfying *wants* of citizens in developed world rather than *needs* of developing world, leaving structural injustices unaddressed (Chapter 3, 4, 5).	• Satisfaction of FHN *needs* for all as central to the CE narrative, including of vulnerable populations (Chapter 6 • Include citizen education & reflexivity to support cultural change to where pseudo-satisfiers are rife. • When material goods are required, resources are managed using circular principles with preference for strategies that maximise satisfiers for various actors (e.g. workers, citizens, vulnerable groups). • Satisfaction of needs of one group should not inhibit the satisfaction of FHNs for another group (e.g. between income-levels, regions).
Self-reliance	• Generating a capacity for self-reliance of communities to reduce dependence on top-down institutions. • Includes participatory processes to ensure outlooks are optimum for respective communities, giving people a voice in the decision-making process	• Top-down approaches are dominant with focus on elite policy & corporate communities, suggesting a technocratic outlook (Chapter 3 & 4). • Citizens & communities are framed as passive 'consumers' who are an economically rational agent (Chapter 3, 4 & to an extent 5).	• Communities actively partake in circularity through democratic approaches. • Preference for collective rather than individualistic initiatives are developed and flourish to ensure equity in social impacts (e.g. top-down structural changes can support grassroots initiatives).
Organic articulations	• Balanced interdependence sought between different actors and components within the system (e.g. between people, technology, nature, the government). • Technologies should not be used indiscriminately but for social & ecologically valuable means.	• Technological solutions are elevated (Chapter 3, 4, 5). • Focus is on elite top-down actors, not rebalancing the existing power structures that favour market-based approaches to overcoming environmental problems (Chapter 3, 4). • Human-nature relations remain imbalanced; nature respected to extent of exchange values resulting in neglect of absolute limits to production & consumption, risking further planetary boundary overshoot.	• A balanced interplay between institutions with a plurality of actors involved in implementation, extending beyond the private sector to encompass alternative forms of exchange. • To rebalance system components, the role of technological fixes should not be overstated & must be combined with behaviour change. • Human-nature relations are rebalanced to respect planetary boundaries.

7.3. Chapter conclusion

This Chapter sought to synthesise and collectively discuss the key findings of this thesis, reflecting on the dominant CE narrative that emerged from the theoretical and empirical findings. Using these findings, reflections and revisiting the core principles of the H-SD, an alternative framing, the *Social CE*, is simultaneously proposed. The Chapter reflects that the dominant focus on addressing existing *needs* of citizens as consumers is elevated in current applications, whereas in a Social CE the focus would be on satisfying human *needs* universally. If this were to be achieved, then the CE becomes a compelling tool to meet sustainable development objectives. Within this Social CE, the dominant efficiency approach must be overturned to focus on sufficiency, which implies moving from downcycling and recycling to reduction and regeneration strategies. This would entail the construction of organic articulations per the H-SD. Finally, the current disproportionate wielded by powerful institutions and businesses must be diversified to include a broader actor base to produce more equitable and democratic outcomes. The Social CE proposal is nascent but is an avenue for future research opportunities, with some suggestions presented in the following concluding chapter.

8. Conclusion

8.1. Chapter overview

This final chapter aims to succinctly conclude this thesis. To avoid repetition, this chapter consists of a concise summary of key findings. Then, with reference to reflections as to what could be extended in this research, potential future research directions are outlined. These are non-exhaustive and supplementary to those noted in the chapters.

8.2. Summary of key findings

I sought to explore the social dimension of sustainability, which was, and remains, the least researched aspect of the developing CE discussion. Per constructionist research, it must be noted that findings and outcomes are not conclusive but rather suggestive (Crotty, 1998).

The collective findings of the thesis imply that it cannot be claimed that dominant interpretations of the CE radically deviate from the linear economy in terms of social concerns when explored using the lens of the H-SD (Max-Neef et al., 1991). On this basis, the previous chapter summarised the findings of the thesis and introduced a normative alternative vision of a Social CE to offer a radical reframing of circularity, with a focus on human needs satisfaction that is conducive to a sustainable development agenda within planetary boundaries. This captures how the CE *ought* to be rather than how the concept is currently being interpreted in dominant, mainstream practice. The core findings are summarised below, separated into social dimension of the CE and FTI-specific findings. I hope to have made a modest contribution to the expanding (or *over*-expanding in terms of quantity) body of CE literature.

8.2.1. Findings related to the social dimension of the CE

- The research contributed to the theoretical gap relating to the social dimension of sustainability within the CE. The utilisation of the H-SD lens to explore and develop this dimension provides a novel approach in the literature, and helps provide a much-needed approach to articulate how circularity can be developed to meet human needs. The concepts of *needs* and *satisfiers* provide a robust lens for analysis, and broader sustainability transitions. This thesis postulates that if a CE could satisfy the FHNs of society, then this would suggest a compelling social narrative for its adoption, providing a much-needed theoretical angle for further nuanced research.
- The focus on human needs satisfaction reconciles the CE with sustainable development, including the SDGs. A CE that can satisfy human needs would overcome concerns in the literature that the CE and SD are diverging concepts. Hence, the focus on *needs* better unites and aligns the two concepts (Chapter 2). However, utilising this lens throughout suggests that dominant CE narratives fail to satisfy needs in a radically different way than the persisting linear economy since *wants* remain elevated above *needs.*
- The dominant approach is led by top-down, elite actors (Chapter 3, 4). This fails to reframe the existing power dynamics, and self-reliance of citizens and communities remains limited in the current CE. As

identified in Chapter 3, the narrative being developed by the private sector is most resonant to the theoretical foundations of the PE, which largely excluded social goals in its original framing. The concept has gone through a conceptual evolution to exclude the more radical, and potentially human-centric visions of seminal scholars (e.g. Lyle, 1996).

- Utilising Max-Neef et al. (1991) argument for the construction of organic articulations between system components in societies, it becomes clear that the dominant CE places disproportionate attention on technological solutions to drive efficiency. This risks a variety of rebound effects, and ultimately does not question the high-production, high-consumption logic since the focus is on unit-based efficiency.
- Employment prospects in the CE are currently elevated but generally viewed in terms of *quantity* rather than *quality*, reflecting a neoclassical economic perspective. Although jobs indeed may constitute a satisfier, the theoretical and empirical findings imply that employment is not neutral as a satisfier of FHNs (Chapter 3). Jobs can represent *inhibiting, singular* or *synergic* satisfiers. Hence, it is important that policy makers and practitioners do not assume that all jobs are equal in terms of social value. Furthermore, employment was also hypothesised as representing a *gateway* satisfier in some scenarios since it can have a cascading effect in terms of the satisfaction of other needs, such as for marginalised populations, as demonstrated in Chapter 6. The findings imply that if CE strategies are to deliver legitimate social benefits through job creation, then human resource and policy strategies should seek to improve upon current practices to ensure these jobs extend beyond being socially neutral (i.e. singular) as a satisfier.
- It emerges that *just* outcomes are not guaranteed in the CE transition (Chapter 4). Employment shifts and the dynamics of resource flows can have impacts in terms of distributive justice. Benefits and harms are unlikely to be evenly realised between Global North and Global South, but also between local communities and institutions. Hence, CE may exacerbate existing structural injustices or create new ones. Alternative business model approaches, such as dual-location strategies, can seek to reduce the risk of uneven impacts (Chapter 5). This may induce greater equity in terms of employment distribution.
- The embedded case study of Chapter 6 provides insight into how environmental problems and social challenges can be strategically approached concurrently with CE as an overarching strategy, adding a unique, deviant case to the literature. The case shows that human needs of vulnerable populations can be satisfied through a progressive business approach that explicitly recognises marginalised groups. Hence these strategies are conducive to recognitional justice and the SDG mantra of leave no one behind (UN, 2015).
- A more radical, Social CE provides a framing for a vision of circularity that is inclusive of human needs, organic articulations and self-reliance, based on the H-SD principles. The vision presented in Chapter 7 provides a conceptual contribution to the literature providing a robust framework for a human-centred alternative to the dominant CE.

8.2.2. FTI specific findings:

- Chapter 4 demonstrates that social impacts of the CE are rarely explicitly addressed in the FTI interpretations of CE. Rather dominant strategies include those focused on recycled materials and incremental business models delivered by existing powerful fashion incumbents. Circular strategies often happen *in addition* to traditional linear sales lines. Hence, these are unremarkable as they do not address the underlying high volume, growth-based norms.
- Efficiency is a common and dominant CE approach, including in the FTI. Efficiency has limitations in terms of ultimate environmental impacts. However, the insights gained from Chapter 5 identify that since efficiency is associated with cost reductions, then this can enable a superior margin that *could* be utilised to pay fair, living wages for the workforce that satisfy FHNs. However, this benefit for the workforce will only be realised if there is a strong top-down impetus for responsible business to pay above minimums, for example demonstrated in Chapter 5.
- Pronounced social impacts of the linear FTI tend to occur upstream, focused on marginalised workers in the Global South, yet these impacts are less addressed through circularity than consumption-focused strategies (e.g. changing how one consumes) (Chapter 4). Hence, structural injustices can – and likely will – persist in a circular fashion industry based on current, exploitative industrial dynamics. The case study of Chapter 5 presented a deviant case of a manufacturer seeking to build a CE strategy as part of an overall responsible and sustainable mindset.
- Chapter 6 presents the case of a progressive manufacturer operating in the FTI where circularity is a core strategy. Through analysis of the business model features, the link between CE strategies and social impacts – viewed through the lens of the H-SD – were identified. Particularly, CE strategies were found to support the satisfaction of *protection* needs for the workforce, and potentially wider communities. The adoption of circular technologies and principles links to reduced workplace hazards and risks. For example, reduction of hazardous chemicals leads to safer tasks for the workforce, but also having indirect positive impacts on local communities and the consumer.
- The nested case (Chapter 6) demonstrated that applying CE strategies in a unique business model that hires persons with disabilities can overcome some regulatory barriers. In Vietnam, labour legislation prevents persons with disabilities undertaking potentially risky tasks, such as working with certain machinery. Instead, the business model was designed to utilise circularity strategies to avoid these tasks by instead working with secondary materials to upcycle pre-consumer waste into new products. Hence, this represents a *sufficiency* based business models where a vulnerable population can *participate* in the workforce safely. This enables a range of needs to be satisfied for a group that typically has difficulty participating, showing that social impact and circularity can produce radical impacts when conscientiously designed into a business strategy.

8.3. Avenues for further research

"A simplistic mind is a mind full of answers. It is also a mind that seldom realizes the simple fact that answers must be preceded by pertinent questions" (Max-Neef, 1991, p.96).

Research often leaves more questions than answers, especially when it is qualitative and exploratory in nature as per this thesis. This work is certainly not a finished product but has sown the seeds for future research; some of which have been identified throughout the chapters, and some that stem directly from constraints of the research or reflections of hindsight. There is potential to expand this research, both theoretically and empirically. Complementary research can expand, deepen and seek to operationalise the ideas set out in this thesis, including the final proposition of a *Social CE* framing based on H-SD principles. This research would in particular benefit from additional studies that include participatory consultation. Participation is encouraged in the H-SD approach as it supports self-reliance and ensures that citizens are a protagonist of their own future (i.e. their voice is included in decision-making) (Guillen-Royo, 2016; Max-Neef et al., 1991). As noted, despite originally planned activities, this was ultimately unfortunately not possible due to COVID-19 disruption.

8.3.1. Participatory exercises and consultations

This research would benefit from supplementary studies that include an element of participatory consultation. Participation is encouraged in the H-SD approach as it supports self-reliance and ensures that the voices of those impacted by decisions are included in analysis and decision-making (Guillen-Royo, 2016; Max-Neef et al., 1991). This is especially important for communities that have historically lacked agency, such as low wage workers or citizens that are considered 'removed' from the activity (e.g. local communities that are impacted by industrial activities without being directly involved). This presents an avenue ripe for complementary research to expand on the propositions of this thesis. Participatory processes could seek to validate and extend the observations and propositions presented. For example, participation could help further dissect the links identified between CE strategies and human needs impacts. This could help extend knowledge on topics, such as by asking *does the workforce perceive the applied technologies as reducing hazards and contributing to satisfying protection needs?* This could also identify whether technologies create additional risks that were not identified in the study, which could in fact negatively impact FHNs of workers.

Participation is also an important tool to further develop aspects of the proposed Social CE. Participatory processes could be used to illuminate which strategies produce the most satisfiers for the respective actors. For example, in the case of the private sector where there is impetus from top-management, employees could be included in decision-making to understand how different strategies can impact the needs satisfaction of workforce and wider communities. This extends the role of the worker to an active agent with complex needs systems, rather than focusing only on rates of pay. In practice, this could support the decision-making process for managers of progressive organisations when choosing between projects to implement. For instance, to ensure human-centred outcomes, research could ask: *Which business strategies are preferable in terms of producing the most synergic and gateway satisfiers for the worker and community at large?*

8.3.2. Clarifying and extending the concept of "gateway" satisfiers

There is opportunity to extend exploration of the proposed concept of gateway satisfiers. This both furthers theory building regarding the H-SD (Max-Neef et al., 1991), whilst also providing a practical conceptual contribution for policy making and social progress. This is important as the H-SD and the original classification of satisfiers were developed in the late 1980s and there is need for more critical examination of their relevance and adaptation for contemporary society. The idea of *gateway* satisfiers could be a useful concept for policy communities, since it suggests both synergic and unlocking properties where a strategy, policy or intervention could release a number of cascading benefits. Whilst this proposition emerged from identifying those unlocking properties that emanated from employment as a gateway satisfier for persons with disabilities, this concept could be explored in other contexts.

8.3.3. A deep dive into consumption

Further engaging with the issue of consumption in a CE is essential to move from a narrative of efficiency to one of sufficiency. Chapter 4's findings suggest that this is required in the FTI, but also across all aspects of society, especially in a Social CE transition. Hence, demand-side research can seek to identify if some circular activities produce more satisfiers than others (e.g. *in the FTI, are strategies such as buying versus borrowing equal in terms of FHN satisfaction for the citizen?).* On the other hand, aspects of this research hinted at the need for further exploration into how theories such as consumption work, per Hobson et al. (2021) can induce synergic satisfiers for citizens or whether these activities actually inhibit needs satisfaction. For example, do activities central to the CE reduce leisure time, or can they be a form of leisure?

Other demand-side questions specifically related to the FTI might seek to assess to what extent do circular business models in the fashion industry support perpetual style changes? Does circular consumption lead to displacement of linear product categories? These issues were not covered in this thesis but clearly require exploration given the challenge that CE does not currently induce radical outcomes in this industry setting and beyond. Here it is worth reflecting on the fact that the focus on the FTI in this thesis may have been overambitious or naïve given the industry can be argued as an empirical setting that represents the epitome of *wants* rather than *needs*. Hence, exploration of other industrial settings may produce fewer tensions. For instance, applying the H-SD in another sector, such as food systems might be more straightforward given 'nutrition' is a universal satisfier (Max-Neef et al., 1991). As such, exploration in other industries offers various research avenues that are relevant to the development of a Social CE.

8.3.4. Beyond the avoidance of harms

The case study (chapter 5) included analysis into how circular strategies may improve social outcomes, particularly for the workforce in FTI manufacturing. Notably, investments in circular technologies were framed as beneficial financially and environmentally, but also for the workforce in terms of health and safety (e.g. reducing or eliminating hazardous processes). However, a prevailing focus on being *less bad* means that the health improvements are not guaranteed, and this benefit may be overstated. Moreover, community benefits

from reduced pollution from industrial activities were also similarly framed as a positive social impact. However, as noted in Chapter 7, such satisfiers may only constitute 'an avoidance of a harm'. For example, the avoidance of hazardous processes was interpreted as a satisfier (i.e. a positive impact) in this thesis, aligning with statements based on the EMF (e.g. that circularity results in societal benefits for employees and citizens). There is clearly a continuum between less harm and transformative impacts, which can be further explored.

8.3.5. Health and the CE?

Although in-depth exploration of health implications of the CE transition was not an intended objective of this thesis, a *perceived* health-CE relationship emerged, particularly in Chapter 5 where technology was viewed as an approach to reducing impacts on the workforce and, potentially, the community at large. However, this relationship is an under-studied area that requires more nuanced research; this is pertinent given that occupational and community health has been stated as a social benefit (Mies and Gold, 2021; Padilla-Rivera et al., 2021; Walker et al., 2021). Hence there are opportunities to develop the impacts of CE on *protection* needs of different actors. Further, there are also technical contributions required. For example, studies could seek to quantify these health benefits alongside the potential trade-offs to provide evidence for use in decision-making.

8.3.6. Switching logic towards a Social CE

The case study approach applied in this thesis was descriptive and exploratory, and hence did not seek to alter the business activities in question. There is opportunity for experimental research stemming from the normative suggestions of the Social CE proposition. For example, research could identify what features a business could adopt if its organisational logic was to shift, for example from a growth-based to a needs-based logic. What would this look like and what are the barriers to this proposition? Could relations between business, NGOs and citizens be transformed per Social CE proposition? This may link to explorations of political reconfigurations that would support such a shift and how can citizens interact in these scenarios. For instance, how would this fit with nascent, but growing, calls for degrowth perspectives to be integrated into the CE? (i.e. building on existing propositions, such as from Kirchherr, 2022 and Schröder et al., 2019). Alternative methodologies utilising H-SD principles could be applied in such explorations, such as the use of action research (Creswell and Creswell, 2018).

8.3.7. Justice impacts of CE transitions

Without reframing, the findings conceded that a CE will almost certainly fail to produce remarkable improved social outcomes compared with the linear economy. However, it was discussed that a transition to a CE (including a Social CE) is likely to produce winners and losers, as captured by the discussions of Chapter 4 and 5. In particular, there is very little research on the implications for the Global South, whilst extractive industries are likely to be *sacrificed.* Hence, a transition could cause unjust outcomes for certain communities if no alternative to the linear counterparts is offered. In the renewable energy transition literature, the work of Sovacool et al. (2021) provides in-depth exploration into the impacts of such transitions. The CE literature would benefit from similar analysis to comprehensively explore the impacts on different actors across supply-chains that will be affected by circular transitions. This is especially relevant to the Social CE's development, as trade-offs will

inevitably emerge for different stakeholders as sufficiency goals alter production and consumption dynamics. This provides an avenue for future research, including to establish how these trade-offs can be optimally mitigated and managed through a supportive and inclusive policy mix. These can be studied using a human needs lens, engaging in participatory processes to ensure they reflect the lived experience of those affected. In a similar vein, the expected positive outcomes in terms of localisation of circular economies may not emerge if the skills requirements do not match citizen expectations or abilities, or if automation and Industry 4.0 developments reduce opportunities (Chapter 5). Further research into these aspects, such as the attitudes of citizens relating to the suitability and willingness to engage in circular vocations, as well as how circularity can be better embedded into educational circular is paramount. These present a promising avenue for future academic and practitioner attention to ultimately ensure *circular justice* (Kirchherr, 2021).

9. References

Accenture, 2014. Circular Advantage, Innovative Business models and Technologies to Create Value in a World without Limits to Growth. Accenture, online.

Aguilar-Hernandez, G.A., Dias Rodrigues, J.F., Tukker, A., 2021. Macroeconomic, social and environmental impacts of a circular economy up to 2050: A meta-analysis of prospective studies. J. Clean. Prod. 278, 123421. https://doi.org/10.1016/j.jclepro.2020.123421

Agyemang, M., Kusi-Sarpong, S., Khan, S.A., Mani, V., Rehman, S.T., Kusi-Sarpong, H., 2019. Drivers and barriers to circular economy implementation An explorative study in Pakistan's automobile industry. Manag. Decis. 57, 971–994. https://doi.org/10.1108/MD-11-2018-1178

Ahmad, S., Hasanuzzaman, M. (Eds.), 2020. Cotton Production and Uses: Agronomy, Crop Protection, and Postharvest Technologies. Springer Singapore, Singapore. https://doi.org/10.1007/978-981-15-1472-2

Ahmed, F., Ahmed, N., Pissarides, C., Stiglitz, J., 2020. Why inequality could spread COVID-19. Lancet Public Health 5, e240. https://doi.org/10.1016/S2468-2667(20)30085-2

Alaerts, L., Van Acker, K., Rousseau, S., De Jaeger, S., Moraga, G., Dewulf, J., De Meester, S., Van Passel, S., Compernolle, T., Bachus, K., Vrancken, K., Eyckmans, J., 2019. Towards a more direct policy feedback in circular economy monitoring via a societal needs perspective. Resour. Conserv. Recycl. 149, 363–371. https://doi.org/10.1016/j.resconrec.2019.06.004

Ali, M., Schur, L., Blanck, P., 2011. What Types of Jobs Do People with Disabilities Want? J. Occup. Rehabil. 21, 199–210. https://doi.org/10.1007/s10926-010-9266-0

Alvesson, M., 2003. Beyond Neopositivists, Romantics, and Localists: A Reflexive Approach to Interviews in Organizational Research. Acad. Manage. Rev. 28, 13–33. https://doi.org/10.5465/amr.2003.8925191

Ambrey, C.L., Daniels, P., 2017. Happiness and footprints: assessing the relationship between individual well-being and carbon footprints. Environ. Dev. Sustain. 19, 895–920. https://doi.org/10.1007/s10668-016-9771-1

Amicarelli, V., Bux, C., Spinelli, M.P., Lagioia, G., 2022. Life cycle assessment to tackle the take-make-waste paradigm in the textiles production. Waste Manag. 151, 10–27. https://doi.org/10.1016/j.wasman.2022.07.032

Amutha, K., 2017. 2 - Environmental impacts of denim, in: Muthu, S.S. (Ed.), Sustainability in Denim. Woodhead Publishing, pp. 27–48. https://doi.org/10.1016/B978-0-08-102043-2.00002-2

ANNER, M., 2022. Power relations in global supply chains and the unequal distribution of costs during crises: Abandoning garment suppliers and workers during the COVID-19 pandemic. Int. Labour Rev. 161, 59–82. https://doi.org/10.1111/ilr.12337

Banks, L.M., Walsham, M., Minh, H.V., Duong, D.T.T., Ngan, T.T., Mai, V.Q., Blanchet, K., Kuper, H., 2019. Access to social protection among people with disabilities: Evidence from Viet Nam: Disabled people's access to social protection in Viet Nam. Int. Soc. Secur. Rev. 72, 59–82. https://doi.org/10.1111/issr.12195

Barraud de Lagerie, P., 2016. Conflicts of Responsibility in the Globalized Textile Supply Chain. Lessons of a Tragedy. J. Consum. Policy 39, 397–416. https://doi.org/10.1007/s10603-016-9312-1

Bartl, A., 2018. The EU Circular Economy Package: A genius programme or an old hat? Waste Manag. Res. 36, 309–310. https://doi.org/10.1177/0734242X18755022

Basit, T., 2003. Manual or electronic? The role of coding in qualitative data analysis. Educ. Res. 45, 143–154. https://doi.org/10.1080/0013188032000133548

Basser, L., 2021. Dead white man's clothes. ABC News.

Bates, W., 2009. Gross national happiness. Asian-Pac. Econ. Lit. 23, 1–16. https://doi.org/10.1111/j.1467-8411.2009.01235.x

Bengtsson, M., Alfredsson, E., Cohen, M., Lorek, S., Schroeder, P., 2018. Transforming systems of consumption and production for achieving the sustainable development goals: moving beyond efficiency. Sustain. Sci. 13, 1533–1547. https://doi.org/10.1007/s11625-018-0582-1

Berkey, B., 2021. Sweatshops, Structural Injustice, and the Wrong of Exploitation: Why Multinational Corporations Have Positive Duties to the Global Poor. J. Bus. Ethics 169, 43–56. https://doi.org/10.1007/s10551-019-04299-1

Berry, B., Farber, B., Rios, F.C., Haedicke, M.A., Chakraborty, S., Lowden, S.S., Bilec, M.M., Isenhour, C., 2021. Just by design: exploring justice as a multidimensional concept in US circular economy discourse. Local Environ. 1–17. https://doi.org/10.1080/13549839.2021.1994535

Berry, J.M., 2002. Validity and Reliability Issues In Elite Interviewing. PS Polit. Sci. Polit. 35, 679–682. https://doi.org/10.1017/S1049096502001166
Beyer, K., Arnold, M.G., 2022. Social sustainability in an evolving circular fashion industry: identifying and triangulating concepts across different publication groups. Sustain. Manag. Forum Nachhalt. https://doi.org/10.1007/s00550-022-00527-x
Bhardwaj, V., Fairhurst, A., 2010. Fast fashion: response to changes in the fashion industry. Int. Rev. Retail Distrib. Consum. Res. 20, 165–173. https://doi.org/10.1080/09593960903498300
Bick, R., Halsey, E., Ekenga, C.C., 2018. The global environmental injustice of fast fashion. Environ. Health 17, 92. https://doi.org/10.1186/s12940-018-0433-7
Bimpizas-Pinis, M., Bozhinovska, E., Genovese, A., Lowe, B., Pansera, M., Alberich, J.P., Ramezankhani, M.J., 2021. Is efficiency enough for circular economy? Resour. Conserv. Recycl. 167, 105399. https://doi.org/10.1016/j.resconrec.2021.105399
Blomsma, F., Brennan, G., 2017. The Emergence of Circular Economy A New Framing Around Prolonging Resource Productivity. J. Ind. Ecol. 21, 603–614. https://doi.org/10.1111/jiec.12603
Bly, S., Gwozdz, W., Reisch, L.A., 2015. Exit from the high street: an exploratory study of sustainable fashion consumption pioneers. Int. J. Consum. Stud. 39, 125–135. https://doi.org/10.1111/ijcs.12159
Bocken, N.M.P., de Pauw, I., Bakker, C., van der Grinten, B., 2016. Product design and business model strategies for a circular economy. J. Ind. Prod. Eng. 33, 308–320. https://doi.org/10.1080/21681015.2016.1172124
Bogenschutz, M., Im, H., Liang, A., 2016. Ecological Model of a Good Life for People with Disabilities in Vietnam. Glob. Soc. Welf. 3, 243–254. https://doi.org/10.1007/s40609-016-0068-y
Bogenschutz, M., Im, H., Liang, A., Quyhn Luong, L.T., 2021. Vietnam and Disability Rights: Perspectives at the Time of Ratification of the UN Convention on the Rights of Persons with Disabilities. Int. J. Disabil. Dev. Educ. 68, 717–733. https://doi.org/10.1080/1034912X.2020.1716958
Börjeson, N., Boström, M., 2018. Towards Reflexive Responsibility in a Textile Supply Chain. Bus. Strategy Environ. 27, 230–239. https://doi.org/10.1002/bse.2012
Bosman, M., Lambooy, T., Oral, E., Jansen, B., 2020. 'The Chemicals Between Us': The Use and Discharge of Chemicals in the Life Cycle of a Pair of Jeans – From Legal Theory to Practice, in: Mauerhofer, V., Rupo, D., Tarquinio, L. (Eds.), Sustainability and Law: General and Specific Aspects. Springer International Publishing, Cham, pp. 157–199. https://doi.org/10.1007/978-3-030-42630-9_10
Boström, M., Micheletti, M., 2016. Introducing the Sustainability Challenge of Textiles and Clothing. J. Consum. Policy 39, 367–375. https://doi.org/10.1007/s10603-016-9336-6
Boulding, K.E., 1966. The economics of the coming spaceship earth. N. Y. 1–17.
Bowen, G.A., 2009. Document Analysis as a Qualitative Research Method. Qual. Res. J. 9, 27–40. https://doi.org/10.3316/QRJ0902027
Boxall, P., Guthrie, J.P., Paauwe, J., 2016. Editorial introduction: progressing our understanding of the mediating variables linking HRM, employee well-being and organisational performance: Understanding mediating variables and their outcomes in HRM. Hum. Resour. Manag. J. 26, 103–111. https://doi.org/10.1111/1748-8583.12104
Brach, S., Walsh, G., Shaw, D., 2018. Sustainable consumption and third-party certification labels: Consumers' perceptions and reactions. Eur. Manag. J. 36, 254–265. https://doi.org/10.1016/j.emj.2017.03.005
Bradley, K., Persson, O., 2022. Community repair in the circular economy – fixing more than stuff. Local Environ. 1–17. https://doi.org/10.1080/13549839.2022.2041580
Braithwaite, J., Mont, D., 2009. Disability and poverty: A survey of World Bank Poverty Assessments and implications. Curr. Trends Dev. Glob. Disabil. Res. Mond. Rech. Sur Handicap Courants Actuels 3, 219–232. https://doi.org/10.1016/j.alter.2008.10.002
Brand-Correa, L.I., Mattioli, G., Lamb, W.F., Steinberger, J.K., 2020. Understanding (and tackling) need satisfier escalation. Sustain. Sci. Pract. Policy 16, 309–325. https://doi.org/10.1080/15487733.2020.1816026
Brand-Correa, L.I., Martin-Ortega, J., Steinberger, J.K., 2018. Human scale energy services: untangling a 'golden thread.' Energy Res. Soc. Sci. 38, 178–187.
Brand-Correa, L.I., Steinberger, J.K., 2017. A Framework for Decoupling Human Need Satisfaction From Energy Use. Ecol. Econ. 141, 43–52. https://doi.org/10.1016/j.ecolecon.2017.05.019
Braun, V., Clarke, V., 2021. One size fits all? What counts as quality practice in (reflexive) thematic analysis? Qual. Res. Psychol. 18, 328–352. https://doi.org/10.1080/14780887.2020.1769238
Braun, V., Clarke, V., 2013. Successful Qualitative Research: A Practical Guide for Beginners. SAGE Publications.

Brutus, S., Aguinis, H., Wassmer, U., 2013. Self-Reported Limitations and Future Directions in Scholarly Reports: Analysis and Recommendations. J. Manag. 39, 48–75. https://doi.org/10.1177/0149206312455245
Buchel, S., Hebinck, A., Lavanga, M., Loorbach, D., 2022. Disrupting the status quo: a sustainability transitions analysis of the fashion system. Sustain. Sci. Pract. Policy 18, 231–246. https://doi.org/10.1080/15487733.2022.2040231
Buchmann-Duck, J., Beazley, K.F., 2020. An urgent call for circular economy advocates to acknowledge its limitations in conserving biodiversity. Sci. Total Environ. 727, 138602. https://doi.org/10.1016/j.scitotenv.2020.138602
Büchs, M., Koch, M., 2019a. Challenges for the degrowth transition: The debate about wellbeing. Futures 105, 155–165. https://doi.org/10.1016/j.futures.2018.09.002
Büchs, M., Koch, M., 2019b. Challenges for the degrowth transition: The debate about wellbeing. Futures 105, 155–165. https://doi.org/10.1016/j.futures.2018.09.002
Bukhari, M.A., Carrasco-Gallego, R., Ponce-Cueto, E., 2018. Developing a national programme for textiles and clothing recovery. WASTE Manag. Res. 36, 321–331. https://doi.org/10.1177/0734242X18759190
Burger, M., Stavropoulos, S., Ramkumar, S., Dufourmont, J., van Oort, F., 2019. The heterogeneous skill-base of circular economy employment. Res. Policy 48, 248–261. https://doi.org/10.1016/j.respol.2018.08.015
Calisto Friant, M., Vermeulen, W.J.V., Salomone, R., 2020. A typology of circular economy discourses: Navigating the diverse visions of a contested paradigm. Resour. Conserv. Recycl. 161, 104917. https://doi.org/10.1016/j.resconrec.2020.104917
Cardoso, R., Sobhani, A., Meijers, E., 2022. The cities we need: Towards an urbanism guided by human needs satisfaction. Urban Stud. 59, 2638–2659. https://doi.org/10.1177/00420980211045571
carson, rachel, 1962. silent spring.
Carson, R., Wilson, E.O., Lear, L.J., Darling, L., 2002. Silent Spring, ASMSU/Spartans.4.Spartans Textbook. Houghton Mifflin.
Cecchin, A., Salomone, R., Deutz, P., Raggi, A., Cutaia, L., 2020. Relating Industrial Symbiosis and Circular Economy to the Sustainable Development Debate, in: Salomone, R., Cecchin, A., Deutz, P., Raggi, A., Cutaia, L. (Eds.), Industrial Symbiosis for the Circular Economy, Strategies for Sustainability. Springer International Publishing, Cham, pp. 1–25. https://doi.org/10.1007/978-3-030-36660-5_1
Centgraf, S., 2018. Supporting civic engagement in German energy cooperatives–Transdisciplinary research based on the reflection of individual needs. Energy Res. Soc. Sci. 44, 112–121.
Chambers, R., 2005. Ideas for Development, Environment-Development Studies. Earthscan.
Chiappetta Jabbour, C.J., Sarkis, J., Lopes de Sousa Jabbour, A.B., Scott Renwick, D.W., Singh, S.K., Grebinevych, O., Kruglianskas, I., Filho, M.G., 2019. Who is in charge? A review and a research agenda on the 'human side' of the circular economy. J. Clean. Prod. 222, 793–801. https://doi.org/10.1016/j.jclepro.2019.03.038
Circle Economy, 2021. Circularity Gap Report 2021. Circle Economy, Amsterdam, Netherlands.
Clarke-Sather, A., Cobb, K., 2019. Onshoring fashion: Worker sustainability impacts of global and local apparel production. J. Clean. Prod. 208, 1206–1218. https://doi.org/10.1016/j.jclepro.2018.09.073
Clift, R., 2003. Metrics for supply chain sustainability. Clean Technol. Environ. Policy 5, 240–247. https://doi.org/10.1007/s10098-003-0220-0
Clube, R., 2022. Is job creation a legitimate social benefit of the circular economy? Resour. Conserv. Recycl. 181, 106220. https://doi.org/10.1016/j.resconrec.2022.106220
Clube, R.K.M., Tennant, M., 2023. What would a human-centred 'social' Circular Economy look like? Drawing from Max-Neef's Human-Scale Development proposal. J. Clean. Prod. 383, 135455. https://doi.org/10.1016/j.jclepro.2022.135455
Clube, R.K.M., Tennant, M., 2021. Social inclusion and the circular economy: The case of a fashion textiles manufacturer in Vietnam. Bus. STRATEGY Dev. bsd2.179. https://doi.org/10.1002/bsd2.179
Clube, Tennant, M., 2020a. Exploring garment rental as a sustainable business model in the fashion industry: Does contamination impact the consumption experience? J. Consum. Behav. 19, 359–370. https://doi.org/10.1002/cb.1817
Clube, Tennant, M., 2020b. The Circular Economy and human needs satisfaction: Promising the radical, delivering the familiar. Ecol. Econ. 177, 106772. https://doi.org/10.1016/j.ecolecon.2020.106772
Corona, B., Shen, L., Reike, D., Rosales Carreón, J., Worrell, E., 2019. Towards sustainable development through the circular economy—A review and critical assessment on current circularity metrics. Resour. Conserv. Recycl. 151, 104498. https://doi.org/10.1016/j.resconrec.2019.104498

Coscieme, L., Mortensen, L.F., Anderson, S., Ward, J., Donohue, I., Sutton, P.C., 2020. Going beyond Gross Domestic Product as an indicator to bring coherence to the Sustainable Development Goals. J. Clean. Prod. 248, 119232. https://doi.org/10.1016/j.jclepro.2019.119232

Costanza et al. - 2016 - Modelling and measuring sustainable wellbeing in c.pdf, n.d.

Costanza, R., Daly, L., Fioramonti, L., Giovannini, E., Kubiszewski, I., Mortensen, L.F., Pickett, K.E., Ragnarsdottir, K.V., De Vogli, R., Wilkinson, R., 2016. Modelling and measuring sustainable wellbeing in connection with the UN Sustainable Development Goals. Ecol. Econ. 130, 350–355. https://doi.org/10.1016/j.ecolecon.2016.07.009

Costanza, R., Fisher, B., Ali, S., Beer, C., Bond, L., Boumans, R., Danigelis, N.L., Dickinson, J., Elliott, C., Farley, J., Gayer, D.E., Glenn, L.M., Hudspeth, T., Mahoney, D., McCahill, L., McIntosh, B., Reed, B., Rizvi, S.A.T., Rizzo, D.M., Simpatico, T., Snapp, R., 2007. Quality of life: An approach integrating opportunities, human needs, and subjective well-being. Ecol. Econ. 61, 267–276. https://doi.org/10.1016/j.ecolecon.2006.02.023

Creswell, J.W., Creswell, J.D., 2018. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (5th Edition). SAGE Publications.

Crinis, V., 2012. The Challenges of Fieldwork: Researchers, Clothing Manufacturers, and Migrant Workers. J. Soc. Issues Southeast Asia 27, 168–189.

Crivits, M., Paredis, E., Boulanger, P.-M., Mutombo, E.J.K., Bauler, T., Lefin, A.-L., 2010. Scenarios based on sustainability discourses: Constructing alternative consumption and consumer perspectives. Futures 42, 1187–1199. https://doi.org/10.1016/j.futures.2010.07.002

Crocker, R., 2018. From 'Spaceship Earth' to the Circular Economy: The Problem of Consumption, in: Crocker, R., Saint, C., Chen, G., Tong, Y. (Eds.), Unmaking Waste in Production and Consumption: Towards the Circular Economy. Emerald Publishing Limited, pp. 13–33. https://doi.org/10.1108/978-1-78714-619-820181003

Crotty, M., 1998. The foundations of social research: meaning and perspective in the research process. SAGE, London.

Cruz, I., Stahel, A., Max-Neef, M., 2009. Towards a systemic development approach: Building on the Human-Scale Development paradigm. Ecol. Econ. 68, 2021–2030. https://doi.org/10.1016/j.ecolecon.2009.02.004

Cuomo, F., 2022. Urban Living Lab: An Experimental Co-Production Tool to Foster the Circular Economy. Soc. Sci. 11, 260. https://doi.org/10.3390/socsci11060260

Dahlbo, H., Aalto, K., Eskelinen, H., Salmenperä, H., 2017. Increasing textile circulation—Consequences and requirements. Sustain. Prod. Consum. 9, 44–57. https://doi.org/10.1016/j.spc.2016.06.005

Dahlke, J., Bogner, K., Becker, M., Schlaile, M.P., Pyka, A., Ebersberger, B., 2021. Crisis-driven innovation and fundamental human needs: A typological framework of rapid-response COVID-19 innovations. Technol. Forecast. Soc. Change 169, 120799. https://doi.org/10.1016/j.techfore.2021.120799

Daly, H.E., 1974. Steady-state economics versus growthmania: A critique of the orthodox conceptions of growth, wants, scarcity, and efficiency. Policy Sci. 5, 149–167. https://doi.org/10.1007/BF00148038

D'Amato, D., 2021. Sustainability Narratives as Transformative Solution Pathways: Zooming in on the Circular Economy. Circ. Econ. Sustain. 1, 231–242. https://doi.org/10.1007/s43615-021-00008-1

Dantas, T.E.T., de-Souza, E.D., Destro, I.R., Hammes, G., Rodriguez, C.M.T., Soares, S.R., 2021. How the combination of Circular Economy and Industry 4.0 can contribute towards achieving the Sustainable Development Goals. Sustain. Prod. Consum. 26, 213–227. https://doi.org/10.1016/j.spc.2020.10.005

Davies, M., 2022. Investigating the Role of of Organic Cotton Certifications in Providing Traceability and Transparency in the Textile Supply Chain. Imperial College, London [Spiral Online Archive].

Day, J.W., D'Elia, C.F., Wiegman, A.R.H., Rutherford, J.S., Hall, C.A.S., Lane, R.R., Dismukes, D.E., 2018. The Energy Pillars of Society: Perverse Interactions of Human Resource Use, the Economy, and Environmental Degradation. Biophys. Econ. Resour. Qual. 3. https://doi.org/10.1007/s41247-018-0035-6

De Angelis, R., Ianulardo, G., 2020. Circular Economy as Fictional Expectation to Overcome Societal Addictions. Where Do We Stand? Philos. Manag. 19, 133–153. https://doi.org/10.1007/s40926-020-00128-y

de Brito, M.P., Carbone, V., Blanquart, C.M., 2008. Towards a sustainable fashion retail supply chain in Europe: Organisation and performance. Spec. Sect. Logist. Manag. Fash. Retail Supply Chains 114, 534–553. https://doi.org/10.1016/j.ijpe.2007.06.012

De Falco, F., Gullo, M.P., Gentile, G., Di Pace, E., Cocca, M., Gelabert, L., Brouta-Agnésa, M., Rovira, A., Escudero, R., Villalba, R., Mossotti, R., Montarsolo, A., Gavignano, S., Tonin, C., Avella, M., 2018.

Evaluation of microplastic release caused by textile washing processes of synthetic fabrics. Environ. Pollut. 236, 916–925. https://doi.org/10.1016/j.envpol.2017.10.057
Deci, E.L., Ryan, R.M., 2008. Hedonia, eudaimonia, and well-being: an introduction. J. Happiness Stud. 9, 1–11. https://doi.org/10.1007/s10902-006-9018-1
Denzin, N.K., Lincoln, Y.S., 2017. The SAGE Handbook of Qualitative Research. SAGE Publications.
Desing, H., Brunner, D., Takacs, F., Nahrath, S., Frankenberger, K., Hischier, R., 2020. A circular economy within the planetary boundaries: Towards a resource-based, systemic approach. Resour. Conserv. Recycl. 155, 104673. https://doi.org/10.1016/j.resconrec.2019.104673
Destek, M.A., Sarkodie, S.A., 2019. Investigation of environmental Kuznets curve for ecological footprint: The role of energy and financial development. Sci. Total Environ. 650, 2483–2489. https://doi.org/10.1016/j.scitotenv.2018.10.017
Diamond, J., 2013. Collapse: How Societies Choose to Fail or Survive. Penguin Books Limited.
Diekel, F., Mikosch, N., Bach, V., Finkbeiner, M., 2021. Life Cycle Based Comparison of Textile Ecolabels. Sustainability 13, 1751. https://doi.org/10.3390/su13041751
Dissanayake, D.G.K., Weerasinghe, D., 2022. Towards Circular Economy in Fashion: Review of Strategies, Barriers and Enablers. Circ. Econ. Sustain. 2, 25–45. https://doi.org/10.1007/s43615-021-00090-5
Dobos, E., Éltető, A., 2022. Regulation of the fashion supply chains and the sustainability–growth balance. Sustain. Account. Manag. Policy J. ahead-of-print. https://doi.org/10.1108/SAMPJ-04-2022-0182
Dodds, S., 1997. Towards a 'science of sustainability': Improving the way ecological economics understands human well-being. Ecol. Econ. 23, 95–111. https://doi.org/10.1016/S0921-8009(97)00047-5
Dollar, D., Kleineberg, T., Kraay, A., 2016. Growth still is good for the poor. Model Uncertain. Econ. 81, 68–85. https://doi.org/10.1016/j.euroecorev.2015.05.008
Dooley, L.M., 2002. Case Study Research and Theory Building. Adv. Dev. Hum. Resour. 4, 335–354. https://doi.org/10.1177/1523422302043007
Doyle, E., Buckley, P., 2017. Embracing qualitative research: a visual model for nuanced research ethics oversight. Qual. Res. 17, 95–117. https://doi.org/10.1177/1468794116661230
Droege, H., Raggi, A., Ramos, T.B., 2021. Co-development of a framework for circular economy assessment in organisations: Learnings from the public sector. Corp. Soc. Responsib. Environ. Manag. 28, 1715–1729. https://doi.org/10.1002/csr.2140
Dryzek, J.S., 2013. The Politics of the Earth: Environmental Discourses. OUP Oxford.
Du Pisani, J.A., 2006. Sustainable development – historical roots of the concept. Environ. Sci. 3, 83–96. https://doi.org/10.1080/15693430600688831
Dwertmann, D.J.G., 2016. Management research on disabilities: examining methodological challenges and possible solutions. Int. J. Hum. Resour. Manag. 27, 1477–1509. https://doi.org/10.1080/09585192.2015.1137614
Easterlin, R.A., 1995. Will raising the incomes of all increase the happiness of all? J. Econ. Behav. Organ., Journal of Economic Behavior & Organization 27, 35–47. https://doi.org/10.1016/0167-2681(95)00003-B
EASTERLIN, R.A., 1974. Does Economic Growth Improve the Human Lot? Some Empirical Evidence, in: DAVID, P.A., REDER, M.W. (Eds.), Nations and Households in Economic Growth. Academic Press, pp. 89–125. https://doi.org/10.1016/B978-0-12-205050-3.50008-7
Eisenmenger, N., Pichler, M., Krenmayr, N., Noll, D., Plank, B., Schalmann, E., Wandl, M.-T., Gingrich, S., 2020. The Sustainable Development Goals prioritize economic growth over sustainable resource use: a critical reflection on the SDGs from a socio-ecological perspective. Sustain. Sci. 15, 1101–1110. https://doi.org/10.1007/s11625-020-00813-x
EMF, 2021. Universal Circular Economy Policy Goals. Ellen Macarthur Foundation, Isle of Wight.
EMF, 2019. The Jeans Redesign Guidelines.
EMF, 2017a. A New Textiles Economy. Isle of Wight.
EMF, 2017b. Growth Within: A Circular Economy Vision for a Competitive Europe. Ellen Macarthur Foundation, Isle of Wight.
EMF, 2013. Towards the Circular Economy (No. 1). Ellen Macarthur Foundation, Isle of Wight.
EU, 2020. Circular Economy Action Plan.
EU, 2015. Closing the loop - An EU action plan for the Circular Economy. European Commission, Brussels.
Everard, M., Longhurst, J.W.S., 2018. Reasserting the primacy of human needs to reclaim the 'lost half' of sustainable development. Sci. Total Environ. 621, 1243–1254. https://doi.org/10.1016/j.scitotenv.2017.10.104
Fashion Revolution, 2022. Fashion Transparency Index 2022 Edition. Fashion Revolution, online.

Fellner, W.J., Goehmann, B., 2020. Human needs, consumerism and welfare. Camb. J. Econ. 44, 303–318. https://doi.org/10.1093/cje/bez046
Fitch-Roy, O., Benson, D., Monciardini, D., 2020. Going around in circles? Conceptual recycling, patching and policy layering in the EU circular economy package. Environ. Polit. 29, 983–1003. https://doi.org/10.1080/09644016.2019.1673996
Fletcher, K., 2010. Slow Fashion: An Invitation for Systems Change. Fash. Pract. 2, 259–265. https://doi.org/10.2752/175693810X12774625387594
Flyvbjerg, B., 2006. Five Misunderstandings About Case-Study Research. Qual. Inq. 12, 219–245. https://doi.org/10.1177/1077800405284363
Folke, C., Polasky, S., Rockström, J., Galaz, V., Westley, F., Lamont, M., Scheffer, M., Österblom, H., Carpenter, S.R., Chapin, F.S., Seto, K.C., Weber, E.U., Crona, B.I., Daily, G.C., Dasgupta, P., Gaffney, O., Gordon, L.J., Hoff, H., Levin, S.A., Lubchenco, J., Steffen, W., Walker, B.H., 2021a. Our future in the Anthropocene biosphere. Ambio 50, 834–869. https://doi.org/10.1007/s13280-021-01544-8
Folke, C., Polasky, S., Rockström, J., Galaz, V., Westley, F., Lamont, M., Scheffer, M., Österblom, H., Carpenter, S.R., Chapin, F.S., Seto, K.C., Weber, E.U., Crona, B.I., Daily, G.C., Dasgupta, P., Gaffney, O., Gordon, L.J., Hoff, H., Levin, S.A., Lubchenco, J., Steffen, W., Walker, B.H., 2021b. Our future in the Anthropocene biosphere. Ambio 50, 834–869. https://doi.org/10.1007/s13280-021-01544-8
Fontana, A., Corti, D., Barni, A., Moltoni, F., 2019. Sustainability Certifications and Labels for the Fashion Industry: Selection Guidelines, in: Rinaldi, R., Bandinelli, R. (Eds.), Business Models and ICT Technologies for the Fashion Supply Chain. Springer International Publishing, Cham, pp. 167–177.
Fosu, A.K., 2017. Growth, inequality, and poverty reduction in developing countries: Recent global evidence. Res. Econ. 71, 306–336. https://doi.org/10.1016/j.rie.2016.05.005
Franco, M.A., 2017. Circular economy at the micro level: A dynamic view of incumbents' struggles and challenges in the textile industry. J. Clean. Prod. 168, 833–845. https://doi.org/10.1016/j.jclepro.2017.09.056
Freudenreich, B., Schaltegger, S., 2020. Developing sufficiency-oriented offerings for clothing users: Business approaches to support consumption reduction. J. Clean. Prod. 247, 119589. https://doi.org/10.1016/j.jclepro.2019.119589
Fritz, M., Koch, M., 2014. Potentials for prosperity without growth: Ecological sustainability, social inclusion and the quality of life in 38 countries. Ecol. Econ. 108, 191–199. https://doi.org/10.1016/j.ecolecon.2014.10.021
Frosch, R.A., Gallopoulos, N.E., 1989. Strategies for Manufacturing. Sci. Am. 261, 144–153.
Galtung, J., 1986. Towards a new economics: on the theory and practice of self-reliance. Living Econ. New Econ. Mak. Lond. Routledge.
Galtung, J., 1976. Trade or Development: Some Reflections on Self-Reliance. Econ. Polit. Wkly. 11, 207–218.
Gasparatos, A., El-Haram, M., Horner, M., 2009. The argument against a reductionist approach for measuring sustainable development performance and the need for methodological pluralism. Account. Forum 33, 245–256. https://doi.org/10.1016/j.accfor.2008.07.006
Geissdoerfer, M., Savaget, P., Bocken, N.M.P., Hultink, E.J., 2017. The Circular Economy – A new sustainability paradigm? J. Clean. Prod. 143, 757–768. https://doi.org/10.1016/j.jclepro.2016.12.048
Geng, Y., Doberstein, B., 2008. Developing the circular economy in China: Challenges and opportunities for achieving "leapfrog development." Int. J. Sustain. Dev. World Ecol. 15, 231–239. https://doi.org/10.3843/SusDev.15.3:6
Genovese, A., Pansera, M., 2020. The Circular Economy at a Crossroads: Technocratic Eco-Modernism or Convivial Technology for Social Revolution? Capital. Nat. Social. 1–19. https://doi.org/10.1080/10455752.2020.1763414
Ghisellini, P., Cialani, C., Ulgiati, S., 2016. A review on circular economy: The expected transition to a balanced interplay of environmental and economic systems. J. Clean. Prod. 114, 11–32. https://doi.org/10.1016/j.jclepro.2015.09.007
Ghisellini, P., Passaro, P., Quinto, R., Ulgiati, S., 2021. Exploring the role of circular start-ups in promoting a more sustainable and humane entrepreneurship. Presented at the THE CRISIS: WHAT IS THE FUTURE FOR SMALL BUSINESSES?
Ghosh, S., Rajan, J., 2019. The business case for SDGs: an analysis of inclusive business models in emerging economies. Int. J. Sustain. Dev. World Ecol. 26, 344–353. https://doi.org/10.1080/13504509.2019.1591539
Giampietro, M., Funtowicz, S.O., 2020. From elite folk science to the policy legend of the circular economy. Environ. Sci. Policy 109, 64–72. https://doi.org/10.1016/j.envsci.2020.04.012

Giannetti, B.F., Agostinho, F., Almeida, C.M.V.B., Huisingh, D., 2015. A review of limitations of GDP and alternative indices to monitor human wellbeing and to manage eco-system functionality. J. Clean. Prod. 87, 11–25. https://doi.org/10.1016/j.jclepro.2014.10.051
Gibson-Graham, J.K., 2008. Diverse economies: performative practices for `other worlds'. Prog. Hum. Geogr. 32, 613–632. https://doi.org/10.1177/0309132508090821
Gilbert, T., 2004. Involving people with learning disabilities in research: issues and possibilities. Health Soc. Care Community 12, 298–308. https://doi.org/10.1111/j.1365-2524.2004.00499.x
Gimelli, F.M., Rogers, B.C., Bos, J.J., 2019. Linking Water Services and Human Well-Being Through the Fundamental Human Needs Framework: The Case of India 12, 19.
Gläser, J., Laudel, G., 2009. On Interviewing "Good" and "Bad" Experts, in: Bogner, A., Littig, B., Menz, W. (Eds.), Interviewing Experts. Palgrave Macmillan UK, London, pp. 117–137. https://doi.org/10.1057/9780230244276_6
Gough, I., 2015. Climate change and sustainable welfare: the centrality of human needs: Fig. 1. Camb. J. Econ. 39, 1191–1214. https://doi.org/10.1093/cje/bev039
Govindan, K., Hasanagic, M., 2018. A systematic review on drivers, barriers, and practices towards circular economy: a supply chain perspective. Int. J. Prod. Res. 56, 278–311. https://doi.org/10.1080/00207543.2017.1402141
Gregson, N., Crang, M., Fuller, S., Holmes, H., 2015. Interrogating the circular economy: the moral economy of resource recovery in the EU. Econ. Soc. 44, 218–243. https://doi.org/10.1080/03085147.2015.1013353
Groce, N.E., 2018. Global disability: an emerging issue 2.
Groggins, A., Ryan, A.M., 2013. Embracing uniqueness: The underpinnings of a positive climate for diversity. J. Occup. Organ. Psychol. 86, 264–282. https://doi.org/10.1111/joop.12008
Groupe Renault, 2020. ReFactory. Groupe Renault, France.
Guba, E.G., Lincoln, Y.S., 1994. Competing paradigms in qualitative research. Handb. Qual. Res. 2, 105.
Guillen-Royo, M., 2016. Sustainability and Wellbeing: Human Scale Development in Practice, Online access with DDA: Askews. Routledge.
Guillen-Royo, M., 2010. Realising the 'wellbeing dividend': An exploratory study using the Human Scale Development approach. Ecol. Econ. 70, 384–393. https://doi.org/10.1016/j.ecolecon.2010.09.010
Gusmão Caiado, R.G., Leal Filho, W., Quelhas, O.L.G., Luiz de Mattos Nascimento, D., Ávila, L.V., 2018. A literature-based review on potentials and constraints in the implementation of the sustainable development goals. J. Clean. Prod. 198, 1276–1288. https://doi.org/10.1016/j.jclepro.2018.07.102
Haas, W., Krausmann, F., Wiedenhofer, D., Heinz, M., 2015a. How Circular is the Global Economy?: An Assessment of Material Flows, Waste Production, and Recycling in the European Union and the World in 2005: How Circular is the Global Economy? J. Ind. Ecol. 19, 765–777. https://doi.org/10.1111/jiec.12244
Haas, W., Krausmann, F., Wiedenhofer, D., Heinz, M., 2015b. How Circular is the Global Economy?: An Assessment of Material Flows, Waste Production, and Recycling in the European Union and the World in 2005. J. Ind. Ecol. 19, 765–777. https://doi.org/10.1111/jiec.12244
Hardin, G., 1968. The Tragedy of the Commons 162, 7.
Hart, J., Pomponi, F., 2021. A Circular Economy: Where Will It Take Us? Circ. Econ. Sustain. 1, 127–141. https://doi.org/10.1007/s43615-021-00013-4
Helne, T., Hirvilammi, T., 2015. Wellbeing and Sustainability: A Relational Approach. Sustain. Dev. 23, 167–175. https://doi.org/10.1002/sd.1581
Hesse-Biber, S.J., Hesse-Biber, S.N., Leavy, P., 2004. Approaches to Qualitative Research: A Reader on Theory and Practice. Oxford University Press.
Hickel, J., O'Neill, D.W., Fanning, A.L., Zoomkawala, H., 2022. National responsibility for ecological breakdown: a fair-shares assessment of resource use, 1970–2017. Lancet Planet. Health 6, e342–e349. https://doi.org/10.1016/S2542-5196(22)00044-4
H&M Group, 2018. 100% Circular and Renewable. H&M Group, Stockholm, Sweden.
Hobson, J., 2013. To die for? The health and safety of fast fashion. Occup. Med. 63, 317–319. https://doi.org/10.1093/occmed/kqt079
Hobson, K., 2020. The limits of the loops: critical environmental politics and the Circular Economy. Environ. Polit. 1–19. https://doi.org/10.1080/09644016.2020.1816052
Hobson, K., Holmes, H., Welch, D., Wheeler, K., Wieser, H., 2021. Consumption Work in the circular economy: A research agenda. J. Clean. Prod. 321, 128969. https://doi.org/10.1016/j.jclepro.2021.128969

Hobson, K., Lynch, N., 2016. Diversifying and de-growing the circular economy: Radical social transformation in a resource-scarce world. Futures 82, 15–25. https://doi.org/10.1016/j.futures.2016.05.012

Hocking, C., 2017. Occupational justice as social justice: The moral claim for inclusion. J. Occup. Sci. 24, 29–42. https://doi.org/10.1080/14427591.2017.1294016

Holmes, H., 2018. New spaces, ordinary practices: Circulating and sharing within diverse economies of provisioning. GEOFORUM 88, 138–147. https://doi.org/10.1016/j.geoforum.2017.11.022

Homrich, A.S., Galvão, G., Abadia, L.G., Carvalho, M.M., 2018. The circular economy umbrella: Trends and gaps on integrating pathways. J. Clean. Prod. 175, 525–543. https://doi.org/10.1016/j.jclepro.2017.11.064

Horbach, J., Rammer, C., 2020. Circular economy innovations, growth and employment at the firm level: Empirical evidence from Germany. J. Ind. Ecol. 24, 615–625. https://doi.org/10.1111/jiec.12977

Hornborg, A., 2009. Zero-Sum World: Challenges in Conceptualizing Environmental Load Displacement and Ecologically Unequal Exchange in the World-System. Int. J. Comp. Sociol. 50, 237–262. https://doi.org/10.1177/0020715209105141

Hossain, L., Sarker, S.K., Khan, M.S., 2018. Evaluation of present and future wastewater impacts of textile dyeing industries in Bangladesh. Environ. Dev. 26, 23–33. https://doi.org/10.1016/j.envdev.2018.03.005

Hukkinen, J., 2001. Eco-efficiency as abandonment of nature. Ecol. Econ. 38, 311–315. https://doi.org/10.1016/S0921-8009(01)00217-8

ILO, 2017. Decent Work and the 2030 Agenda for Sustainable Development. International Labour Organisation, Switzerland.

ILO, 2013. Inclusion of People with Disabilities in Viet Nam. Hanoi, Vietnam.

Inigo, E.A., Blok, V., 2019. Strengthening the socio-ethical foundations of the circular economy: Lessons from responsible research and innovation. J. Clean. Prod. 233, 280–291. https://doi.org/10.1016/j.jclepro.2019.06.053

IPCC, 2018. Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. New York.

Jackman, P.C., Sanderson, R., Haughey, T.J., Brett, C.E., White, N., Zile, A., Tyrrell, K., Byrom, N.C., 2022. The impact of the first COVID-19 lockdown in the UK for doctoral and early career researchers. High. Educ. 84, 705–722. https://doi.org/10.1007/s10734-021-00795-4

Jackson, T., 2013. Material Concerns: Pollution, Profit and Quality of Life. Taylor & Francis.

Jackson, T., Jager, W., Stagl, S., 2004. Beyond insatiability – needs theory, consumption and sustainability, in: The Ecological Economics of Consumption. Edward Elgar Publishing, p. 3205. https://doi.org/10.4337/9781845423568.00013

Jaeger-Erben, M., Jensen, C., Hofmann, F., Zwiers, J., 2021. There is no sustainable circular economy without a circular society. Resour. Conserv. Recycl. 168, 105476. https://doi.org/10.1016/j.resconrec.2021.105476

Jakob, M., Lamb, W.F., Steckel, J.C., Flachsland, C., Edenhofer, O., 2020. Understanding different perspectives on economic growth and climate policy. WIREs Clim. Change 11, e677. https://doi.org/10.1002/wcc.677

James, P., 2022. Re-embedding the circular economy in Circles of Social Life: beyond the self-repairing (and still-rapacious) economy. Local Environ. 1–17. https://doi.org/10.1080/13549839.2022.2040469

Jia, F., Yin, S., Chen, L., Chen, X., 2020. The circular economy in the textile and apparel industry: A systematic literature review. J. Clean. Prod. 259, 120728. https://doi.org/10.1016/j.jclepro.2020.120728

Johansson, N., Henriksson, M., 2020. Circular economy running in circles? A discourse analysis of shifts in ideas of circularity in Swedish environmental policy. Sustain. Prod. Consum. 23, 148–156. https://doi.org/10.1016/j.spc.2020.05.005

Jolibert, C., Max-Neef, M., Rauschmayer, F., Paavola, J., 2011. Should We Care About the Needs of Non-humans? Needs Assessment: A Tool for Environmental Conflict Resolution and Sustainable Organization of Living Beings: Should We Care About the Needs of Non-humans? Environ. Policy Gov. 21, 259–269. https://doi.org/10.1002/eet.578

Jorge, M., 2010. Patients' needs and satisfiers: applying human scale development theory on end-of-life care. Curr. Opin. Support. Palliat. Care 4, 163–169.

Jørgensen, M.S., Jensen, C.L., 2012. The shaping of environmental impacts from Danish production and consumption of clothing. Ecol. Econ. 10.

Kalimeris, P., Bithas, K., Richardson, C., Nijkamp, P., 2020. Hidden linkages between resources and economy: A "Beyond-GDP" approach using alternative welfare indicators. Ecol. Econ. 169, 106508. https://doi.org/10.1016/j.ecolecon.2019.106508
Kalmykova, Y., Sadagopan, M., Rosado, L., 2018. Circular economy - From review of theories and practices to development of implementation tools. Resour. Conserv. Recycl. 135, 190–201. https://doi.org/10.1016/j.resconrec.2017.10.034
Kaltenborn, B.P., Linnell, J.D.C., Gómez-Baggethun, E., 2020. Can cultural ecosystem services contribute to satisfying basic human needs? A case study from the Lofoten archipelago, northern Norway. Appl. Geogr. 120, 102229. https://doi.org/10.1016/j.apgeog.2020.102229
Kannuri, N.K., Jadhav, S., 2018. Generating toxic landscapes: impact on well-being of cotton farmers in Telangana, India. Anthropol. Med. 25, 121–140. https://doi.org/10.1080/13648470.2017.1317398
Kant Hvass, K., Pedersen, E.R.G., 2019. Toward circular economy of fashion: Experiences from a brand's product take-back initiative. J. Fash. Mark. Manag. Int. J. 23, 345–365. https://doi.org/10.1108/JFMM-04-2018-0059
Katrini, E., 2018. Sharing Culture: On definitions, values, and emergence. Sociol. Rev. 66, 425–446. https://doi.org/10.1177/0038026118758550
Kazancoglu, I., Kazancoglu, Y., Kahraman, A., Yarimoglu, E., Soni, G., 2022. Investigating barriers to circular supply chain in the textile industry from Stakeholders' perspective. Int. J. Logist. Res. Appl. 25, 521–548. https://doi.org/10.1080/13675567.2020.1846694
Keßler, L., Matlin, S.A., Kümmerer, K., 2021. The contribution of material circularity to sustainability—Recycling and reuse of textiles. Curr. Opin. Green Sustain. Chem. 32, 100535. https://doi.org/10.1016/j.cogsc.2021.100535
Khan, M., Damalas, C.A., 2015. Occupational exposure to pesticides and resultant health problems among cotton farmers of Punjab, Pakistan. Int. J. Environ. Health Res. 25, 508–521. https://doi.org/10.1080/09603123.2014.980781
Khan, M.A., Brymer, K., Koch, K., 2020. The Production of Garments and Textiles in Bangladesh: Trade Unions, International Managers and the Health and Safety of Workers. South Asian J. Hum. Resour. Manag. 7, 276–292. https://doi.org/10.1177/2322093720944270
Khan, R., Richards, H., 2021. Fashion in 'crisis': consumer activism and brand (ir)responsibility in lockdown. Cult. Stud. 35, 432–443. https://doi.org/10.1080/09502386.2021.1898028
Khan, T., Abimbola, S., Kyobutungi, C., Pai, M., 2022. How we classify countries and people—and why it matters. BMJ Glob. Health 7, e009704. https://doi.org/10.1136/bmjgh-2022-009704
Ki, C.-W. (Chloe), Chong, S.M., Ha-Brookshire, J.E., 2020. How fashion can achieve sustainable development through a circular economy and stakeholder engagement: A systematic literature review. Corp. Soc. Responsib. Environ. Manag. 27, 2401–2424. https://doi.org/10.1002/csr.1970
King, N., Horrocks, C., 2010. Interviews in Qualitative Research. SAGE Publications.
Kirchherr, J., 2022. Circular economy and growth: A critical review of "post-growth" circularity and a plea for a circular economy that grows. Resour. Conserv. Recycl. 179, 1–2.
Kirchherr, J., 2021. Towards circular justice: A proposition. Resour. Conserv. Recycl. 173, 105712. https://doi.org/10.1016/j.resconrec.2021.105712
Kirchherr, J., Piscicelli, L., Bour, R., Kostense-Smit, E., Muller, J., Huibrechtse-Truijens, A., Hekkert, M., 2018. Barriers to the Circular Economy: Evidence From the European Union (EU). Ecol. Econ. 150, 264–272. https://doi.org/10.1016/j.ecolecon.2018.04.028
Kirchherr, J., Reike, D., Hekkert, M., 2017. Conceptualizing the circular economy: An analysis of 114 definitions. Resour. Conserv. Recycl. 127, 221–232. https://doi.org/10.1016/j.resconrec.2017.09.005
Kirchherr, J., van Santen, R., 2019. Research on the circular economy: A critique of the field. Resour. Conserv. Recycl. 151, 104480. https://doi.org/10.1016/j.resconrec.2019.104480
Knott, E., Rao, A.H., Summers, K., Teeger, C., 2022a. Interviews in the social sciences. Nat. Rev. Methods Primer 2, 73. https://doi.org/10.1038/s43586-022-00150-6
Knott, E., Rao, A.H., Summers, K., Teeger, C., 2022b. Interviews in the social sciences. Nat. Rev. Methods Primer 2, 73. https://doi.org/10.1038/s43586-022-00150-6
Kobayashi, H., Sumimura, Y., Dinh, C.N., Tran, M., Murata, H., Fukushige, S., 2019. Needs-Based Workshops for Sustainable Consumption and Production in Vietnam, in: Ball, P., Huaccho Huatuco, L., Howlett, R.J., Setchi, R. (Eds.), Sustainable Design and Manufacturing 2019. Springer Singapore, Singapore, pp. 35–47.
Korhonen, J., Honkasalo, A., Seppälä, J., 2018a. Circular Economy: The Concept and its Limitations. Ecol. Econ. 143, 37–46. https://doi.org/10.1016/j.ecolecon.2017.06.041

Korhonen, J., Nuur, C., Feldmann, A., Birkie, S.E., 2018b. Circular economy as an essentially contested concept. J. Clean. Prod. 175, 544–552. https://doi.org/10.1016/j.jclepro.2017.12.111
Korhonen, J., Seager, T.P., 2008. Beyond eco-efficiency: a resilience perspective. Bus. Strategy Environ. 17, 411–419. https://doi.org/10.1002/bse.635
Kozlowski, A., Searcy, C., Bardecki, M., 2018. The reDesign canvas: Fashion design as a tool for sustainability. J. Clean. Prod. 183, 194–207. https://doi.org/10.1016/j.jclepro.2018.02.014
Krausmann, F., Lauk, C., Haas, W., Wiedenhofer, D., 2018. From resource extraction to outflows of wastes and emissions: The socioeconomic metabolism of the global economy, 1900–2015. Glob. Environ. Change 52, 131–140. https://doi.org/10.1016/j.gloenvcha.2018.07.003
Kristensen, G.K., Ravn, M.N., 2015. The voices heard and the voices silenced: recruitment processes in qualitative interview studies. Qual. Res. 15, 722–737. https://doi.org/10.1177/1468794114567496
Kuckartz, U., 2014. Qualitative Text Analysis: A Guide to Methods, Practice and Using Software. SAGE Publications.
Kümmerer, K., Clark, J.H., Zuin, V.G., 2020. Rethinking chemistry for a circular economy. Science 367, 369–370. https://doi.org/10.1126/science.aba4979
Lamb, W.F., Steinberger, J.K., 2017. Human well-being and climate change mitigation. WIREs Clim. Change 8. https://doi.org/10.1002/wcc.485
Lamichhane, K., 2015. Disability, Education and Employment in Developing Countries: From Charity to Investment. Cambridge University Press, Cambridge. https://doi.org/10.1017/CBO9781107565265
Lazarevic, D., Valve, H., 2017. Narrating expectations for the circular economy: Towards a common and contested European transition. ENERGY Res. Soc. Sci. 31, 60–69. https://doi.org/10.1016/j.erss.2017.05.006
Le Quéré, C., Korsbakken, J.I., Wilson, C., Tosun, J., Andrew, R., Andres, R.J., Canadell, J.G., Jordan, A., Peters, G.P., van Vuuren, D.P., 2019. Drivers of declining CO2 emissions in 18 developed economies. Nat. Clim. Change 9, 213–217. https://doi.org/10.1038/s41558-019-0419-7
Leal Filho, W., Ellams, D., Han, S., Tyler, D., Boiten, V.J., Paço, A., Moora, H., Balogun, A.-L., 2019. A review of the socio-economic advantages of textile recycling. J. Clean. Prod. 218, 10–20. https://doi.org/10.1016/j.jclepro.2019.01.210
Lee, S., 2020. Role of social and solidarity economy in localizing the sustainable development goals. Int. J. Sustain. Dev. World Ecol. 27, 65–71. https://doi.org/10.1080/13504509.2019.1670274
Leipold, S., Petit-Boix, A., 2018. The circular economy and the bio-based sector - Perspectives of European and German stakeholders. J. Clean. Prod. 201, 1125–1137. https://doi.org/10.1016/j.jclepro.2018.08.019
Leipold, S., Weldner, K., Hohl, M., 2021. Do we need a 'circular society'? Competing narratives of the circular economy in the French food sector. Ecol. Econ. 187, 107086. https://doi.org/10.1016/j.ecolecon.2021.107086
Lemille, A., 2020. The circular humansphere. Medium. Available at: https://alexlemille.medium.com/the-circular-humansphere-2020-update-8b2df60a477 [accessed: 3 March 2022.]
Leonas, K.K., 2017. The Use of Recycled Fibers in Fashion and Home Products, in: Muthu, S.S. (Ed.), Textiles and Clothing Sustainability: Recycled and Upcycled Textiles and Fashion. Springer Singapore, Singapore, pp. 55–77. https://doi.org/10.1007/978-981-10-2146-6_2
Leopold, A., 1949. A Sand County Almanac, and Sketches Here and There, Environmental studies. Oxford University Press.
Lieder, M., Rashid, A., 2016. Towards circular economy implementation: a comprehensive review in context of manufacturing industry. J. Clean. Prod. 115, 36–51. https://doi.org/10.1016/j.jclepro.2015.12.042
Liu, Z., Adams, M., Walker, T.R., 2018. Are exports of recyclables from developed to developing countries waste pollution transfer or part of the global circular economy? Resour. Conserv. Recycl. 136, 22–23. https://doi.org/10.1016/j.resconrec.2018.04.005
Lobe, B., Morgan, D., Hoffman, K.A., 2020. Qualitative Data Collection in an Era of Social Distancing. Int. J. Qual. Methods 19, 1609406920937875. https://doi.org/10.1177/1609406920937875
Lorek, S., Fuchs, D., 2013. Strong sustainable consumption governance – precondition for a degrowth path? J. Clean. Prod. 38, 36–43. https://doi.org/10.1016/j.jclepro.2011.08.008
Lorek, S., Spangenberg, J.H., 2014. Sustainable consumption within a sustainable economy – beyond green growth and green economies. Spec. Vol. Sustain. Prod. Consum. Livelihoods Glob. Reg. Res. Perspect. 63, 33–44. https://doi.org/10.1016/j.jclepro.2013.08.045
Luu, T., 2019. Relationship between benevolent leadership and the well-being among employees with disabilities. J. Bus. Res. 99, 282–294. https://doi.org/10.1016/j.jbusres.2019.03.004

Lyle, J.T., 1996. Regenerative Design for Sustainable Development, Professional Series. Wiley.
Lysaght, R., Kranenburg, R., Armstrong, C., Krupa, T., 2016. Participant Recruitment for Studies on Disability and Work: Challenges and Solutions. J. Occup. Rehabil. 26, 125–140. https://doi.org/10.1007/s10926-015-9594-1
Madhav, S., Ahamad, A., Singh, P., Mishra, P.K., 2018. A review of textile industry: Wet processing, environmental impacts, and effluent treatment methods. Environ. Qual. Manag. 27, 31–41. https://doi.org/10.1002/tqem.21538
Mahlert, B., 2021. Needs and Satisfiers: A Tool for Dealing with Perspectivity in Policy Analysis. Eur. J. Dev. Res. 33, 1455–1474. https://doi.org/10.1057/s41287-020-00294-9
Mair, S., Druckman, A., Jackson, T., 2016. Global inequities and emissions in Western European textiles and clothing consumption. Absol. Reduct. Mater. Throughput Energy Use Emiss. 132, 57–69. https://doi.org/10.1016/j.jclepro.2015.08.082
Majumdar, A., Shukla, S., Singh, A.A., Arora, S., 2020. Circular fashion: Properties of fabrics made from mechanically recycled poly-ethylene terephthalate (PET) bottles. Resour. Conserv. Recycl. 161, 104915. https://doi.org/10.1016/j.resconrec.2020.104915
Malay, O.E., 2019. Do Beyond GDP indicators initiated by powerful stakeholders have a transformative potential? Ecol. Econ. 162, 100–107. https://doi.org/10.1016/j.ecolecon.2019.04.023
Malinauskaite, J., Erdem, F.B., 2021. Planned Obsolescence in the Context of a Holistic Legal Sphere and the Circular Economy. Oxf. J. Leg. Stud. 41, 719–749. https://doi.org/10.1093/ojls/gqaa061
Manieson, L.A., Ferrero-Regis, T., 2022. Castoff from the West, pearls in Kantamanto?: A critique of second-hand clothes trade. J. Ind. Ecol. n/a. https://doi.org/10.1111/jiec.13238
Marino, A., Pariso, P., 2020. Comparing European countries' performances in the transition towards the Circular Economy. Sci. Total Environ. 729, 138142. https://doi.org/10.1016/j.scitotenv.2020.138142
MarketLine, 2021. Vietnam In-depth PESTLE insights (No. ML00002- 033). MarketLine, Online.
Marks, A., Wilkes, L., Blythe, S., Griffiths, R., 2017. A novice researcher's reflection on recruiting participants for qualitative research. Nurse Res. 2014 25, 34.
Maslow, A.H., 2013. A Theory of Human Motivation. Start Publishing LLC.
Mattioli, G., 2016. Transport needs in a climate-constrained world. A novel framework to reconcile social and environmental sustainability in transport. Energy Demand Mobil. Domest. Life New Insights Energy Justice 18, 118–128. https://doi.org/10.1016/j.erss.2016.03.025
Max-Neef, M., 2010. The World on a Collision Course and the Need for a New Economy. AMBIO 39, 200–210. https://doi.org/10.1007/s13280-010-0028-1
Max-Neef, M.A., Elizalde, A., Hopenhayn, M., 1991. Human Scale Development: Conception, Application and Further Reflections, Human Scale Development: Conception, Application and Further Reflections. Apex Press.
McDonough, William., Braungart, M., 2002. Cradle to cradle : remaking the way we make things. North Point Press, New York.
McDowall, W., Geng, Y., Huang, B., Bartekova, E., Bleischwitz, R., Turkeli, S., Kemp, R., Domenech, T., 2017. Circular Economy Policies in China and Europe. J. Ind. Ecol. 21, 651–661. https://doi.org/10.1111/jiec.12597
Merk, J., 2011. Production beyond the Horizon of Consumption: Spatial Fixes and Anti-sweatshop Struggles in the Global Athletic Footwear Industry. Glob. Soc. 25, 73–95. https://doi.org/10.1080/13600826.2010.522984
Merli, R., Preziosi, M., Acampora, A., 2018. How do scholars approach the circular economy? A systematic literature review. J. Clean. Prod. 178, 703–722. https://doi.org/10.1016/j.jclepro.2017.12.112
Mies, A., Gold, S., 2021. Mapping the social dimension of the circular economy. J. Clean. Prod. 321, 128960. https://doi.org/10.1016/j.jclepro.2021.128960
Miles, M.B., Huberman, A.M., Saldana, J., 2018. Qualitative Data Analysis: A Methods Sourcebook. SAGE Publications.
Millar, N., McLaughlin, E., Börger, T., 2019. The Circular Economy: Swings and Roundabouts? Ecol. Econ. 158, 11–19. https://doi.org/10.1016/j.ecolecon.2018.12.012
Minh, H.V., Giang, K.B., Liem, N.T., Palmer, M., Thao, N.P., Duong, L.B., 2015. Estimating the extra cost of living with disability in Vietnam. Glob. Public Health 10, S70–S79. https://doi.org/10.1080/17441692.2014.971332
Mishra, S., Singh, S.P., Johansen, J., Cheng, Y., Farooq, S., 2019. Evaluating indicators for international manufacturing network under circular economy. Manag. Decis. 57, 811–839. https://doi.org/10.1108/MD-05-2018-0565

Mizunoya, S., Yamasaki, I., Mitra, S., 2016. The Disability Gap in Employment Rates in a Developing Country Context: New Evidence from Vietnam. SSRN Electron. J. https://doi.org/10.2139/ssrn.2766103
Moktadir, Md.A., Kumar, A., Ali, S.M., Paul, S.K., Sultana, R., Rezaei, J., 2020. Critical success factors for a circular economy: Implications for business strategy and the environment. Bus. Strategy Environ. bse.2600. https://doi.org/10.1002/bse.2600
Mol, A.P.J., 2015. Transparency and value chain sustainability. J. Clean. Prod. 107, 154–161. https://doi.org/10.1016/j.jclepro.2013.11.012
Moon, K., Blackman, D., 2014. Guide to Understanding Social Science Research for Natural Scientists. Conserv. Biol. 28, 1167–1177. https://doi.org/10.1111/cobi.12326
Moore, F.C., 2011. Toppling the Tripod. Consilience 141–150.
Moreau, V., Sahakian, M., van Griethuysen, P., Vuille, F., 2017. Coming Full Circle Why Social and Institutional Dimensions Matter for the Circular Economy. J. Ind. Ecol. 21, 497–506. https://doi.org/10.1111/jiec.12598
Moreau, V., Vuille, F., 2018. Decoupling energy use and economic growth: Counter evidence from structural effects and embodied energy in trade. Appl. Energy 215, 54–62. https://doi.org/10.1016/j.apenergy.2018.01.044
Morrow, O., Davies, A., 2022. Creating careful circularities: Community composting in New York City. Trans. Inst. Br. Geogr. 47, 529–546. https://doi.org/10.1111/tran.12523
Murray, A., Skene, K., Haynes, K., 2017. The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context. J. Bus. ETHICS 140, 369–380. https://doi.org/10.1007/s10551-015-2693-2
Nangombe, H., Ackermann, L., 2013. Subsistence and Protection Needs of the Elderly Living in Katutura, Windhoek (Namibia). Res. Aging 35, 182–200. https://doi.org/10.1177/0164027512439071
Naustdalslid, J., 2014. Circular economy in China - The environmental dimension of the harmonious society. Int. J. Sustain. Dev. World Ecol. 21, 303–313. https://doi.org/10.1080/13504509.2014.914599
Nayak, R., George, M., Jajpura, L., Khandual, A., Panwar, T., 2022. Laser and ozone applications for circularity journey in denim manufacturing - A developing country perspective. Curr. Opin. Green Sustain. Chem. 38, 100680. https://doi.org/10.1016/j.cogsc.2022.100680
Negrin, K.A., Slaughter, S.E., Dahlke, S., Olson, J., 2022. Successful Recruitment to Qualitative Research: A Critical Reflection. Int. J. Qual. Methods 21, 16094069221119576. https://doi.org/10.1177/16094069221119576
Nguyen, N.C., 2013. Examination of existing arguments on business oriented towards poverty reduction with the case of people with disabilities in Vietnam. Asian J. Bus. Ethics 2, 147–161. https://doi.org/10.1007/s13520-012-0022-8
NIDIS, 2022. Conditions for Los Angeles [WWW Document]. URL https://www.drought.gov/location/Los%20Angeles%2C%20California (accessed 11.14.22).
Niewohner, J., Pierson, S., Meyers, S.J., 2020. 'Leave no one behind'? The exclusion of persons with disabilities by development NGOs. Disabil. Soc. 35, 1171–1176. https://doi.org/10.1080/09687599.2019.1664053
Niinimäki, K., Peters, G., Dahlbo, H., Perry, P., Rissanen, T., Gwilt, A., 2020. The environmental price of fast fashion. Nat. Rev. Earth Environ. 1, 189–200. https://doi.org/10.1038/s43017-020-0039-9
Norris, L., 2015. The limits of ethicality in international markets: Imported second-hand clothing in India. Geoforum 67, 183–193. https://doi.org/10.1016/j.geoforum.2015.06.003
O'Hara, P.A., 2009. Political economy of climate change, ecological destruction and uneven development. Ecol. Econ. 69, 223–234. https://doi.org/10.1016/j.ecolecon.2009.09.015
Olivares-Aising, D., 2018. Occupational justice and human scale development: A theoretical integration approach. J. Occup. Sci. 25, 474–485. https://doi.org/10.1080/14427591.2018.1513780
O'Neill, D.W., Fanning, A.L., Lamb, W.F., Steinberger, J.K., 2018. A good life for all within planetary boundaries. Nat. Sustain. 1, 88–95. https://doi.org/10.1038/s41893-018-0021-4
O'Rourke, D., Lollo, N., 2015. Transforming Consumption: From Decoupling, to Behavior Change, to System Changes for Sustainable Consumption. Annu. Rev. Environ. Resour. 40, 233–259. https://doi.org/10.1146/annurev-environ-102014-021224
Padilla-Rivera, A., do Carmo, B.B.T., Arcese, G., Merveille, N., 2021. Social circular economy indicators: Selection through fuzzy delphi method. Sustain. Prod. Consum. 26, 101–110. https://doi.org/10.1016/j.spc.2020.09.015
Padilla-Rivera, A., Russo-Garrido, S., Merveille, N., 2020. Addressing the Social Aspects of a Circular Economy: A Systematic Literature Review. Sustainability 12, 7912. https://doi.org/10.3390/su12197912

Pal, R., Gander, J., 2018. Modelling environmental value: An examination of sustainable business models within the fashion industry. J. Clean. Prod. 184, 251–263. https://doi.org/10.1016/j.jclepro.2018.02.001
Palacios-Mateo, C., van der Meer, Y., Seide, G., 2021. Analysis of the polyester clothing value chain to identify key intervention points for sustainability. Environ. Sci. Eur. 33, 2. https://doi.org/10.1186/s12302-020-00447-x
Palm, C., Cornell, S.E., 2020. Making sense of fashion: a critical social-ecological approach 10.
Palm, C., Cornell, S.E., Häyhä, T., 2021a. Making Resilient Decisions for Sustainable Circularity of Fashion. Circ. Econ. Sustain. 1, 651–670. https://doi.org/10.1007/s43615-021-00040-1
Palm, C., Cornell, S.E., Häyhä, T., 2021b. Making Resilient Decisions for Sustainable Circularity of Fashion. Circ. Econ. Sustain. 1, 651–670. https://doi.org/10.1007/s43615-021-00040-1
Palmer, M., Groce, N., Mont, D., Nguyen, O.H., Mitra, S., 2015. The Economic Lives of People with Disabilities in Vietnam. PLOS ONE 10, e0133623. https://doi.org/10.1371/journal.pone.0133623
Pauli, G.A., 2010. The Blue Economy: 10 Years, 100 Innovations, 100 Million Jobs. Paradigm Publications.
Payne, A., 2019. Fashion Futuring in the Anthropocene: Sustainable Fashion as “Taming” and “Rewilding.” Fash. Theory 23, 5–23. https://doi.org/10.1080/1362704X.2017.1374097
Pearce, D.W., Turner, R.K., 1990. Economics of Natural Resources and the Environment. Harvester Wheatsheaf.
Periyasamy, A.P., Militky, J., 2017. 7 - Denim processing and health hazards, in: Muthu, S.S. (Ed.), Sustainability in Denim. Woodhead Publishing, pp. 161–196. https://doi.org/10.1016/B978-0-08-102043-2.00007-1
Phau, I., Teah, M., Chuah, J., 2015. Consumer attitudes towards luxury fashion apparel made in sweatshops. J. Fash. Mark. Manag. 19, 169–187. https://doi.org/10.1108/JFMM-01-2014-0008
Pieroni, M.P.P., McAloone, T.C., Pigosso, D.C.A., 2019. Business model innovation for circular economy and sustainability: A review of approaches. J. Clean. Prod. 215, 198–216. https://doi.org/10.1016/j.jclepro.2019.01.036
Pitkänen, K., Karppinen, T.K.M., Kautto, P., Turunen, S., Judl, J., Myllymaa, T., 2020. Chapter 13: Sex, drugs and the circular economy: the social impacts of the circular economy and how to measure them. Edward Elgar Publishing, Cheltenham, UK. https://doi.org/10.4337/9781788972727.00021
Pla-Julian, I., Guevara, S., 2019. Is circular economy the key to transitioning towards sustainable development? Challenges from the perspective of care ethics. FUTURES 105, 67–77. https://doi.org/10.1016/j.futures.2018.09.001
Prentice, R., De Neve, G., Mezzadri, A., Ruwanpura, K.N., 2018. Health and safety in garment workers’ lives: Setting a new research agenda. Geoforum 88, 157–160. https://doi.org/10.1016/j.geoforum.2017.11.024
Pritchett, L., Kenny, C., 2013. Promoting millennium development ideals: The risks of defining development down. Cent. Glob. Dev. Work. Pap.
Rao, N.D., Min, J., 2018. Decent Living Standards: Material Prerequisites for Human Wellbeing. Soc. Indic. Res. 138, 225–244. https://doi.org/10.1007/s11205-017-1650-0
Rask, N., 2022. An intersectional reading of circular economy policies: towards just and sufficiency-driven sustainabilities. Local Environ. 1–17. https://doi.org/10.1080/13549839.2022.2040467
Rauschmayer, F., Omann, I., Frühmann, J., 2012. Sustainable Development: Capabilities, Needs, and Well-being, Routledge Studies in Ecological Economics. Taylor & Francis.
Redman, A., 2018. Harnessing the Sustainable Development Goals for businesses: A progressive framework for action. Bus. Strategy Dev. 1, 230–243. https://doi.org/10.1002/bsd2.33
Rendtorff, J.D., 2019a. Sustainable Development Goals and progressive business models for economic transformation. Local Econ. J. Local Econ. Policy Unit 34, 510–524. https://doi.org/10.1177/0269094219882270
Rendtorff, J.D., 2019b. Sustainable Development Goals and progressive business models for economic transformation. Local Econ. 34, 510–524. https://doi.org/10.1177/0269094219882270
Repp, L., Hekkert, M., Kirchherr, J., 2021. Circular economy-induced global employment shifts in apparel value chains: Job reduction in apparel production activities, job growth in reuse and recycling activities. Resour. Conserv. Recycl. 171, 105621. https://doi.org/10.1016/j.resconrec.2021.105621
Ridder, H.-G., 2017. The theory contribution of case study research designs. Bus. Res. 10, 281–305. https://doi.org/10.1007/s40685-017-0045-z
Robinson, P.K., Hsieh, L., 2016. Reshoring: a strategic renewal of luxury clothing supply chains. Oper. Manag. Res. 9, 89–101. https://doi.org/10.1007/s12063-016-0116-x

Rocha, C., 2001. From Plant Closure to Reemployment in the New Economy: Risks to Workers Dislocated from the Declining Garment Manufacturing Industry. J. Sociol. 23.
Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F.S., Lambin, E., Lenton, T.M., Scheffer, M., Folke, C., Schellnhuber, H.J., Nykvist, B., de Wit, C.A., Hughes, T., van der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P.K., Costanza, R., Svedin, U., Falkenmark, M., Karlberg, L., Corell, R.W., Fabry, V.J., Hansen, J., Walker, B., Liverman, D., Richardson, K., Crutzen, P., Foley, J., 2009. Planetary Boundaries. Ecol. Soc. 14.
Rosa, H., Henning, C., 2017. The Good Life Beyond Growth: New Perspectives, Routledge Studies in Ecological Economics. Taylor & Francis.
Rosa, P., Sassanelli, C., Urbinati, A., Chiaroni, D., Terzi, S., 2020. Assessing relations between Circular Economy and Industry 4.0: a systematic literature review. Int. J. Prod. Res. 58, 1662–1687. https://doi.org/10.1080/00207543.2019.1680896
Rovira, J., Domingo, J.L., 2019. Human health risks due to exposure to inorganic and organic chemicals from textiles: A review. Environ. Res. 168, 62–69. https://doi.org/10.1016/j.envres.2018.09.027
Rowley, J., 2012. Conducting research interviews. Manag. Res. Rev. 35, 260–271. https://doi.org/10.1108/01409171211210154
Rowley, J., 2002. Using case studies in research. Manag. Res. News 25, 16–27. https://doi.org/10.1108/01409170210782990
Sachs, J.D., 2012. From Millennium Development Goals to Sustainable Development Goals. The Lancet 379, 2206–2211. https://doi.org/10.1016/S0140-6736(12)60685-0
Sahakian, M., Anantharaman, M., 2020. What space for public parks in sustainable consumption corridors? Conceptual reflections on need satisfaction through social practices. Sustain. Sci. Pract. Policy 16, 128–142. https://doi.org/10.1080/15487733.2020.1788697
Sainato, M., 2021. 'We work non-stop': LA garment workers toil for top brands and earn paltry rate. The Guardian.
Salado, A., Nilchiani, R., 2014. A Categorization Model of Requirements Based on Max-Neef's Model of Human Needs. Syst. Eng. 17, 348–360. https://doi.org/10.1002/sys.21274
Sandin, G., Peters, G.M., 2018. Environmental impact of textile reuse and recycling – A review. J. Clean. Prod. 184, 353–365. https://doi.org/10.1016/j.jclepro.2018.02.266
Saunders, M.N.K., Townsend, K., 2016. Reporting and Justifying the Number of Interview Participants in Organization and Workplace Research. Br. J. Manag. 27, 836–852. https://doi.org/10.1111/1467-8551.12182
Sauvé, S., Bernard, S., Sloan, P., 2016. Environmental sciences, sustainable development and circular economy: Alternative concepts for trans-disciplinary research. Environ. Dev. 17, 48–56. https://doi.org/10.1016/j.envdev.2015.09.002
Schandl, H., Hatfield-Dodds, S., Wiedmann, T., Geschke, A., Cai, Y., West, J., Newth, D., Baynes, T., Lenzen, M., Owen, A., 2016. Decoupling global environmental pressure and economic growth: scenarios for energy use, materials use and carbon emissions. J. Clean. Prod. 132, 45–56. https://doi.org/10.1016/j.jclepro.2015.06.100
Schenck, R., Blaauw, D., Nell, C., 2022. Waste management in rural South Africa-perspectives from Manfred Max-Neef's human scale development framework. Int. J. Sustain. Dev. 25, 30–52.
Schneider, P., Rochell, V., Plat, K., Jaworski, A., 2021. Circular Approaches in Small-Scale Food Production. Circ. Econ. Sustain. 1, 1231–1255. https://doi.org/10.1007/s43615-021-00129-7
Schöggl, J.-P., Stumpf, L., Baumgartner, R.J., 2020. The narrative of sustainability and circular economy - A longitudinal review of two decades of research. Resour. Conserv. Recycl. 163, 105073. https://doi.org/10.1016/j.resconrec.2020.105073
Schröder, P., Bengtsson, M., Cohen, M., Dewick, P., Hoffstetter, J., Sarkis, J., 2019. Degrowth within – Aligning circular economy and strong sustainability narratives. Resour. Conserv. Recycl. 146, 190–191. https://doi.org/10.1016/j.resconrec.2019.03.038
Schröder, P., Lemille, A., Desmond, P., 2020. Making the circular economy work for human development. Resour. Conserv. Recycl. 156, 104686. https://doi.org/10.1016/j.resconrec.2020.104686
Schroeder, P., Anggraeni, K., Weber, U., 2019. The Relevance of Circular Economy Practices to the Sustainable Development Goals: Circular Economy and SDGs. J. Ind. Ecol. 23, 77–95. https://doi.org/10.1111/jiec.12732
Schulz, C., Hjaltadóttir, R.E., Hild, P., 2019. Practising circles: Studying institutional change and circular economy practices. J. Clean. Prod. 237, 117749. https://doi.org/10.1016/j.jclepro.2019.117749
Schur, L., 2002. The Difference a Job Makes: The Effects of Employment among People with Disabilities. J. Econ. Issues 36, 339–347. https://doi.org/10.1080/00213624.2002.11506476

Sehnem, S., Vazquez-Brust, D., Pereira, S.C.F., Campos, L.M.S., 2019. Circular economy: benefits, impacts and overlapping. Supply Chain Manag. Int. J. 24, 784–804. https://doi.org/10.1108/SCM-06-2018-0213
Shirvanimoghaddam, K., Motamed, B., Ramakrishna, S., Naebe, M., 2020. Death by waste: Fashion and textile circular economy case. Sci. Total Environ. 718, 137317. https://doi.org/10.1016/j.scitotenv.2020.137317
Sirgy, M.J., 2021. Effects of Needs and Need Satisfaction on Wellbeing, in: Sirgy, M.J. (Ed.), The Psychology of Quality of Life: Wellbeing and Positive Mental Health. Springer International Publishing, Cham, pp. 263–281. https://doi.org/10.1007/978-3-030-71888-6_12
Skene, K.R., 2018. Circles, spirals, pyramids and cubes: Why the circular economy cannot work. Sustain. Sci. 13, 479–492. https://doi.org/10.1007/s11625-017-0443-3
Sneddon, C., Howarth, R.B., Norgaard, R.B., 2006. Sustainable development in a post-Brundtland world. Ecol. Econ. 57, 253–268. https://doi.org/10.1016/j.ecolecon.2005.04.013
Snyder, H., 2019. Literature review as a research methodology: An overview and guidelines. J. Bus. Res. 104, 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039
Socha, T.J., Beck, G.A., 2015. Positive communication and human needs: A review and proposed organizing conceptual framework. Rev. Commun. 15, 173–199.
Sousa-Zomer, T.T., Magalhaes, L., Zancul, E., Campos, L.M.S., Cauchick-Miguel, P.A., 2018. Cleaner production as an antecedent for circular economy paradigm shift at the micro-level: Evidence from a home appliance manufacturer. J. Clean. Prod. 185, 740–748. https://doi.org/10.1016/j.jclepro.2018.03.006
Sovacool, B.K., Turnheim, B., Hook, A., Brock, A., Martiskainen, M., 2021. Dispossessed by decarbonisation: Reducing vulnerability, injustice, and inequality in the lived experience of low-carbon pathways. World Dev. 137, 105116. https://doi.org/10.1016/j.worlddev.2020.105116
Spiering, S., Barrera, M. del V., 2021. Testing the quality of transformative science methods: the example of the Human Scale Development approach. Sustain. Sci. 16, 1439–1457. https://doi.org/10.1007/s11625-021-00966-3
Stahel, W., 2010. The Performance Economy, 2nd ed. 2010. ed. Palgrave Macmillan UK, London. https://doi.org/10.1057/9780230274907
Stal, H.I., Jansson, J., 2017. Sustainable Consumption and Value Propositions: Exploring Product-Service System Practices Among Swedish Fashion Firms. Sustain. Dev. 25, 546–558. https://doi.org/10.1002/sd.1677
Statista, 2022a. Women's Apparel. online.
Statista, 2022b. Denim market worldwide.
Steffen, W., Richardson, K., Rockstrom, J., Cornell, S.E., Fetzer, I., Bennett, E.M., Biggs, R., Carpenter, S.R., de Vries, W., de Wit, C.A., Folke, C., Gerten, D., Heinke, J., Mace, G.M., Persson, L.M., Ramanathan, V., Reyers, B., Sorlin, S., 2015. Planetary boundaries: Guiding human development on a changing planet. Science 347, 1259855–1259855. https://doi.org/10.1126/science.1259855
Stewart, F., 2015. The Sustainable Development Goals: a comment. J. Glob. Ethics 11, 288–293. https://doi.org/10.1080/17449626.2015.1084025
Stewart, R., Niero, M., 2018. Circular economy in corporate sustainability strategies: A review of corporate sustainability reports in the fast-moving consumer goods sector. Bus. STRATEGY Environ. 27, 1005–1022. https://doi.org/10.1002/bse.2048
Stock, T., Obenaus, M., Kunz, S., Kohl, H., 2018. Industry 4.0 as enabler for a sustainable development: A qualitative assessment of its ecological and social potential. Process Saf. Environ. Prot. 118, 254–267. https://doi.org/10.1016/j.psep.2018.06.026
Streeten, P., Burki, S.J., 1978. Basic needs: Some issues. World Dev. 6, 411–421. https://doi.org/10.1016/0305-750X(78)90116-X
Studley, M., 2021. Onshoring Through Automation; Perpetuating Inequality? Front. Robot. AI 8.
Su, B., Heshmati, A., Geng, Y., Yu, X., 2013. A review of the circular economy in China: moving from rhetoric to implementation. J. Clean. Prod. 42, 215–227. https://doi.org/10.1016/j.jclepro.2012.11.020
Tacconi, L., 1998. Scientific methodology for ecological economics. Ecol. Econ. 27, 91–105. https://doi.org/10.1016/S0921-8009(97)00134-1
Talay, C., Oxborrow, L., Goworek, H., 2022. The impact of asymmetric supply chain relationships on sustainable product development in the fashion and textiles industry. J. Bus. Res. 152, 326–335. https://doi.org/10.1016/j.jbusres.2022.07.034
Taplin, I.M., 2014. Global Commodity Chains and Fast Fashion: How the Apparel Industry Continues to Re-Invent Itself. Compet. Change 18, 246–264. https://doi.org/10.1179/1024529414Z.00000000059
Teipen, C., Mehl, F., 2022. Social Upgrading in Global Value Chains—The Role of Labor and Industrial Relations, in: Teipen, C., Dünhaupt, P., Herr, H., Mehl, F. (Eds.), Economic and Social Upgrading in Global Value

Chains: Comparative Analyses, Macroeconomic Effects, the Role of Institutions and Strategies for the Global South. Springer International Publishing, Cham, pp. 97–120. https://doi.org/10.1007/978-3-030-87320-2_4
Thompson, J., Mckeever, M., 2014. The impact of stroke aphasia on health and well-being and appropriate nursing interventions: an exploration using the Theory of Human Scale Development. J. Clin. Nurs. 23, 410–420.
Tien, N.H., Anh, D.B.H., Ngoc, N.M., 2020. Corporate financial performance due to sustainable development in Vietnam. Corp. Soc. Responsib. Environ. Manag. 27, 694–705. https://doi.org/10.1002/csr.1836
To, M.H., Uisan, K., Ok, Y.S., Pleissner, D., Lin, C.S.K., 2019. Recent trends in green and sustainable chemistry: rethinking textile waste in a circular economy. Bioresour. Biomass Bio-Fuels Bioenergies 20, 1–10. https://doi.org/10.1016/j.cogsc.2019.06.002
Todeschini, B.V., Cortimiglia, M.N., Callegaro-de-Menezes, D., Ghezzi, A., 2017. Innovative and sustainable business models in the fashion industry: Entrepreneurial drivers, opportunities, and challenges. Bus. Horiz. 60, 759–770. https://doi.org/10.1016/j.bushor.2017.07.003
Tolio, T., Bernard, A., Colledani, M., Kara, S., Seliger, G., Duflou, J., Battaia, O., Takata, S., 2017. Design, management and control of demanufacturing and remanufacturing systems. CIRP Ann.-Manuf. Technol. 66, 585–609. https://doi.org/10.1016/j.cirp.2017.05.001
Tukker, A., 2015. Product services for a resource-efficient and circular economy – a review. J. Clean. Prod. 97, 76–91. https://doi.org/10.1016/j.jclepro.2013.11.049
Turker, D., Altuntas, C., 2014. Sustainable supply chain management in the fast fashion industry: An analysis of corporate reports. Eur. Manag. J. 32, 837–849. https://doi.org/10.1016/j.emj.2014.02.001
UN, 2019. Disability and Development Report: Realizing the Sustainable Development Goals by, for and with persons with disabilities. United Nations Department of Economic and Social Affairs, New York.
UN, 2015. Resolution adopted by the General Assembly on 25 September 2015: Transforming our world: the 2030 Agenda for Sustainable Development. General Assembly: United Nations.
UN, 2006. United Nations Convention on the Rights of Persons with Disabilities. United Nations, Geneva, Switzerland.
Van Buren III, H.J., Schrempf-Stirling, J., 2022. Beyond structural injustice: Pursuing justice for workers in post-pandemic global value chains. Bus. Ethics Environ. Responsib. 31, 969–980. https://doi.org/10.1111/beer.12466
van den Bergh, J.C.J.M., 2020. Six policy perspectives on the future of a semi-circular economy. Resour. Conserv. Recycl. 160, 104898. https://doi.org/10.1016/j.resconrec.2020.104898
Van den bergh, J.C.J.M. van den, 2009. The GDP paradox. J. Econ. Psychol. 30, 117–135. https://doi.org/10.1016/j.joep.2008.12.001
Vehmas, K., Raudaskoski, A., Heikkilae, P., Harlin, A., Mensonen, A., 2018. Consumer attitudes and communication in circular fashion. J. Fash. Mark. Manag. 22, 286–300. https://doi.org/10.1108/JFMM-08-2017-0079
Velenturf, A.P.M., Purnell, P., 2021. Principles for a sustainable circular economy. Sustain. Prod. Consum. 27, 1437–1457. https://doi.org/10.1016/j.spc.2021.02.018
Veleva, V., Bodkin, G., 2018. Corporate-entrepreneur collaborations to advance a circular economy. J. Clean. Prod. 188, 20–37. https://doi.org/10.1016/j.jclepro.2018.03.196
Vita, G., Ivanova, D., Dumitru, A., García-Mira, R., Carrus, G., Stadler, K., Krause, K., Wood, R., Hertwich, E.G., 2020. Happier with less? Members of European environmental grassroots initiatives reconcile lower carbon footprints with higher life satisfaction and income increases. Energy Res. Soc. Sci. 60, 101329. https://doi.org/10.1016/j.erss.2019.101329
Vogel, J., Steinberger, J.K., O'Neill, D.W., Lamb, W.F., Krishnakumar, J., 2021. Socio-economic conditions for satisfying human needs at low energy use: An international analysis of social provisioning. Glob. Environ. Change 69, 102287. https://doi.org/10.1016/j.gloenvcha.2021.102287
Wahba, M.A., Bridwell, L.G., 1976. Maslow reconsidered: A review of research on the need hierarchy theory. Organ. Behav. Hum. Perform. 15, 212–240.
Walker, A.M., Opferkuch, K., Lindgreen, E.R., Simboli, A., Vermeulen, W.J.V., Raggi, A., 2021. Assessing the social sustainability of circular economy practices: industry perspectives from Italy and the Netherlands. Sustain. Prod. Consum. S2352550921000300. https://doi.org/10.1016/j.spc.2021.01.030
Wallace, M., Sheldon, N., 2015. Business Research Ethics: Participant Observer Perspectives. J. Bus. Ethics 128, 267–277. https://doi.org/10.1007/s10551-014-2102-2
Wastling, T., Charnley, F., Moreno, M., 2018. Design for circular behaviour: Considering users in a circular economy. Sustain. Switz. 10. https://doi.org/10.3390/su10061743

Wastling, Thomas, Charnley, F., Moreno, M., 2018. Design for Circular Behaviour: Considering Users in a Circular Economy. Sustainability 10, 1743. https://doi.org/10.3390/su10061743
WCED, 1987. Our common future. Oxford University Press, Oxford.
WHO, 2018. Circular Economy and Health: Opportunities and Risks. Copenhagen, Denmark.
WHO, W.B., 2011. World Report on Disability.
Wiedmann, T., Lenzen, M., Keyßer, L.T., Steinberger, J.K., 2020. Scientists' warning on affluence. Nat. Commun. 11, 3107. https://doi.org/10.1038/s41467-020-16941-y
Winans, K., Kendall, A., Deng, H., 2017. The history and current applications of the circular economy concept. Renew. Sustain. ENERGY Rev. 68, 825–833. https://doi.org/10.1016/j.rser.2016.09.123
Wright, C., Nyberg, D., Rickards, L., Freund, J., 2018. Organizing in the Anthropocene. Organization 25, 455–471. https://doi.org/10.1177/1350508418779649
Yin, R.K., 2017. Case Study Research and Applications: Design and Methods. SAGE Publications.
York, R., Rosa, E.A., 2003. Key Challenges to Ecological Modernization Theory: Institutional Efficacy, Case Study Evidence, Units of Analysis, and the Pace of Eco-Efficiency. Organ. Environ. 16, 273–288. https://doi.org/10.1177/1086026603256299
Yuan, Z., Bi, J., Moriguichi, Y., 2008. The Circular Economy: A New Development Strategy in China. J. Ind. Ecol. 10, 4–8. https://doi.org/10.1162/108819806775545321
Zink, T., Geyer, R., 2017. Circular Economy Rebound. J. Ind. Ecol. 21, 593–602. https://doi.org/10.1111/jiec.12545

10. Annex

Annex a: Ethics

- Ethics form approval
    - Due to changes of circumstances there were three iterations of ethics forms and subsequent approvals due to changes to the methodology.
    - Below is an example of one of the approval letters, in this instance approval for the original case study plan.

Imperial College London

Science Engineering Technology Research Ethics Committee
Imperial College London
Room 221
Medical School Building
St Marys Campus
London
W2 1PG
Tel: +44 (0)207 594 1872

researchethicscommittee@imperial.ac.uk

12 June 2020

Dear Dr Mike Tennant

Study Title: How can the circular economy contribute to satisfaction of fundamental human needs and sustainable development? The case of the fashion industry: a case study of a denim manufacturer in Vietnam

SETREC reference: 20IC5908

The above study was approved by your Head of Department on 01/04/20 and by the Joint Research Compliance Office on 12/06/20.

Under the Science Engineering Technology Research Ethics Committee process, a study that has been reviewed by the Joint Research Compliance Office and Head of Division/Department, where no significant ethical issues have been identified in the protocol or ethics application, can be given JRCO approval without requiring it to go to full committee.

Documents
The documents reviewed were:

- Application form (v2 10/06/20)
- Protocol (v2 10/06/20)
- Focus Group Topic Guide – Supply Chain Workers (v1, 29/03/20)
- Interview Topic Guide – Management (v1, 29/03/20)
- Interview Topic Guide – NGO (v1, 29/03/20)
- Participant Information Sheet (v2.0 10/06/20)
- Participant Consent Form (v2 10/06/20)
- Organisation Consent Form (v1 30/03/20)
- RKC Recruitment Email - Partners (v1 02/02/20)

Yours sincerely,

Ruth Nicholson
Digitally signed by Ruth Nicholson
Date: 2020.06.12 12:11:26 +01'00'

Ruth Nicholson,
Head of Research Governance and Integrity,
Imperial College London

Annex b: Chapter 4 participants

- Overview of experts interviewed.

P	Role	Organisation type	Interview focus	Date
1	Sustainability Specialist	Online retailer	• Insights into business model & approach to circularity	2020
2	CE Manager	Retailer	• Insights into business model & approach to circularity	2020
3	Consultant	Independent	• Insights into circular fashion transition & commonly applied approaches to circularity	2020
4	Head of Sustainability	Online retailer	• Insights into business model & approach to circularity	2020
5	Founder	Manufacturer	• Insights into business model & approach to circularity	2020
6	Manager	NGO	• Insights into NGO activities re. clothing retail & redistribution	2020
7	Marketing Manager	Remanufacturer	• Insights into business model & approach to circularity	2020
8	Innovation Manager	NGO/ Funder	• Insights into NGO activities relating to funding circular fashion innovations	2020
9	CE Manager	Consultancy	• Insights into circular FTI	2020
10	Consultant, researcher	Independent	• Insights into circular FTI • Questioning regarding broad sustainability, incl. Social impacts.	2021
11	Consultant	Independent	• Insights into circular FTI • Questioning regarding broad sustainability, incl. Social impacts.	2021
12	Circularity Specialist	Retailer	• Insights into business model & approach to circularity. • Insights into circular FTI	2021
13	Circularity Specialist	Incubator	• Insights into business model & approach to circularity • Insights into circular FTI • Questioning regarding broad sustainability, incl. Social impacts.	2021
14	Circular Design Strategist	Consultancy	• Insights into circular FTI • Questioning regarding broad sustainability, incl. Social impacts.	2021
15	Director	Policy/ Consultancy	• Insights into circular FTI • Questioning regarding broad sustainability, incl. Social impacts.	2022
16	CE Consultant	Policy/ Consultancy	• Insights into circular FTI • Questioning regarding broad sustainability, incl. Social impacts.	2022
17*	CEO	NGO	• Insights into role of NGO clothing redistribution & retail in CE fashion transition. • Questioning regarding broad sustainability, incl. Social impacts.	2022
18*	Head of International Development	NGO	• Insights into role of NGO clothing redistribution & retail in CE fashion transition. • Questioning regarding broad sustainability, incl. Social impacts.	2022
19	Partner	Consultancy	• Insights into circular FTI • Questioning regarding broad sustainability, incl. Social impacts.	2022
20	Head of CE	NGO	• Insights into role of NGO clothing redistribution & retail in CE fashion transition. • Questioning regarding broad sustainability, incl. Social impacts.	2022

21	Manager	NGO/ Consultancy	• Textiles circularity strategies. • Corporate & policy approaches. • Questioning regarding broad sustainability, incl. Social impacts.	2022
22	CE specialist	Independent	• Textiles circularity strategies. • Corporate & policy approaches. • Questioning regarding broad sustainability, incl. Social impacts.	2022
23^	CE specialist	Policy/ Academic	• Textiles circularity strategies. • Corporate & policy approaches. • Questioning regarding broad sustainability, incl. Social impacts.	2022

*Representatives from the same organisation were interviewed together.

^Interviewee requested to respond to in writing - by email; Rowley (2012) considers this a form of interview, but less preferable to in-person or video interviewing.

Annex c: Chapter 4 topic guides

- Interview topic guides for Chapter 4. These guides are indicative but not exhaustive of all the questions asked given the line of questioning was flexible and was altered based on expertise of the participant.

Interviews 1-9

- Please can you tell me about your role and organisation you represent?
- What is your understanding of the Circular Economy?
- What are your views on the current trend for high volume, low-cost consumption of fashion.
- How much control over your supply chain do you have?
- How does your organisation contribute to fulfilling the needs of citizens?
- What is the greatest challenge in your supply chain relating to human needs?*

*this question was omitted after the early interviews as it did not resonate with participants

Interview 10-23

- Please can you tell me about your role? What parts of the fashion textiles supply-chain you have experience with?
- What is your understanding of the Circular Economy? How would you define it?
- How have you seen the Circular Economy applied in the fashion textiles industry
- Do you have any insights into the level of understanding of circularity at the individual organisation level?
- What are the sustainability benefits of transitioning to CE?
- What would you say are the key kind of opportunities and barriers for the individual organisation?
- What, if any, are the social benefits and implications of transitioning to a CE in this industry?
- How is policy currently helping or hindering the transition to the CE in the industry?
- Can the CE in the fashion textiles industry contribute to sustainable development?

Annex d: Example transcript

- Example transcript, P19. Any reference that may be identifiable has been removed to protect the privacy of organisations and the participants.

RC: So just to begin with, could you tell me a bit about your background in the circular economy, your current role and also your experience specifically related to fashion textiles?

P19: Okay, so, I am a partner at [*company name*], we are a small nimble B Corp sustainability and circular economy consultancy. So we work with our clients to help them become more circular and still make a profit and also help our clients set, develop and deliver sustainability strategies. So my role as a partner [*removed to protect confidentiality*]. And what we do is, well we all do everything from comms to consultancy, to work winning to relationship stakeholder management. My specific experience in fashion and textiles has been in during my tenure at [*previous company name*]. If you know of [*previous company name*], in about 2011, they took over the sustainable clothing action band from DEFRA. So I took on the role of leading that and developing it further and setting industry level targets for carbon, water and waste. And I worked to deliver that over a period of years with the retail owners - lead retailers and brands at the front end. And then at the other end with people like the recyclers and collectors and charities. And I went off to another consultancy for four years back to construction, which was my background. And then when I became a partner at [*company name*] I've been back at [*company name*] for a couple of years on and off helping them develop and deliver the [*removed to protect confidentiality*] in 2020. So I spent a bit of time doing again, stakeholder engagement, and yeah, and getting it up and running. And I probably dipped out just at the point of launch. So I helped things like making the case for change. And then what I subsequently have done is develop their circularity roadmap, which if you've gone to the [*previous company name*], website is hidden in their amongst their website somewhere. But I wrote that, you know, what do we need to do as a country as retailers and brands to deliver circularity in textiles sector.

RC: Okay, great, thank you. And broadly because it means different things to different people, what is your understanding or interpretation of the circular economy as a concept?

P19: Well, really, it's about moving away from that linear consumption. So you know, moving away from the sort of the make-take into that, you know, how do we keep materials and products in play for longer. And then when things no longer have a useful or active life… How do we close the loop on that? So how do we keep the materials in circulation? And at the same thing, you know at [*company name*], what we do very much is a bit underpinning that with commercial you know, so how can people who typically have a linear model still make a profit and commercial success and deliver for their customers by moving to a circular model? So that's really very much underpins what we do as a business.

RC: Where at [*company name*] do you get most your information on circularity from?

P19: Well, a bit like yourself, probably, it's quite overwhelming when you read the amount of press that goes on, and the amount of reports that are published. So we do go through the press and the reports and see what evidence base is out there. We are always very much an evidence based organisation. So we do look for, you know, proven real data. And the other thing that we learn from is the work we do with our clients. So taking them through that journey from 'oh we think we want to go circular', or 'we've got this amazing rental idea', or actually, 'we're gonna flip into a service model', and just working with them through that whole process, right through, you know, from innovation to feasibility to pilots, and then how do they scale up? So we continually, I know, everybody probably says this, but we are continually learning all the time, and feeding that back in, you know, whether it's things like we have set templates that we run the commercial model on. So, you know, we tweak that continually, so it's a case of looking outward to what the markets doing and what other people are publishing and then looking inward from what we've, what we've discovered with clients.

RC : Okay, great. I don't know what your kind of client base is like in terms of fashion textiles industry. But in general, what would you say are the strategies that are most commonly applied and also kind of what are clients asking for or what are they interpreting circularity as when they come to you?

P19: We have quite a few clients across the retailers and brands so from some very high end luxury brands, a very well known resale brand, through some the smaller retailers and brands in the UK. I mean, I think for them, there's a couple of things. There's a bit of that FOMO [*fear of missing out*], you know, 'oh, goodness me, everyone else is doing it, why aren't we' - seeing where they sort of jump on the journey? I think the that are some retailers and brands who really [*emphasised*] get it, like we need to be doing this for, you know, for our investors, our stakeholders our climate change our customers. And then there's the ones that are a bit the ones I sort of said that a bit FOMO. And I think the drivers, well there's quite a lot of different drivers. But I think the problem is if the drivers aren't pinned down, and really from the start, you haven't got the commercial buy in. It's really difficult for any of them to make a success of it mean, even only this week, is it ThreadUp they have been running and this doesn't make any money. You know, so there's a lot about us making the case to retailers, brands and new sellers about you can still make money. And we've proven that. Yeah, I think that's where I'm at if I'm going a bit off topic, but I think that's where some of the heart of it might lies. If you get people who dip the toe in the water on the wrong way, or they're not really they don't really have the right drive or the commercial insight. It won't work it will feel and then, you know, they're like, oh, you know, it's not for us.

RC: Can you confirm the specific strategies that you've seen most kind of, I don't want to use the word popular. But those that are most employed in the fashion textiles industry?

P19: I've done some work, we did some circularity work with a really big fashion brand, and platform just at the beginning of the year. And from that I did do a bit of sort of competitor analysis. And I think there are some companies out there who, you know, somebody like Zalando, for example, when you look through what they're doing, I mean, that, that if you've had a look in detail on what they're doing. I mean, for me that stood out as being a big organisation that really had the strategy. And then they had started to have the policy and procedures and the roadmap in place. I know they had a couple of things that we're still working on. And I think that's just been published. I think for me what it is, in the strategy, there's a lot of conversation about we will be circular by or 50% of our products will be circular by, etc, etc. By 2030. But I am not convinced that their strategies are or their goals are...well whether they have got all the steps in place to deliver it. So I think for me, there's a lot I like with what Zalando were saying and when I look at some of their detail it looks at the delivering it. But there are some other companies you know, there was one I looked like [*inaudible*] talking about we're going to be - whether it was rent or resale I can't remember off the top of my head - and then you go on the website and there's three items or the garments. So you know, that's small. So I've looked at you know, Stella McCartney, there's a lot about, there's a lot about sustainable materials and low impact materials. But that in itself isn't circular. So you know,

Stella McCartney talks a lot about that. But actually, when you look at what's in the public domain, there's nothing on circular models in there - very little.

RC: Yeah, that's one thing that I guess I've kind of noticed with some, when I've spoken to some retailers directly, they'll say something like, yeah, we have an aim to be 50% circular by 2020 like this. And then as you say, well, what does that mean? And then, though, it won't necessarily. It seems to refer quite often to recycled materials or to even to something else…

P19: Yeah, definitely. So I did quite like I said, at the beginning of year, I did quite a big piece of work about for a client and you know, 50% of their products would be circular or have circular attributes by 2030, or whatever. You start to see a lot of the same strategies and the same goals. But I mean, pineapple leather and having a clothing donation scheme are *not* circular. And I think we are [*removed to protect confidentiality*], and we're on this Circular Economy Working Group for the [*removed to protect confidentiality*]. And you think about people who are in [*removed to protect confidentiality*]., you think they're on message? Absolutely. We all truly believe in balancing purpose of profit. But even in that group, there's a lot of talk about recycling. And actually, I think we've written a couple things on our blog, opinion piece that is like, 'Guys, this isn't about recycling'. You know, if actually, if you're recycling, you failed because you haven't kicked it. You've not failed, but that's a further down the line solution. You know why aren't you, you know, making the most of the product in the state that it's in? Why are you doing something to it to really, downcycle; we know in fashion textiles, closing the loop on materials is not great, because you can take you know, we know, got a client we've been talking to them about recently want to do more on recycled polyester and more like, but ultimately that's fine, but it's made out of plastic bottles and then when you recycled polyester thing was a piece of furniture, you know, covering furniture. It's not recyclable back into fabric at this point in the technology cycle that we're in, in the UK, well worldwide.

RC: Yeah, I always think that's misleading. If I spoke to I don't know, if I spoke to a friend and I said, you know, when something's 100% recycled polyester is usually from you know, from a plastic bottle waste stream, it's actually taking in other industries waste stream.

P19: Yeah, completely. I don't know if it was public in the public domain, but I think WRAP did a piece of work. They certainly had a working group conversation about the competition and what it was doing to price between on recycled PET because the demand from the clothing retailers, the clothing, well, the fabric manufacturers versus going back into bottles and what it was doing to the economics and the place. So there is some stuff out there on that. And it's not, you know, if you're a purist, you'd be like, well, plastic bottles should be made back into plastic bottles.

RC: I think it's quite interesting. And also just unknown amongst anyone other than those who work in the industry.

P19: No, it's true. A lot of people talk about all I've got, you know what, I saw some bamboo socks, or there'll be right up your street, [*participant name*], and you're like, bamboo, we'll...You see, here's the thing about bamboo...to keep dragging your soapbox to stand on, but you can like go. And actually, I suppose when it works, what we say, you know, to be truly, you know, circular by that it's a wee bit more talked about now, in the last few months, as you know, it being the most circular is keeping the things that you've got, as long as you can, you know. And repaired or, and when I worked at [*previous company name*], we talked about sort of what I said was making secondhand sexy. And actually, I can't believe now that you know, Love Island has been sponsored by eBay. You know, two years ago, we would never have seen that. And I kept thinking we need to make secondhand the norm, we need to make it better. We need to make it easier to shop, we need to have better choice. Anyway. Sorry. That's my passion.

RC: So back to my next question, which is, what do you consider the sustainability impacts of circularity?

P19: Well, for me, it's all about, you know, the carbon, water and waste saving, because if you're keeping the materials and [*inaudible*] for longer, you are reducing the environmental impact. And there's enough data and evidence out there particularly the work that we did with WRAP. So very much about that. And also, I think that is a bit more a bit social sustainability and circularity, the work that we wrote the if you've seen it, but [*removed to protect confidentiality*]. And if you dig into that, that is a bit more about it being a fair and just transition. So I think the environmental say does relatively well known and spoken about, but the thing that's coming out more from the broader sustainability is about the social side, and also a bit about regenerative agriculture. And where does have its part to play?

RC: So yeah, just drilling a little bit more into the social, potential benefits or implications of circularity; are you able to summarise what you would consider them to be or what the key ones that are spoken about?

P19: Okay, so key ones are things about things like labour, you know; if we keep things in play for longer, and therefore, are we taking jobs away from the collection and recycling sector? And [*name removed for confidentiality*], we know at the TRA [*textiles recycling association*], who we know very well, we've had conversations about that. And, with a third of clothing still going to landfill, if recyclers and collectors and sorters and resellers could get their hands on that. There is absolutely no need for the businesses to lose materials because there's a whole untapped source of materials. So there's a lot about if we become more circular the job losses, but there wouldn't be there might be a shift in the types of jobs. But also there is still potential to gather more discarded clothing. And so I think that is a checks and balances. Yeah, there might be different losses in some parts of the sector. But you know, there could be growth in other parts, we need better sorting in the UK, you know, by hand to pick up the good stuff to resell it. And then, you know, if you look at what people like Oxfam or ReSkins are doing, they're really upping their game on what their second hand sailing sites look like. So there's a lot load of job opportunities from you know refreshing the clothes, presenting them well, loading them onto the websites. There's a conversation - by the way this isn't really my thing - but about, you know, we know that quite a lot of the UK's collected clothing gets sold on to other countries. And a conversation about you know, that's always comes up in the news and panorama. It does get sold to other countries. And then there is an amazing, massive secondhand clothing market. And seeing that, you know, if we were to keep more of those clothes in the UK, does that mean that some of those places like Ghana, where they go to where they have a thriving secondhand market with UK clothing, will that suffer as well? Because there wouldn't be that export? I guess it's like they wouldn't be that flow of stock for them to run a business? I don't have I'm not I just know that that's discussed but I don't have much more opinion on that's since it is not really my area of focus.

RC: Do you think is ready to accept the concept of circularity?

P19: I think we need to translate it into what does it mean, for me? I think that's the whole part. You know, 'what does it mean for me', because consumers are not going to go for the [*inaudible*]. People have done quite well since Blue Planet and a bit of bit climate change. But if you ask them, I want you to question you know, people can go I don't know what that means. And the David Attenborough and penguins or turtles. But if it's presented in that, you know, repair, keep clothes in play for longer, you know, pass on, swapped and donate. And with circularity underpinning it, but I think if you ask the man on the street, that's not a concept that they would understand. And I think they are ready for all those other things, like repair, for example. But there's loads of consumer research out there about what sections of the demographic, the population, that are more open to it than others. And there's loads of research on that I can't off the top of my head discuss it, but there's, you know, we've done it for clients and WRAP has done it. And we've just done a piece of work for one of the big reselling sites about the demographics and about what does and doesn't work for them. I think that's the key thing about circularity, where we've been talking to retailers and brands, it's like who is your customer? Our whole circular models is about putting the customer at the heart of it, because there's no point in you having a circular model, if you're Selfridges, or if you are Burberry, or if you are H&M, if it doesn't appeal to your customer? The other thing about social sustainability. There's a lot of conversations. Again, we focus quite heavily on environmental here. But there is a lot of conversations and if you dig into that [*removed for confidentiality*] report about things like skills; there's a lot of talk about bringing manufacturing skills back to the UK people, that might not be the right thing for us, because we don't have the fabric in the UK. We don't have the spinners and the mills, but can we have, can we upskill people to work on repair, refresh, etc, etc. And there's an amazing organisation of b2c them in Glasgow called ACS clothing. If you've looked at them.

RC: I see, one of the things that's what I was looking at recently was like, with the skills it was almost I have some concerns that like UK, some workforce might not be that interested in some of the jobs associated with circularity like some of the manual kind of work, just from what, you know, sort of from the skill shortages we've seen.

P19: It is interesting because I was an assessor for [*removed for confidentiality*], for some of their grants and I went to three different factories recently. And I went to Salvation Army, I went to a couple of Woollen Mills and the workforce were very engaged, very engaged and they won the grants which were circularity-based, for circularity activities, and the workforce people on the line and people in the lab, people on the shop floor, were very engaged. So I think it's getting it right. You know, there was a guy who was like, I don't know, the engineer in a woolen mill and he was showing me what they were doing with the old cones, you know, and he was like this is amazing that we're doing this and he was gonna do all this with these old cones. First of all, they were taking the, the left or every Cones got a little bit of wool on the end, and they we're putting them on this machine is spinning all the leftover wool into a massive, great big bobbin-ey thing. And then all the to that meant we could then sell those to crafters so that it didn't get wasted. And then all the cones were getting ground up and sent it off to plastics. You know, so when you get it right, and engage people and make it I mean,

don't get me wrong, but we've all done rubbishy jobs on the line. But you see, I felt like there was a really good engagement level.

RC: Now, at the kind of individual at the business level, and from your insights, discussing with clients and things. What do you think their level of understanding of the circular economy concept?

P19: I think I've touched on a bit, I think you get, you get the two spectrums. I think there's people who you know 'my boss talked about this, and we need to do it, but I don't know what it is' through to experts, who've maybe done it somewhere, or they've already taken steps. I think it's mixed. I think it's right across the board. But I think it's a barrier because when you talk about something at high level concepts, and you don't translate it into direct action, people are always quite confused about what it is for them and what they would do. And I think that's the thing when we get into see retailers and brands, and we really hone it down into you know 'your your handbags are being sold on eBay or Vestire for 300 pounds, why can't you get them back from your customers, refurbish them and sell them on your secondhand website?' And they go 'Oh, yeah. Oh, yeah, we could do that'. So I think it's back to that, what can we do what I think I mean, it's a high level concept, people just get a bit scared about it. And then that's when you get a company doing a rental model with three garments on their website, even though that wasn't the right model for you guys. If you can't do that with authority and without really serving your customer, you pick the wrong horse.

RC: Do you think that's because they pick the strategies that they think will be easiest to implement?

P19: Or, 'well everyone else is doing it, so why aren't we?' I wouldn't say very many, well, some strategies are easy to do. We did a lot of we did quite a lot of conversations with [*removed to protect confidentiality*]. about well you can use a service partner to deliver your circular strategies. You know, they were working, they were working on the rental model with [*removed to protect confidentiality*]. [*removed to protect confidentiality*] are experts at it so why don't you partner with them? So there's lots of ways we talk with clients about making it easier. And dipping your toe in the water in a less risky way. But I think the overall concept people are just like, 'Oh, my goodness, we need to do something' unless we go and teach people not that we need to do this, what do you need to do, I don't know what it was what we need to do. And then you have to sit down and go through a very detailed thought process with them, dragging everything out and finding out where the model is and where they make the profit and what the customer wants. And all that deep thinking stuff is the bit we do upfront before we get into business model creation, because there's what I say there's no point in creating a model if first of all your customer is not going to pay for it and you're not going to make any money.

RC: Do you think that's so one of the reasons that they go for the materials focus because is just because that's the easiest thing to implement?

P19: I think it's because it's the most technically mature thing to do as in it has matured over time. You know, back in 2011, 2012 I ran things like cotton working groups with retailers and brands. And we really started to pin down what was sustainable cotton - at the time you had Fairtrade, organic, cotton made in Africa, Better Cotton. I think that was it. But proving - going back to the point I made about evidence based - proving which one had a lower impact environmentally than the other, and there wasn't the data out there. And then what happened is the different cotton brands and different cotton, if you call that a brand, fibre brands, cotton went off and did the research to prove that the way they grew their cotton used less water, etc, etc. So I think the thing is, is that that material resource efficiency piece, and lower impact materials has been on the go for longer. So that is an evidence base out there. There's data out there, you can tell your customer that it's 10%, better 50% Better than normal, conventional. So I think it's about the maturity of the lower impact materials.

RC: Okay. So, where it is in the kind of learning cycle are these strategies?

P19: Yeah, yeah. And the evidence to back it up. There's a lot of theoretical stuff out there about circularity, and you could make more money, or it could be lower impact, but I'm not sure. We find there's not a lot of it's been done in real life and has real evidence in the public domain.

RC: Yeah, that makes sense. Kind of related to that, how often, if ever, have you seen reduction being applied as a strategy?

P19: Not often [*laughs*]. We discuss it at the top, always, you know, actually the best way for you to do this is to sell less. When you're talking to retailers and brands, that's not gonna fly. There are some retailers and brands who do understand that, you know, they know that the way for them to do that, to reduce their impact, and their customers impact is to sell less stuff and keep things in use for longer. I can't think of anything specifically from a client at the moment. There is a

project that [*name of colleague*] is doing with one of the big luxury brands and they are looking at really hammering down durability and clothes made for longer. I mean, I know there's a piece of research, we worked on with someone at [*removed for confidentiality*] where he took a very expensive t shirt and a high street t shirt and did all the testing and actually even though that one was 90 quid and that one was five pounds, you know, the five pound one performed better. So there's a bit about the luxury brands not just trading on their name, but actually delivering clothes that do last for longer. I mean, a Burberry raincoat might last for years, but you know, 90 pound t-shirt might not.

RC: So I think you've kind of covered a couple of these next questions already, but for clarification and some more detail. When you speak to your clients, are the main drivers for circularity, economic, environmental, or social in nature? From what you've observed.

P19: I think it comes from a place of environmental you know, their sustainability strategy. They've set something, they've got an aspiration and a goal. But they perhaps haven't quite understood how they would deliver it and how they will measured it. We don't provide social sustainability advice, really. We'll get into so many of those conversations, although it is typically something, with a sustainability strategy with the client, we have looked at it, but not so much with clothing and retailer brands. I mean, they have teams of people that do that stuff. And then financially, yeah, we are getting a lot more retailers and brands coming to us and talking about the fact that their stakeholders and shareholders and investors are asking them what you're doing on this and, you know, where does it link to ESG? And then what you're doing on it, but ultimately, if it doesn't make money, they're really not going to do it.

RC: What, what would you say are the key kind of opportunities and barriers for the individual organisation? So if you're speaking to a client, and they asked that kind of question, what would you summarise them as?

P19: Our key thing with the barriers is that if we only work with this sustainability team, it's very difficult to get traction. We need to get somebody from the commercial team in the room or the you know, the FD [*financial director*] in the room and show them how they can still make money and how it can be commercial. We think that it's very difficult to get buy in when you have a sustainability manager who wants to do something. It tends not to have enough teeth to go anywhere. So the barriers for us, and therefore for the retailer's brand, is presenting that strong commercial case and getting through the door to the commercial team quickly. That's a barrier; another thing is a lot of retailers and brands don't actually understand who the customer is, and what their customer drivers are on circularity. So quite a lot of the work we do at the early stage when we're talking about that whole idea, creation innovation pieces, is you know, who's your customer, identifying who your customer is, and getting some of that detailed questionnaire and consumer surveys done. So that that's the big barriers. Yeah, it's usually not having the right commercial people in the room and have making the good commercial case and not understanding your customer.

RC: So linking to that, have you seen any examples of companies trying to fix that through kind of metrics or KPIs? Is that something you've ever come across?

P19: Yeah, absolutely - we've seen that a lot. I think, at strategy level, if you have a strategy that says we will have 50% of our products being circular by 2050. When that set out at that corporate level, and then cascading through into people's individual and departmental objectives and KPIs. So I've heard of buying teams, you know, having it within their actual personal objectives and within their department strategies for them to do that. So that is one of the really good ways to deliver it, is to get it right down at department level. And then, you know, if it's a product, getting it at product level, every product I mean, we've seen some bad examples of it, but doesn't matter. You know, is an alligator skin coat that your selling secondhand or newer, selling site, circular. You know these ethical questions, you won't sell, anything with fur new, but you go onto your secondhand selling site and discover you've got jackets trimmed with real fur. So, but that's a bit of a case example, it might not happen that often, I just think it's, it is being cascaded down into buying teams. And that's not every, I think when you also look at Zalando, I'm sure they've embedded it further down, and they've got a lot more detailed targets and KPIs and goals. And that is, I mean, when we're talking to clients, that is one of the ways to make it happen.

RC: So, you sound like you mainly work with businesses, but who are the other kind of key actors and stakeholders that you think have to be recognised or collaborated with, in order to make circularity a success?

P19: I think circularity I think, particularly organisations like the universities, you know, whether it's on research and development, you know, like people like [*deleted for confidentiality*], and you've got London College of Fashion, doing lots of stuff. And we know the team in [*deleted for confidentiality*], because we worked on the [*deleted for confidentiality*]. One of the interesting things about the [*deleted for confidentiality*], we did some work with designers and they seem to be quite

far removed from circularity in that, you know, they'll design one piece that's made of something very fancy, or you can take your five pairs of trainers and they will make them into one super pair for you. And it's got all your old trainers built in to this new trainer, but then they are 1500 pounds, so I think there's a lot of work has to happen at the design stage. And whether that's the universities or the British Fashion Council, you know, how many designers have high end designers rather than perhaps some of the retail designers, how many of them have been to see Oxfam's WasteSavers Site or the Salvation Army. So it's that connecting the two ends up so that's where I think people like the sector bodies come into play. So British Fashion Council, UKFT, and like sort of BRC British retail consortium. And the other thing is the charities as well because we mustn't miss those out. They are massive players in circularity in the UK, we are doing some work actually, it's going to come out next week, and it's really super exciting. We're doing a massive recycling project with [*deleted for confidentiality*]. And when we've had the first meetings with them, they didn't understand in the UK how big the charity sector is, you know, with Salvation Army collecting the most used clothes in the UK, you know, and Oxfam WasteSavers, massive business. So they are incredibly important as well, because they are some of the, you know, first of all, they've got the coms to the consumers plus they're the collectors plus they're sorters. Plus they're resellers. So for me, I think they are also key. And then the other thing you've got but just making sure you've got I'm sure you have as you know, in the UK, the collectors and sorters are commercial businesses. You know, the charities, such as salvation army and Oxfam are charities, but their clothing collection part is very business focused. So I think from retailer the brand sector bodies that the charities and the academics.

RC: Okay, great. And I don't know how engaged you are with sort of policy issues. But how, in your opinion, is policy helping or hindering the transition to circularity at the moment in the textiles industry?

P19: At the moment, we are we have been behind the scenes running some industry consultation with the [*deleted for confidentiality*] and retailers and brands on helping to inform Defra, what the textiles EPR could look like. So you know, there's a lot of concern out there from retailers and brands to make sure that it doesn't follow some of the less successful models such as the France EPR, but it really just becomes a tax on clothing. So I am not particularly involved in that. But we are working with industry to try and inform and lobby Defra on what does that EPR system ends up looking like for textiles. So I can't really elaborate, I mean two of my other partners have been working on that over the last sort of like six months. But I think the thing is, is that we've had a sense of frustration that something's going to be delivered that isn't what the industry wants. And we're trying as a collective to prevent that.

RC: And then final question is do you think the circular economy can be a successful tool for helping sustainable development? If so, how?

P19: Yeah, I think it can. I think that, you know, everything we've covered today, you know, there are masses of opportunities. And we know that we can't continue on this linear model. So I think it has, I think it has massive opportunities, the opportunities for business, and opportunities for well, non business, like charities. Yeah, no, I mean, I think there is a big opportunity, I think the key thing is, is that we need more organisations, running circular models to get it right and delivered properly. And think about it and do something. I think the thing is that if everybody comes at it half baked, it's going to be more difficult to influence everybody to be more circular.

RC: Have you seen examples of your clients implementing something and then it completely like failing? Has there been like lessons learned from it?

P19: Yes. We, a couple years ago, we had a big massive piece of funding from the [*deleted for confidentiality*] to help businesses run circular models. And we think we've got four case studies on our website. But we worked with more than four retailers and brands. So the ones on our website are the ones that actually made it to pilot and beyond. And so people like Farfetch and Forward Ski Wear. There are a couple of big UK brands that we never got through the process with. And actually this is a barrier now that I think about it: the reason why one of them failed was again they didn't have the right people in the room ever didn't have the financial buy in from the commercial team and didn't know who the customer was. And these are big retailers and brands and didn't have the data, didn't have access to the data, there were massive data problems. So you know, how many of this coat do you sell? How much have you sold it for? Who bought it? And actually, could you then buy back and resell that model? You know there was just the disconnect on the data, which made it very difficult for them to get them into pilot stage. So we did have quite a few that field. And that's why we do lessons learned. And the work that we did, which is now on the [*deleted for confidentiality*] website is about, getting the commercial team in the room, know who your customer is, and make sure you've got the data. And also when we go and pitch to retailers and brands, we say, 'Look, guys, we've worked with people like you that haven't managed it. But we've learned from that'.

So we don't go to clients and go we're amazing, we've done this for everybody; we go, we've done this for a lot of people. And actually we've had people who failed.

RC: Do you think there's certain circular business models that are more suited to certain companies than others?

P19: Yeah, but it was back to that again, who's your customer? Yeah. And what, you know, what model is attractive to them? You know, we know that if you look at Selfridges they did a whole load of different models, I'm not sure where they are at now and what models they are going to roll forward. But, you know, they had several resale, and they had their hire, and they had, you know, but I don't know what they're doing. Maybe they were testing the water with quite a lot of different models. And the hiring one was been, I think, quite successful. But they had their own model. And then they had the HURR model running side by side. And we were saying to them, if I'm a service customer I don't know whether to you know, I'm struggling to understand the difference between the two. I think it's about, back to that heart of it, who's your customer? We don't just work in textiles, and we work on other sectors as well, electronics, and we've done work on transport. And, again, it's all about, you know, what, what does your customer want, so you need to make sure that your model chimes with your customer, and you'll be able to engage your customer, and be able to sell that to your customer.

[end of formal questions]

[*chatting*]

P19: yeah, I mean, personally, I think the rental is brilliant, because if I was going to go back to work in the city, and you'd like to have a really smart winter coat, you know, you could hire two different winter coats that winter, and then give them back and next one to get another two smart coats.

RC: yeah, as long as the clothing I think the main problem at the moment is that the the economics don't quite add up so that no, it's clothing, so some clothes are so cheap, then you lose the incentive to rent it...

P19: And the key thing, even back in 2011 and all through the time of clothing is you know, why are still people out why are people still putting 335,000 tonnes of closing in the bin every year in the UK. And when people sit around the table and know about stuff recycled and collectors and sort of sitting and moaning about that stuff, i am like well get your hands on that, work together get your hands on that.

RC: yeah and um bit concerned still about luxury not wanting to discount and I've heard that incineration remains happening quite frequently.

P19: The pre-customer stock is still blackhole of no information, always was at [*deleted for confidentiality*], even through to when I went back still no data, no visibility. We on the cotton project that we're doing, we're getting some dead stock from clients. But not, well we couldn't possibly say what percent of their stock that was because they're not sharing that data, but we are taking some pre-consumer stock, so dead stock stuff that will probably be incinerated or jobbed, and we're going to recycle it for our project.

Annex e: Chapter 4 additional analysis

- CE strategies identified being utilised in circular FTI (participant number).

List of CE strategies being explored/ applied in the FTI mentioned in interviews (interview participants)
- *Chemical, manual & mechanical recycling of fibres* (P6, P7, P9, P10, P14, P15, P21, P22) - *Recycled fabric strategies incl. use of recycled content* (P1, P2, P3, P9, P10, P11, P12, P13, P19, P21, P22, P23) - *Bio-based/ natural fibres* (P5, P11, P12) - *Organic fibres* (P9, P10) - *Regenerative agriculture of fibres* (P10, P19) - *Upcycle* (P2, P6, P9, P12, P13, P15, P22) - *Durability and longevity of garments* (P13, P14, P16, P19) - *Waste to energy using clothing that cannot be resold* (P6) - *Commercial resale (reuse) (wholesale, business-to-consumer, peer-to-peer)* (P1, P4, P10, P11, P13, P14, P15, P19, P21, P22, P23) - *Charitable resale (reuse) (e.g. redistribution of used clothes at point of consumption & overseas)* (P1, P2, P11, P17, P18, P20, P22) - *Takeback/ reverse supply-chain strategies* (P2, P3, P5, P9, P14, P15, P17, P18, P20, P21, P23) - *Swapping* (P13) - *Rental (business to consumer & peer-to-peer)* (P3, P10, P11, P13, P15, P19, P22, P23) - *Downcycling (e.g. old fabric used for car stuffing, mattresses)* (P6, P15, P19) - *Repair* (P6, P11, P13, P16, P21, P22, P23) - *Recycled inputs (e.g. water cycling)* (P12) - *On-demand manufacturing* (P5, P12) - *Low waste manufacturing* (P11) - *Renewable energy* (P5, P12) - *Low or reduced chemicals* (P22) - *Monitoring technologies (e.g. LCA)* (P10, P12) - *Digital labelling (e.g. blockchain to enable correct end-of-use management)* (P12, P13) - *Digital design* (P13, P14) - *Ecodesign / circular design (e.g. design for repairability, modular design)* (P12, P14, P15, P21, P22, P23) - *Reverse supply-chain strategies* (P14)

Annex f: Chapter 5/6 Country information

- Country snapshot summary, Vietnam.

Vietnam: Country Snapshot

- Vietnam is a lower middle income country situated in South East Asia with a population of approximately 97.4 million (MarketLine, 2021).
- It is considered to have a stable political landscape, in part through the one-party ruling system, which presents an attractive investment environment. Although previously predominantly closed to global competition, in 1986 market-orientated economic reforms, known as *doi moi* (renovation), opened the country up to domestic & foreign investment (*ibid*).
- Vietnam now has one of the fastest growing economies in the region, benefiting from a growing export-orientated manufacturing sector (MarketLine, 2021; World Bank, 2019). However, reliance on export-based growth can leave the nation vulnerable to external shocks (*ibid*).
- The nation has a young population structure, with 69% of the population in the 15-64 age group (MarketLine, 2021), presenting favourable business conditions in terms of a large workforce.
- Environmental issues have been growing in line with urbanisation and industrial activities. Deforestation, biodiversity loss (including through deforestation), air & water pollution remain problematic despite following a National Green Growth Strategy since 2012 (Notice 1393/QD-TTg, 2012). The high use of industrial pollutants pose an ongoing health risk for workers and communities.
- Socially, citizens may suffer from the suppression of freedoms of expression.

Annex g: Chapter 5 case study scoping

- List of internal initiatives owned by Saitex.

Entity	Brief description	Location	
Saitex (core)	• Core operations, denim processing including cutting, sewing, laundry, finishing. • 18,000 jeans/ day capacity.	Vietnam	Chapter 5, section 5.4.4.
Saitex Mill	• A mill which processes cotton into finished fabric for processing at Saitex operations. Founded to enable circularity, transparency and sustainability across the entire Saitex supply chain. • Founded in 2022, having been in development since 2018.	Vietnam	Chapter 5, section 5.4.9.
Rekut	• An initiative hiring persons with disabilities and from disadvantaged backgrounds. Uses factory off-cuts to produce a range of items. • Founded in 2019. • Commercial in nature.	Vietnam	Chapter 5, section 5.4.7.; Chapter 6
Saitex Farms	• An initiative to green the factory sites and produce vegetables using hydroponic approaches. • Non-commercial in nature. • Founded in 2019. • The initiative is in a phase of expansion at the newly formed Saitex Mill.	Vietnam	Chapter 5, section 5.4.5.
STELAPOP	• A Company founded to upcycle by-products of manufacturing waste to create a range of furniture and homeware items. • Commercial in nature.	Thailand	Chapter 5, section 5.4.6.
Saitex USA	• A local production unit based in Los Angeles to serve the USA market, using the knowhow developed at the Vietnam facility. • Founded in 2021.	USA	Chapter 5, section 5.4.8.
Atelier & Repairs	• An acquired manufacturing brand which focuses on upcycling vintage and used denim garments into new, unique garments. • Commercial in nature.	USA	Excluded: dormant at time of study

Annex h: Chapter 5/6 participant information

- Outline of participants for chapter 5/6.
- An additional informal interview with a denim expert is not included in this list but was utilised for context.

P	Internal/ external	Interview focus	Date
A	Internal	• Insights into business model & approach to circularity	2020
B	External	• CSR partner, approach to partnership	2020
C	Internal	• Rekut	2020
D	Internal	• Rekut	2020
E	External	• Rekut & wider inclusion strategy	2020
F	Internal	• Saitex Farms	2021
G	External	• Rekut & more broadly	2020
H	Internal	• Saitex USA	2021
I*	Internal	• Saitex USA	2021
J	Internal	• Saitex USA	2021
K	Internal	• Saitex VN	2022
L	Internal	• Saitex VN	2022
M	Internal	• Saitex VN, Saitex USA	2021
N	Internal	• Saitex Mill	2021
O	Internal	• Saitex VN, Saitex USA	2021
P	Internal	• STELAPOP	2022
Q	Internal	• Saitex VN, Saitex USA, Rekut, Mill	2022

*not recorded, notes taken.

Annex i: Chapter 5/6 document summary

- Summary of document evidence utilised in the analysis. Public links are provided when available.

Doc No.	Type	Publisher	Date	Title	Brief description	Link (if public)
D1	Online journalism, business press	Forbes	2019	*How This Denim Manufacturer Became The First B Corp Factory in Asia*	• Focus on B-Corp certification process & impact.	https://www.forbes.com/sites/eshachhabra/2019/06/30/how-this-denim-manufacturer-became-the-first-b-corp-factory-in-asia/
D2	Online journalism, sustainability press	The Forward Lab	2021	*From Landfill to lookbook: the innovators taking on local textile waste*	• Interview re STELAPOP waste revalorisation.	https://www.theforwardlab.com/from-landfill-to-lookbook-the-innovators-taking-on-local-textile-waste/
D3	Certification document	LEED	2017	*Saitex International LEED new construction_v3*	• Certification scorecard for factory building of Saitex, Vietnam. • Evidence of certification.	https://www.usgbc.org/projects/saitex-international?view=scorecard
D4	Certification document	LEED	2017	*Saitex International LEED new construction_v3*	• Certification information for factory building of Saitex, Vietnam. • Evidence of certification.	https://www.usgbc.org/projects/saitex-international
D5	Certification information	B-Corp	2019	*Saitex International Dong Nai (VN) Co., Ltd*	• Certification highlights for Saitex. • Evidence of certification.	https://www.bcorporation.net/en-us/find-a-b-corp/company/saitex-international
D6	Online journalism, business press	Fast Company	2017	*Everlane's Quest to Make the World's Most Sustainable Denim*	• Article explores major customer Everlane's decision to work with Saitex. • Discusses social & environmental impacts of producing with Saitex.	https://www.fastcompany.com/40455752/everlanes-quest-to-make-the-worlds-most-sustainable-denim
D7	Sustainability report	Edwin USA	2020	*Edwin USA 2020 Impact Report*	• Report for Edwin USA, whom Saitex are licensee. • Contains information re sourcing, Vietnam & USA operations. • Evidence of sustainability procedures relating to environmental & social impacts.	https://cdn.shopify.com/s/files/1/0267/5136/9271/files/Edwin_Impact_Report_2020.pdf?v=1613435844
D8	Online journalism, industry press	Sourcing Journal	2021	*Saitex Is Finding Creative Uses for Textile Waste*	• Interview re STELAPOP waste revalorisation.	https://sourcingjournal.com/sustainability/sustainability-news/sustaining-voices-2020-waste-reduction-saitex-denim-stelapop-b-corp-207807/
D9	Saitex buyer blog press	Outerknown		*Cleaning Up a Dirty Business*	• Interview with Saitex founder by buying brand (Outerknown). • Discusses technology, environmental & social impacts.	https://www.outerknown.com/blogs/journey/interview-with-sanjeev-bahl

D10		Ellen MacArthur Foundation jeans redesign	2021	*The Jeans Redesign Insights from the first two years 2019-2021*	• Document includes information on collaborators of the EMF Jeans Redesign Project. • Includes an overview of key approaches applied by Saitex in the project. • Evidence of engagement with circularity strategies.	https://emf.thirdlight.com/link/m32pivncqxmc-gp46rn/@/preview/1?o
D11	Investment press release	Navis Capital Partners	2021	*Deal Book 2021*	• General information re investments made by Navis Capital Partners in various Saitex initiatives.	https://www.globalprivatecapital.org/app/uploads/2021/03/Investing-for-Growth-Deal-Book-Navis-Saitex.pdf
D12	Press release	Freight Farms	2017	*Freight Farms Expands Reach to Asia*	• Announcement of Everlane & Freight Farms partnership that delivers hydroponic containers to Saitex Vietnam.	https://www.prnewswire.com/news-releases/freight-farms-expands-reach-to-asia-300560371.html
D13	Online journalism, industry press	Just Style	2021	*Denim major Saitex on a quest to be a force for good*	• General update covering technology, Rekut, USA factory. • COVID-19 impact on operations discussed.	https://www.just-style.com/interviews/denim-major-saitex-on-a-quest-to-be-a-force-for-good/
D14	Online journalism, industry press	Rivet Magazine/ Sourcing Journal	2021	*Saitex Gives Disabled Community Employment Opportunity*	• Overview of Rekut project & strategy for diversity & inclusion.	https://issuu.com/sourcingjournalevents/docs/rivet_mag_12_singles
D15	Online journalism, industry press	Apparel News	2021	*Saitex's Sustainable Plant Aims to Help Bring Back U.S. Manufacturing*	• Introduction to Saitex USA.	https://www.apparelnews.net/news/2021/apr/01/can-saitex- sustainable-plant-help-bring-back-us-ma/
D16	Online journalism, industry press	Sourcing Journal	2021	*Will SB 62 Help or Hinder a Revival of LA's Denim Industry?*	• Discussion of changing labour regulations in California. • Saitex discussed as supporter of new Senate Bill 62.	https://sourcingjournal.com/denim/denim-business/california-garment-worker-protection-act-sb62-los-angeles-denim-industry-304920/
D17	Internal document	Saitex	2021	*Saitex Mill 2021: The Most Sustainable Mill on the Planet*	• Investor/ sales deck relating to opening of Saitex mill in Vietnam. • Contains information re technology & unique approach to mill. • Evidence of continued focus on developing circularity strategy.	Personal Communication
D18	Certification, case study	C2C (case study: G-Star Raw)	2020	*Setting the Standard for Water Smart Denim*	• Case study of G-Star Raw approach to obtaining C2C Gold Certification. • Reference to Saitex processes relating to chemicals & water. • Evidence of certification.	https://cdn.c2ccertified.org/resources/C2C_Gstar_RAW_Case_Study_2020.pdf
D19	Internal document	Rekut employee information	2020	*NA*	• Outline of records relating to Rekut employees with personal data removed.	Personal Communication
D20	Report	UNDP	2020	*Improving Employment opportunities for persons with disabilities in Viet Nam*	• Explores bottlenecks & opportunities to involve persons with disabilities in employment in Vietnam. • Saitex utilised as a case study, identifying best practices, including at Rekut venture.	https://www.undp.org/vietnam/publications/report-improving-employment-opportunities-persons-disabilities-viet-nam

					• Evidence of uniqueness of diversity & inclusion for an industrial business.	
D21	Press release	Saigon Children (orphanage)	2019	*A vegetable planting lesson with hearing impaired students at rose disabled school*	• Press release outlining an activity between Saitex & children's orphanage whereby Saitex employees volunteered. • Evidence of local charity engagement in Vietnam.	https://www.saigonchildren.com/news/mot-buoi-hoc-trong-rau-cua-hoc-sinh-khiem-thinh-tai-truong-khuyet-tat-hoa-hong/
D22	Online journalism, business press	BBC	2019	*Why blue jeans are going green*	• Brief description of Saitex Vietnam, including relating to water use.	https://www.bbc.com/news/business-48851820
D23	Marketing, IKEA	IKEA	2022	*Creating impact beyond beautiful homes*	• Introduction to IKEA's partnership with social businesses. • Describes partnership with Rekut.	https://about.ikea.com/en/behind-scenes/commitments/2022/02/17/creating-impact-beyond-beautiful-homes
D24	Online journalism, industry press	Sourcing Journal	2019	*Making Jeans has become a dirty business but it is coming clean*	• Overview of Saitex technology, approach to labour & other sustainability impacts, focused on Saitex Vietnam.	https://sourcingjournal.com/denim/denim-innovations/saitex-sustainability-sanjeev-bahl-137468/
D25	Online journalism, business press	Bloomberg	2019	*Making Jeans is bad for the planet but this factory could change that*	• Interview with founder focused on Vietnam operations & uniqueness of approach. • Introduces the USA factory being planned at time of article publication.	https://www.bloomberg.com/features/2019-saitex-clothing-factory-eco-friendly/#:~:text=This%20Factory%20Could%20Change%20That,industry%20to%20follow%20his%20lead
D26	Online article, industry press	Sourcing Journal	2020	*Sustainability won't cut it: circularity is the future that denim needs*	• Discusses Saitex involvement in the EMF Jeans Redesign project, focusing on circularity approach.	https://sourcingjournal.com/denim/denim-mills/saitex-jeans-redesign-ellen-macarthur-foundation-sustainability-circularity-196203/
D27	Impact report, internal	Saitex	2019	*Impact Report 2019*	• Company impact report covering environmental & social impacts.	Personal communication
D28	Training manual, internal	Saitex	2020	*Saitex Inclusive Training Manual*	• Internal training manual for Saitex managers explaining how to interact with workers with disabilities in line with best practice guidelines.	Personal communication
D29	Internal document	Saitex		*Impact Report 2020*	• Company impact report covering environmental & social impacts.	Personal communication
D30	Internal document	Saitex		*No title – internal report*	• Diversity & inclusion plan, including strategies for accessibility, recruitment, training, grievance etc.	Personal communication
D31	Online journalism, industry press	Fashion United	2019	*Saitex revamps impact of denim with U.S.-based production*	• Introducing the USA factory.	https://fashionunited.com/news/fashion/saitex-revamps-impact-of-denim-with-u-s-based-production/2019021826215
D32	Award documents (internal)	Saitex (internal)	2020	*Award for Diversity and Inclusion Submission*	• Internal document outlining Rekut strategy in application of an award.	Personal communication
D33	Report	UNDP	NA	*Strategy for Strengthenin*	• Recommendations to Saitex re developing diversity & inclusion strategies.	Personal communication

				g Diversity and Inclusion	• Identifies unique features & recommendations for further improvements.	
D34	Press release	Saitex	2021	*Saitex Announces the Opening of Saitex USA in Los Angeles, CA*	• Press announcement introducing the Saitex USA factory.	https://www.prweb.com/releases/saitex_announces_the_opening_of_saitex_usa_in_los_angeles_ca/prweb17785479.htm
D35	Certification, case study	Fair Trade	2021	*A Social Framework for Responsible Apparel Sourcing*	• Case study of use of Fair Trade certification at Saitex in association with buyer (Madewell). • Outlines key benefits to workers of engaging with Fair Trade certification.	https://es.fairtradecertified.org/blog/a-social-framework-for-responsible-apparel-sourcing/

Annex j: summary of certifications

- Certification & affiliations. Information based on certification websites (first column) as well as Diekel et al., (2021) and Fontana et al. (2019). Nb. Saitex has various other certifications that are not directly focused on sustainability (e.g. GSV: Global Security Verification).

Certification & website	**Focus**	**Overview**	**Examples of reference to 'social' aspects?** (non-exhaustive)
B-Corp https://www.bcorporation.net/en-us/	Company-level	• Ultimately can adopt a structure that supports compatible stakeholder governance, providing value for more than just shareholders. • Relies on other third-party certifications to verify information.	• The certification process includes scoring on various social ('community') indicators, including: job creation, diversity & inclusion, civic engagement, impact on local communities etc.
EMF Jeans Redesign Project https://ellenmacarthurfoundation.org/the-jeans-redesign	Design/ production	• A programme to encourage manufacturers to design jeans following circular principles as set out by the EMF. • References other certifications as best practice (e.g. GOTS).	• No specific references, but general statements about socially responsible manufacturing. • Protocol includes eliminating risky practices of sandblasting, relating to worker health & safety.
LEED (*Leadership in Energy and Environmental Design*) https://www.usgbc.org/leed/why-leed	Building design	• Most widely used green building rating system in the world. • To achieve certification, a building project is scored based on addressing issues, such as carbon, energy, water, waste, transportation, materials, health and indoor environmental quality.	• 20% of the certification credits directly impact human health (e.g. improved indoor air pollution, natural light & views, reduced toxicity of materials). • General references to wellbeing (e.g. "enhance community quality of life" through reduced pollution in local areas, neighbourhood considerations etc).
BlueSign https://www.bluesign.com/en	Chemicals	• To become certified adherence to their chemical lists is necessary, omitting any chemicals that are restricted/ banned. • The focus is on eliminating problematic chemicals before inception (i.e. a precautionary approach).	• Reducing risks associated with chemical use for workers (occupational safety), users (consumer safety) & wider society (including through resource stewardship).
Cradle-to-Cradle https://www.c2ccertified.org/	Production, labour, sourcing	• A global standard to ensure products are safe, circular and responsibly made. • 5 categories of sustainability are assessed: material health; product circularity; clean air & climate protection; water & soil stewardship; and social fairness.	• Materials and chemical selection prevent ecological and human harm, without substances of concern. • Healthy workplaces. • Companies should be committed to 'social fairness' that upholds human rights and apply fair and equitable practices (e.g. evidence of policy and procedures across a variety of areas).
OKEO-TEX https://www.oeko-tex.com/en/	Fibres, chemicals	• Testing and certification system for raw, semi-finished & finished textile products.	• Product safety by ensuring chemicals are safe for human and environment. • Certain OKEO-TEX certificates look at labour issues based on ILO principles/ guidelines.
Fair Trade https://www.fairtrade.net/about/certification	Labour	• Certification covers a range of social & environmental compliance issues, including through audits. • Ensures a fair minimum price & premium reaches workers.	• Funds from Fair Trade sales given to workforce to allocate this premium, which can be spent according to worker needs (as decided by Fair Trade committee with inputs from the workers themselves.
ZDHC (*zero discharge of hazardous chemicals*)	Chemicals	• Emerged from a landmark Greenpeace report that identified hazardous chemicals (including endocrine disruptors) were prevalent in garments.	• Enhanced safety of workers, citizens & ecosystems. • Preservation of natural resources (e.g. water).

https://www.roadmaptozero.com/?locale=en		• Outlines recommendations for sound management of chemicals/. • Seeks to eliminate hazardous chemicals from supply-chain, working with brands, suppliers, manufacturers etc.	
GRS (*Global Recycled Standard*) https://textileexchange.org/recycled-claim-global-recycled-standard/	Fibres, chemicals	• Overall aim is to increase the recycled content of products. • Enabling verifiable (clear chain of custody) demonstration of recycled material of at least 20% in a product, or 50% for labelled products. • It also includes various aspects of responsible production (environmental & social). • Links to other certifications (e.g. ZDHC restrictions).	• Policy & procedures should be in place for social compliance, such as labour minimums (e.g. labour should be voluntary, no forced overtime, no child labour, no discrimination, workers should be able to join trade unions etc). • Workplace should be safe & follow appropriate protocols (e.g. local laws). • Exclusion of listed hazardous substances, reducing health risks.
GOTS (*Global Organic Textile Standard*) https://global-standard.org/the-standard/gots-key-features/ecological-and-social-criteria	Fibres, chemicals	• An internationally recognised organic material standard. • Considers social and environmental issues in organic materials across the supply-chain.	• GOTS bases their social compliance on the key norms of the ILO, the United Nations Guiding Principles on Business and Human Rights (UNGP) & Organization for Economic Cooperation and Development (OECD). • Covers issues such as pay, discrimination, working time etc.
SA8000 https://www.bsigroup.com/en-GB/sa8000-social-accountability/	Labour	• Guidelines for ethical labour approaches with an auditable framework.	• Guidelines for ethical employment. • Ensures that minimum standards are upheld to ensure workers are receiving a fair deal. • Equitable & fair workplace practices. • Supports transparency.

Annex k: Chapter 6 managerial recommendations

- Summary of Managerial Recommendations emerging from Rekut embedded case, adapted from Clube and Tennant (2021).

Managerial Recommendations emerging from Rekut case

- To maximise social and environmental impacts of circular business strategies, coupling t**argeted human resource strategies** with **creative reconceptualization of existing waste streams** can simultaneously tackle human and circular challenges.
- Ambitious inclusion strategies need l**ong-term commitment and investment**; experimentation of business models is likely to remain an ongoing process and positive impacts may take time to realise.
- Legislation may be vague or under-developed relating to disability and the workforce and this may be heightened in developing countries. Legislation intended to protect vulnerable persons may unintentionally present obstacles to their employment. As per this study, existing manufacturing companies can **creatively work around these legislative challenges** (e.g. prohibition of utilising heavy machinery) by using existing resources (e.g. already processed materials). For smaller incumbents or standalone ventures without such internal capabilities, collaborating with other businesses using industrial symbiosis principles may be more suitable.
- **Training and supportive work practices are essential** for vulnerable groups, such as persons with disabilities. Investment in training, adaptive equipment and supportive strategies (e.g. transport to work, onboarding support etc) is necessary to ensure persons with disabilities can thrive in the workplace.
- More generally, **adopting a human needs** lens can help managers consider whether business models or initiatives result in enhanced satisfaction of human needs for the intended beneficiary compared with business-as-usual.