A Conceptualisation of Circular Business Models and Explanation of Their Adoption: Evidence From Four In-Depth Case Studies

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I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree
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Abstract

The scale of the ecological crisis and a combination of socio-economic and regulatory trends (rising global demand for goods, increasing resource price volatility and legislative efforts to reduce waste), are severely undermining the viability of linear operating business models which rest on a take-make-dispose logic. It is within this context that the circular economy gains relevance by proposing more resource efficient industrial processes that mirror the cyclical functioning of the eco-system where waste does not occur. A crucial constituent in the achievement of a circular economy is business model innovation. However, the academic literature on sustainable business models is still in its early days and pays very little attention to the circular economy and to circular business models. Hence, this research contributes to the sustainable business models literature by proposing a conceptualisation of circular business models and by illustrating the processes leading to their emergence and development. Organisational (resources and capabilities) and institutional (regulatory, normative and cognitive) perspectives have been applied mostly separately in the management literature examining why companies pursue ecological and social sustainability goals. This research attempts to reconcile the above agency versus structure dichotomy in explaining the adoption of circular business models. To accomplish this task, a qualitative, hermeneutical study has been conducted. Four holistic British case studies, considered as a form of contextualised explanation and chosen via purposive selection, delineate this research strategy. Participant observations, shadowing and semi-structured interviews (n=33) are the methods used for collecting primary data. Using narrative and comparative analyses, this thesis conceptualises circular business models as characterised by enhanced customers' value, diffused and interconnected value creation, boundary spanning relational structures and idiosyncratic value capture mechanisms. It finds that their emergence and development is dependent on a combination of organisational and institutional influences.

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List of abbreviations

Abbreviation	Definition
ABR	Action Based Research
ACEs	Area Champions for the Environment
APMG	All-Party Parliamentary Manufacturing Group
APSRG	All-Party Parliamentary Sustainable Resource Group
ATOC	Association of Train Operating Companies
BEMS	Building Energy Management System
BEMSE	Building Energy Management System Engineer
BEP	Biodiversity Enhancement Plan
BM	Business Model
BMD	Business Model Design
BMI	Business Model Innovation
BMIs	Business Model Innovations
BMR	Business Model Reconfiguration
BMs	Business Models
BoP	Bottom of the Pyramid
CAQDAS	Computer Aided Qualitative Data Analysis Software
CDC	Carbon Data Coordinator
CDs	Compact Discs
CE	Circular Economy
CEBF	Circular Economy Business Forum
CEOs	Chief Executive Officers
CER	Community of European Railway and Infrastructure Companies
CET	Circular Economy Toolkit
CETF	Circular Economy Task Force
CIF	Capital Infrastructure Funding
CISL	University of Cambridge Institute for Sustainability Leadership
CMP	Carbon Management Plan
DDED	Deputy Director Estate Development

DECC	Department for Energy and Climate Change
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EAUC	The Environmental Association for Universities and Colleges
EC	European Commission
EfS	Education for Sustainability
EIU	Economist Intelligence Unit
EMF	Ellen MacArthur Foundation
ESAP	Electrical and Electronic Equipment Sustainable Action Plan
ESS	Environmental Sustainability Strategy
EU	European Union
EVCPs	Electric Vehicles Charging Points
FAQ	Frequently Asked Question
FIRA	Furniture Industry Research Association
FTPC	Former Travel Plan Coordinator
FSC	Forest Stewardship Council
FWP	Food Waste Policy
GDP	Gross Domestic Product
GHGs	Greenhouse Gases
GOM	Grounds Operations Manager
HE	Head of Environment
HEFCE	Higher Education Funding Council for England
HEIs	Higher Education Institutions
HESI	Higher Education Sustainability Initiative
HFSA	Hospitality and Food Service Agreement
HP	Head of Procurement
HSGU	Head of Students Green Unit
IBV	Institution Based View
ICT	Information and Communication Technologies
IE	Industrial Ecology
IEMA	Institute of Environmental Management & Assessment
IMF	International Monetary Fund
Int.	Interview
IPPR	Institute for Public Policy Research

ISO	International Organisation for Standardisation
LED	Light Emitting Diode
MBA	Master of Business Administration
MD	Managing Director
MEA	Millennium Ecosystem Assessment
NBS	Network for Business Sustainability
NRBV	Natural Resource Based View
OECD	Organisation for Economic Cooperation and Development
ONS	Office for National Statistics
ORR	Office of Rail and Road
PCs	Personal Computers
PIRAP	Plastics Industry Recycling Plan
POST	Parliamentary Office of Science and Technology
PSF	Product Sustainability Forum
PVC	Polyvinyl Chloride
RBV	Resource Based View
REBMs	Resource Efficient Business Models
ROSCOs	Rolling Stock Companies
RQ	Research Question
RSA	Royal Society for the Encouragement of Arts, Manufactures and Commerce
RSSB	Rail Safety and Standards Board
SBM	Sustainable Business Model
SBMG	Sustainable Business Model Group
SBMs	Sustainable Business Models
SC	Sustainability Coordinator
SCAP	Sustainable Clothing Action Plan
SCRP	Sustainable Construction & Refurbishment Policy
SFD	Sustainable Food & Drink
SGM	Steering Group Member
SGUCs	Students Green Unit Coordinators
SM	Sustainability Manager
SMART	Specific, Measurable, Achievable, Realistic, Timely
SME	Small Medium Enterprise
SMEs	Small Medium Enterprises

STEM	Science, Technology, Engineering and Mathematics
STP	Sustainable Travel Plan
SUN	Environmental Economics Unit of the Deutsche Post Foundation
TOCs	Train Operating Companies
TT	Transition Town
UCL	University College London
U-PVC	Unplasticised Polyvinyl Chloride
UK	United Kingdom
UN	United Nations
UNEP	United Nations Environment Programme
US	United States
USA	United States of America
UUK	Universities UK
VAT	Value Added Tax
WECD	World Commission on Environment and Development
WEF	World Economic Forum
WRAP	Waste and Resource Action Plan
WWF	World Wildlife Fund
ZWS	Zero Waste Scotland

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Chapter one
Introduction

1.1 Research overview, aims, questions and objectives

The debate on sustainability has been extensively discussed over the last thirty years, initially prompted by the 1987 *Brundtland Report* which proposed that "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WECD, 1987, chapter two). Deliberation on the sustainability concept and its implications for the management of organisations has extended to both the business community and the management academic literature (Etzion, 2007; Gao & Bansal, 2013; Winn & Pogutz, 2013; Zollo, Cennamo & Neumann, 2013). However, despite the abundance of literature on corporate sustainability and the fact that corporate approaches to the natural environment have evolved from the reactive to the more proactive (Whiteman, Walker & Perego, 2013), the evidence is that the ecosystem is deteriorating. Though the responsibility for the so evident environmental crisis cannot be attributed exclusively to the business community, a reform of corporations and in particular of their business models to account for ecological and social impacts is advocated (Haigh & Hoffman, 2014).

There is growing recognition that current industrial processes are wasteful and that a more sustainable economy requires efforts going beyond eco-efficiency (McKinsey & Ellen MacArthur Foundation (EMF), 2012). Although the application of eco-efficiency principles is valuable since it enables a decrease in the amount of resources consumed per unit of economic output, it can only delay material stocks consumption without modifying their finite nature and linear flow within the economy (ibid). Nevertheless, it is not only the environmental crisis that demands an evolution towards more resource efficient industrial and business processes but also a combination of socio-economic and regulatory trends (Accenture 2014; McKinsey & EMF, 2012). Increasing resource price volatility and the rise of regulatory intervention to reduce carbon emissions and waste among other factors, are now pushing companies to move

away from the prevailing industrial model based on a take-make-dispose logic (ibid). It is within these changing regulatory, environmental and socio-economic landscapes that the circular economy thinking, though not new, is gaining relevance. It has been defined as:

> an industrial system that is restorative or regenerative by intention and design [that] replaces the end-of life concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impairs reuse and aims for the elimination of waste through the superior design of materials, products, systems, and within this, business models (McKinsey & EMF, 2012, p. 7).

The circular economy is thus advocated to decouple growth from further pressure on finite natural resources (Domenech et al., 2013; Preston, 2012, Schulte, 2013).

Although there is an emerging research stream focussing on the implementation of the circular economy in China, where it is by law an objective of the country's economic development policy (Mathews & Tan, 2011; Su et al., 2013), the "concept remains eclectic" (McKinsey, EMF & SUN, 2015, p. 23) and its comprehension is fairly low (Preston, 2012). In addition, despite acknowledgement that the transition towards a circular economy would require business model innovation, (Aldersgate Group, 2012; McKinsey & EMF, 2012; Schulte, 2013; Sempels & Hoffman, 2013; Sempels, 2013) there is little understanding of circular business models in terms of concepts and categorisation, nor of the processes through which these business models emerge, are transformed and implemented within the academic literature (Diaz Lopez et al., 2014; Planing, 2015; Roos, 2014). Therefore, this thesis aims to contribute to the sustainable business models literature via exploring what circular business models look like and this will be accomplished with a focus on the British business context. While the academic literature at the intersection between the circular economy and business models is constrained (Lewandowski, 2016), some elements and categories of circular business models are developing within practitioner studies (e.g. Accenture, 2014; McKinsey & EMF, 2012; McKinsey, EMF & World Economic Forum (WEF), 2014; McKinsey, EMF & SUN, 2015; WRAP e). However, it would appear that practitioner literature gives implicit consideration to the business model concept. While acknowledging that business model innovation is a crucial constituent in

the attainment of a circular economy (McKinsey & EMF, 2012), the business model concept is not addressed comprehensively for two reasons. Firstly, it is not explained what the business model refers to and secondly, when the business model is addressed this is done only partially. For instance, "usage-and-performance-based payments models" (McKinsey & EMF, 2012, p. 59) are identified as elements of new business models that would fit with circular economy thinking but the complexity of the business model concept, which describes "the rationale of how an organization creates, delivers and captures value" (Osterwalder & Pigneur, 2010, p. 14) is missing. Zott et al. (2011) in a review of the academic and practitioner literature on business models lamented a lack of definition of the business model concept in those studies and warned that such an approach is not beneficial to advance understanding of the topic. Consequently, it might be argued that not clearly articulating the concept of circular business models has negative implications not only for the academic development of the topic but also for the rapid scaling up of these business models within the business community, whereby it might not be entirely clear what a circular business model refers to. By contrast, this thesis provides a conceptualisation of circular business models based on the core building blocks of the business model concept, which is to say, value proposition, value creation, value delivery and value capture (Richardson, 2008).

In addition, this thesis aims to explain the processes leading to the adoption of the investigated circular business models via employing organisational and institutional perspectives, which is appropriate in both the study of business models in general, and circular business models in particular. Organisations resources and capabilities are involved in the value creation and delivery mechanisms (Osterwalder & Pigneur, 2010) and the value proposition itself reflects the bundle of resources and capabilities exploited to create value (Amit & Zott, 2001). In addition, Wells (2013) has highlighted that business models studies should give consideration to the context within which such business models emerge because "in the debate between structure and agency (…) business models are a form of agency that arises from and flourishes (or fails) within a distinct structure" (p. 61). In relation to the circular economy, as it is argued that "no single intervention on its own will create the tipping point for a circular economy. It is a systems problem that needs a systems solution"

(Green Alliance, 2013, p. 28), the holistic approach to the study of circular business models taken in this thesis, involving the organisational and institutional contexts, is conducive to a deeper understanding of the processes leading to the adoption of these business models. Such an approach is also relevant academically and practically. Academically, the simultaneous reliance on resource and institutional perspectives is valuable because although it is acknowledged that corporate sustainability is the outcome of a complex process whereby the interplay between the organisational level and the wider institutional context within which companies operate takes place (Hoffman, 2001 a), few studies have combined those two levels of analyses. Previous literature has adopted either a resource or institutional perspective separately (Clemens & Douglas, 2006; Menguc et al., 2010). Practically, using multiple lenses to comprehend how circular business models emerge and develop within companies might serve to illustrate how these business models can be replicated within the business community. Hence, the following research questions are asked:

1st RQ: *How can circular business models be conceptualised?*

2nd RQ: *How can the emergence and development of circular business models be understood?*

To attain the research aims, the following objectives will be met:

1) *Review of the circular economy, the business model and the sustainable business model literature.*

The first aim of this thesis is to conceptualise circular business models in order to contribute to the sustainable business models literature. The conceptualisation of circular business models requires the intersection between the circular economy and the business model/sustainable business models literature. The review of the relevant literature is therefore conducted in chapter two (part two) to identify themes, concepts and frameworks that will be used for the conceptualisation of the investigated circular business models. It will also identify opportunities for advancing the research in these areas.

2) *Review of the literature employing the theoretical perspectives of the natural-resource-based-view of the firm (Hart, 1995) and the neo-institutional theory (Di Maggio & Powell, 1983) in the study of corporate sustainability.*

As noted earlier, the adoption of these two perspectives in the study of the processes leading to the emergence and development of circular business models is appropriate and, academically and practically, relevant. The review of the studies in these fields will be accomplished in chapter two (part three) and will identify both the role of organisational and institutional dynamics in explaining corporate environmental sustainability, and opportunities for advancing the academic research in both areas. In addition, it will trace, conceptually and graphically, the emergent UK's 'circular economy field': a representation of regulatory, normative and cognitive influences that might be conducive to the scaling up of more circular business models within the British context.

3) *Collect, analyse and report primary and secondary data from four British organisations implementing circular business model innovations.*

An overview of the methodological features of this thesis is developed in chapter three.

4) *Combine the evidence emerging from the data and themes from the business model, the circular economy and the sustainable business models literature to provide a conceptualisation of circular business models.*

A first overview of the cases considered in this research will be presented in chapter four and five where it will be highlighted how the features of the studied companies business models relate to the circular economy and to the sustainable business models literature. Circular business models will be conceptualised in chapter six. The resulting conceptualisation of circular business models is neither a typology (purely theoretically driven) nor a taxonomy (purely empirically driven) but can be considered closer to Weber's 'ideal type' (Weber, 1904), which according to Baden-Fuller & Morgan (2010) is a construct sitting between the two.

5) *Identify organisational and institutional influences that explain the processes leading to the emergence and development of the investigated circular business models.*

The analysis of the processes leading to the adoption of the circular business models in the empirical settings will be presented in chapter six and will start from the organisational level and thus consider organisational resources, capabilities and characteristics. The institutional level will be then evaluated with consideration of regulatory, normative and cognitive influences. Organisational and institutional dynamics will be appraised in the stages of emergence and development of the investigated circular business models to understand whether the adoption of these business models is dependent on organisational or institutional influences or on a combination of both.

To conclude, by meeting its aims and objectives this thesis will contribute to the sustainable business model literature particularly to the field that explores the intersection between the circular economy and business models. After this overview of the research context, aims, questions and objectives an outline of the thesis structure is presented.

1.2 Thesis structure

Following this introductory chapter, chapter two reviews the relevant literature and it is delineated into three parts. Part one identifies the context of this research, and traces the development of corporate environmentalism along with the academic literature on corporate sustainability. It also discusses proposals that might enable a transition to a more environmentally sustainable economy and presents this research perspective in relation to the business contribution. Part two reviews the business model and sustainable business model literature, as well as the emerging practitioner literature on the circular economy. Then part three examines the literature relating to the conceptual framework used to explore what are the processes leading to the emergence and development of circular business models.

Chapter three describes the research method. It begins with an overview of the social science research paradigms and concentrates on interpretivism and hermeneutics as the chosen philosophical approaches. It then presents the research strategy (case studies), the methods used to gather data (participant observations, semi-structured interviews and shadowing) and how data have been interpreted (narrative and comparative analyses). This chapter also discusses both the theme of validity in qualitative and hermeneutical studies, and the research ethics. Overall, this study can be defined as qualitative, based on four holistic case studies considered as a form of 'contextualised explanation', chosen by following a purposive logic and representing four British organisations in the manufacturing (two SMEs) and service (two large organisations) sectors.

Chapter four is the first empirical chapter and it is focussed on the two manufacturing SMEs investigated. Each case referred to as 'FurnitureCo' and 'PlanksCo' respectively, is individually analysed to understand how its business activities relate to the circular economy and to the sustainable business models literature. The initial analysis of the empirical data matches the business practices of each case against the ReSOLVE framework (McKinsey et al., 2015) and the sustainable business models archetypes (Bocken et al., 2014 a).

Chapter five is the second empirical chapter and analyses the two large, service-providing organisations ('RailCo' and 'UniCo'). This chapter follows the same structure as the first empirical chapter.

Chapter six complements the overview of the cases presented in chapter four and five with a comparative analysis, which presents and discuss the research findings. The research results are analysed in relation to the two research questions. This comparative analysis will draw on the literature relating to the circular economy, the business model and the sustainable business models and on the natural-resource-based-view of the firm (Hart, 1995) and neo-institutional theory (Di Maggio & Powell, 1983) as well as on empirical data, to conceptualise and discuss the emergence and development of the investigated circular business models.

Chapter seven, the final chapter of this thesis, is divided into two parts. The first summarises the research contribution to the emerging academic literature on the circular economy and sustainable business models as well as to the management and sustainable innovation literature. The second part identifies the limitations of this enquiry and offers reflections for advancing the research on circular business models. It also highlights some key lessons that this thesis can offer to other researchers, practitioners and policy makers.

Chapter 2
Literature Review

2.1.1 Introduction

This literature review chapter is divided into three parts. Part one introduces the research context by tracing the development of corporate environmental sustainability in both the business community and in the management literature. Nonetheless, part one emphasises that despite the plethora of corporate sustainability studies and the evolution of corporate approaches to the natural environment from the reactive to the more proactive, the ecological crisis has not been solved. This is conducive to the discussion on what could enable a shift towards a more environmentally sustainable economy. Within this discussion the de-growth proposal is appraised (e.g. Latouche, 2009; Martínez-Alier et al., 2010; Schneider, Kallis & Martínez-Alier, 2010) with consideration of the criticism it has attracted. Attention then is given to the market-based economy and to what a sustainable capitalism and corporation might look like. The proposal contained in natural capitalism (Lovins, Lovins & Hawken, 1999) is thus assessed as considered relevant for organisations willing to implement business practices that are more aligned with the principles of ecological sustainability. Overall, part one delineates the research context and the thesis perspective on how business sustainability might be achieved and it is propaedeutic to the development of the discussion on the circular economy in part two. The literature reviewed in part one follows from the need to highlight both the evolution of corporate environmental sustainability to date, and the steps forwards corporations are demanded to take for the transition towards a more environmentally sustainable economy given the so evident ecological crisis.

Part two focuses on the two main bodies of literature that are elemental for the development of the thesis. It reviews the practitioner literature on the circular economy while linking its origins to academic studies in the economic, industrial ecology and corporate sustainability literature, thus providing the context for discussion of sustainable business models. It then examines the

literature relating to the concept of the business model and how the idea of the sustainable business model has evolved. This necessitates a diversion into the literature on business model innovation. The literature reviewed in part two acknowledges the pioneering studies on the circular economy conducted to date in practitioner circles, for example by McKinsey and the Ellen MacArthur Foundation. While gaining currency only recently in policy and business circles, the concept of the circular economy is not new. This is why part two gives also attention to the studies that can be considered as originators of the circular economy thinking. As one of the aims of this thesis is to conceptualise circular business models, part two then deals with the concept of the business model and reviews the related literature published in prominent academic journals such as *Long Range Planning*, which dedicated a special issue to the topic in 2010, and the *Journal of Management*. Attention is then given to the sustainable business model literature and to the practitioner studies that have identified elements and categories of circular business models. The review of the circular economy, business models and sustainable business models literature is conducive to the identification of the frameworks that combined with the empirical data will lead to the conceptualisation of the investigated circular business models.

Part three presents the conceptual framework used to address the second research question, which includes multiple theoretical perspectives. The adoption of a wide conceptual framework, or "interpretive repertoire" (Alvesson & Kärreman, 2007, p. 1273), benefits the research because it helps with the analysis of data as well as with the biases that a more limited conceptual framework might give rise to (Alvesson & Kärreman, 2007). Amundson (1998) shares the view of Alvesson & Kärreman (2007), arguing that "ideally, a good theoretical perspective should be a 'wide angle lens', capable of illuminating a wide variety of issues in the environment" (p. 346). In this thesis, the *interpretive repertoire* employed comprises the natural-resource-based view of the firm (Hart, 1995) and the neo-institutional theory (Di Maggio & Powell, 1983). The studies linking corporate sustainability to internally developed resources and capabilities are reviewed first. Then the concept of institutions and institutional theories are introduced before turning to the business and natural environment studies that have employed an institutional lens to explain corporate

environmentalism. The last section of part three discusses the relevance of institutional influences for the emergence and development of circular business models and conceptual and graphical representations of these institutional influences unfolding within the UK context are presented. The literature reviewed in part three serves to highlight the appropriateness as well as the academic and practical relevance of organisational and institutional theories in the study of circular business models.

Part one

Corporate Environmental Sustainability: Past, Present and Future

2.1.2 Research context

Chapter one highlighted that the concept of sustainability has been extensively debated over the last thirty years. There has been a proliferation of definitions of sustainable development with the one given in the *Brundtland Report* (1987) most widely acknowledged (Banerjee, 2003; Gladwin, Kennelly & Krause, 1995). That report has argued that "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WECD, 1987, chapter two). Despite its popularity, the *Brundtland Report* definition of sustainable development has attracted criticism for not offering any guidance for action (Montiel & Delgado-Ceballos, 2014). Others have argued that the definition has not specified adequately what 'needs' exactly mean and which needs should be prioritised (Starik & Kanashiro, 2013; Starik & Rands, 1995).

Discussions on the sustainability concept and its implications have also entered the business community and the management academic literature (Etzion, 2007; Gao & Bansal, 2013; Winn & Pogutz, 2013; Zollo et al., 2013). There are many definition of corporate sustainability (Montiel & Delgado-Ceballos, 2014) with Elkington (1997) being one of the first to define it as an approach whereby companies integrate economic performances with social and environmental ones. It is on the environmental angle that this thesis concentrates, a research area that according to Montiel & Delgado-Ceballos (2014) is appropriate to term corporate environmental sustainability. Hence, in this thesis the term corporate environmental sustainability is used to describe the initiatives that companies take to manage responsibly their interface with the natural environment.

Corporate environmental sustainability has emerged as a consequence of both, increasing scepticism towards corporations, perceived as sources of environmental degradation, and the associated growing public expectations for

companies to commit themselves to solving our pressing environmental concerns (Hoffman & Bansal, 2012). Hoffman & Bansal (2012) suggest that corporate environmental sustainability has evolved through three different phases since the 1960s: (a) as a matter of compliance to the regulatory environment (late 1960s-early 1970s), (b) as a strategic opportunity (late 1980s-early 1990s) and (c) as a dimension to be integrated with the social and the economic one (2000s-now). Over the years attention to social and environmental sustainability has grown within the business community, with developing CEOs' awareness that managing organisations integrating comprehensive principles of sustainability is a matter of strategic relevance (Dillick & Muff, 2015), and as demonstrated by the proliferation of corporate reports dedicating sections to how sustainability principles have been implemented (Montiel & Delgado-Ceballos, 2014).

The evolution of corporate environmental sustainability has paralleled the debate in the wider social sciences on what corporations should do to address the environmental consequences of their business activities. Notably, in 1970, Milton Friedman, leading economist and *Nobel Prize* winner, wrote in the *New York Times Magazine* that the sole social responsibility of businesses is to maximise shareholders' return while operating within the rules established by markets and institutions. At that point in time, being environmentally responsible was considered "at best a necessary evil and at worst a temporary nuisance" (Hoffman, 2001 a, p. 3). One year later, Narver (1971) countered Friedman's position by arguing that it would be appropriate to engage in some actions to address the impact of corporate activities (e.g. pollution) upon society in advance of legal requirements prescribing to do so. In the face of both growing public concerns about environmental issues and expectations of more pro-active business initiatives, not taking actions could result in a company experiencing lower present market value induced by the perceived higher risks and reduced earnings (Narver, 1971). Twenty years later, Michael Porter, the prominent scholar in the field of competitive strategy, argued that environmental responsibility is not so much a threat to a company bottom line but rather an opportunity that could lead to a better competitive advantage through enhanced resource efficiency (Porter & Van Der Linde, 1995 a).

The rise of corporate environmental sustainability as a matter of strategic concern and the increased awareness of environmental issues, the latter triggered by the *Rio de Janeiro Earth Summit* in 1992, led to the growth of the business and natural environment literature (Etzion, 2007; Hoffman & Bansal, 2012). The development of this was encouraged by the launch of the *Organizations and the Natural Environment* division of the *Academy of Management* in 1994 (Etzion, 2007), the advent of special issues in journals like *Long Range Planning* (1992), the *Academy of Management Review* (1995) and the *Academy of Management Journal* (2000) and finally by other dedicated journals such as *Organization & Environment* and *Business Strategy and the Environment* (Banerjee, 2003; Whiteman et al., 2013). Nevertheless, most of the business and natural environment literature has focussed on eco-efficiency, which means that it has considered incremental improvement to the current, linear industrial model, by mainly reducing resource use and pollution per unit of output, rather than radical and innovative ways of conducting business to fundamentally address sustainability challenges (Gladwin, 2012; Hahn et al., 2015; Hart, 2010; Hart, 2012; Hawken, Lovins & Lovins, 2010; NBS, 2012; Young & Tilley, 2006).

Chapter one introduced the argument that despite the evolution of corporate approaches to the natural environment and the abundance of studies on sustainability, the ecosystem continues to deteriorate. The Millennium Ecosystem Assessment [MEA] (2005), the WWF's Living Planet Report (2014) and the indication of Planetary Boundaries (Steffen et al., 2015), underline that human activities have had a substantial impact on the ecosystem in the last decades (MEA, 2005), that "vertebrate species populations show a decline of 52 per cent between 1970 and 2010" (WWF, 2014, p. 2) and that humanity has already passed four planetary boundaries: climate change, rate of biodiversity loss, land system change and biogeochemical cycles (phosphorus and nitrogen) (Steffen et al., 2015, p. 7). Given this alarming ecological scenario, it is understandable that our market-based economy and corporations, that dominate economic activity, are accused of making a large contribution to this state of affairs. Corporations, which are endowed with resources and capabilities to invest in change, are demanded to address the problems they helped to create (Naughton, Habisch & Lenssen, 2010; Winn & Pogutz, 2013).

A failure to do so can risk greater tensions arising from societal expectations, thereby ultimately affecting their legitimacy to operate (Hart, 2010; Naughton et al., 2010; Wells, 2013; Winn & Pogutz, 2013). Playing an active role in addressing environmental and societal concerns as a matter that is central to doing business rather than as a marginal activity, would contribute to overcoming the separation between businesses and society that the prevalent instrumental logic to sustainability, with a lack of a system perspective, has produced (Gao & Bansal, 2013; Porter & Kramer, 2011). What is required for a transition to a more sustainable economy is explored next, with attention given to the reasons why the above transition might be possible within a free market economy.

2.1.3 Business as 'unusual' and capitalism: an oxymoron?

The 2008 global financial crisis and a series of business scandals, contributed towards many publications which address the concomitant ecological crisis, and advocated reforms of the free market economy and of corporations operating within it, in order to develop a more sustainable economy (e.g. Coyle, 2011; Jackson, 2009; Speth, 2008; Waddock & McIntosh, 2011; Witcher & Chau, 2012).

Proposals for an alternative economic paradigm based on de-growth have entered the discussion too (e.g. Latouche, 2009; Martínez-Alier et al., 2010; Schneider et al., 2010) following also from considering both 'technological optimism' as flawed, and the problem of the 'rebound effect' (Schneider et al., 2010). Costanza (1989) has argued that those who believe in technological optimism consider that the limits posed to growth by constrained natural resources can be overcome with the development of new technology. Nevertheless, eco-efficient technologies and products alone, the predominant corporate responses to environmental problems so far (Hawken et al., 2010), are not sufficient for a transition to a more environmentally sustainable economy (Speth, 2012; Wells, 2013). Although the application of the eco-efficiency principle is valuable since more units of a product are obtained while using less inputs of materials and resources, (Braungart, McDonough, &

Bollinger, 2007) this leads to increased demand via the 'rebound effect' (Ayres, 2008). This happens because efficiency improvements reduce energy and resource inputs and thus the cost of goods over time, which inevitably stimulates demand and further growth (Jackson, 2009). Consequently, uptakes in production and consumption diminish the relevance of eco-efficiency gains (ibid). Since the postulated sustainable growth achievable via technological and efficiency improvements has not been realised, the de-growth movement, on the other hand, considers as inevitable to limit production and consumption so as to decrease material use (Schneider et al., 2010). De-growth is a developing research agenda particularly in the field of ecological economics (Martínez-Alier et al., 2010) and can be described as "an equitable downscaling of production and consumption that increases human well-being and enhances ecological conditions at the local and global level, in the short and long term" (Schneider et al., 2010, p. 512). However, although the de-growth agenda has gained currency in the light of the financial, social and ecological crises (Martínez-Alier et al., 2010), concerns have been expressed on its effectiveness at addressing environmental issues and at promoting the shift to a more sustainable economy (van den Bergh, 2011).

Van den Bergh (2011) has critically discussed why de-growth and its most popular conceptualisations, e.g. GDP de-growth, consumption de-growth, work-time de-growth, radical de-growth and physical de-growth, are not suitable to achieve environmental sustainability. For instance, he has argued that a GDP de-growth is very likely to have certain negative social consequences but uncertain positive effects in terms of reduced environmental impact in both the short and the long term. In the short term a contraction of the GDP will probably redirect production activities towards cheaper and thus dirtier technologies and in the long term a contraction of the GDP is likely to lead to contraction in cleaner technologies investments too. Equally van den Bergh does not regard consumption de-growth as an effective and efficient strategy, which also comes with measurement and policy issues. Indeed, it is not entirely clear how to measure consumption de-growth, which means by how much each individual should reduce his/her consumption to produce a positive effect on the environment (ibid). Furthermore, if there were to be a government policy to reduce consumption, this would resemble a central planned economy (ibid) and

bring risk of the environmental disasters produced by this political and economic system, which are well documented (e.g. Feshback & Friendly, 1992).

The rejection of a market based economy to achieve social and environmental sustainability is often advocated by those proposing radical de-growth according to van den Bergh (2011). However, he criticises such proposals for being “normative and idealistic rather than analytical and realistic” (p. 884). His arguments against the radical de-growth agenda are based again on highlighting the far from positive environmental achievements under central planned economies which represent a departure from market-based economies. While being critical of the alternative de-growth proposals, van den Bergh (2011) does not reject entirely the relevance of discussing GDP and economic growth. However, he suggests that problems arise when considering GDP as indicator of social welfare, a critique shared by other authors (e.g. Coyle, 2011; Jackson, 2009), and from the assumption of unconditional growth. He proposes that a transition to a more environmentally sustainable economy requires effective environmental regulations, starting with an international agreement on climate change.

While the recent economic and financial crises have attracted criticism of the free market economy, nonetheless it is argued that in protecting the environment, it performs better than its alternatives (Desrochers, 2002 a; Porritt, 2007; Scruton, 2013) and that problems are not due to capitalism per se but rather to flaws in its current forms (Barton, 2011; Porter & Kramer, 2011). For instance, Porter & Kramer (2011) maintained that it has been a restricted view of capitalism that has prevented businesses from creating economic value while simultaneously taking responsibility for environmental and social concerns. Barton (2011) has contributed to the discussion on the flaws of capitalism in raising the issue of short-termism surrounding corporate decision-making, with consideration of the implications of such decisional process in the long term being preferable.

The stance taken in this thesis is that it is within a free market economy that the transition towards a more sustainable economy can develop. This thesis viewpoint is derived from the flaws in the de-growth agenda and from

considering that the intrinsic features of capitalism, such as freedom of enterprise, innovation and creativity, are better suited to promote innovation for a more environmentally sustainable economy. Joseph Schumpeter, the founding father of the innovative entrepreneurship theory (Spulber, 2014, pp. x-xi), has argued that "innovation is the outstanding fact in the economic history of capitalist society" (Schumpeter, 1939, p. 86) and that "development (…) is then defined by the carrying out of new combinations" (Schumpeter, 1934, p. 66).

A positive stance in viewing corporations as possible change agents is endorsed too for several reasons. Friedman (2002) argued that crises are an opportune lever to produce change. The so-evident ecological crisis affecting businesses worldwide cannot be denied and thus this crisis can be seen as a significant opportunity to invest in change. This might lead to put forward the Schumpeterian 'new combination' in economic development considering that businesses have the potential to drive the change towards a more sustainable economy (Shrivastava, Ivanaj & Persson, 2013). Some major organisations already are engaged in initiatives to reduce their environmental impact (Cohen & Winn, 2007) and current changes in the socio-economic landscapes would seem to suggest that 'new combinations' are coming into place. Sustainability is considered as both a rising business "megatrend" (Lubin & Esty, 2010, p. 44) and as a developing "long wave" (Kondratieff & Stolper, 1935, p. 105) of innovation (Seebode, Jeanreneaud & Bessant, 2012, p. 196). In addition, new forms of enterprises are emerging. Examples include the "third generation (…) [or] sustainable corporation" (Hart, 2012, p. 647) characterised by a stakeholder orientation and "hybrid organizations" (Haigh & Hoffman, 2012) operating between for-profit and non-profit to address environmental and social concerns. Also notable is the unfolding of for-benefit corporations, the Conscious Capitalism and Corporation 2020 movements which share with the former a model of enterprise based on a deeper, more comprehensive purpose of doing business (Waddock & McIntosh, 2011).

A concluding remark on the reasons why this thesis considers that a more sustainable economy can be achieved within capitalism and that corporations can lead the transition is rooted in non-utilitarian moral philosophy. The history of corporations reveals a series of business scandals due to poor

ethical or irresponsible business conduct (Metcalf & Benn, 2012). Nonetheless, it would be painting an incomplete picture of the business community if it is not acknowledged that the more sustainable business initiatives discussed above, are in part the result of stronger ethical foundations in the management of organisations. These initiatives would seem to be aligned with a Smithian view of individuals as moved by more than maximisation of utility only. Adam Smith, the founding father of modern economics and a great moral philosopher, in the 1759 *Theory of Moral Sentiments* "viewed man as both self-regarding and other-regarding" (Whittaker, 2011, p. 35) and "motivated to act in a way that achieves approval and avoids disapproval" (ibid). Studies in the business and economic literature share this Smithian view. Malloch (2008) has rejected the prevailing view of seeing greed as the determinant factor in business success and his argument is based on examples of companies succeeding because of the spiritual capital incorporated in the management of their organisations. Novak (1996) and McCloskey (2006) concur with Malloch (2008) arguing respectively that success in business is dependent on strong moral foundations and that a positive mutual relationship between virtues and markets exist as they sustain each other.

The argument developed in the last sections of this paragraph on the suitability of corporations in driving the change towards a more environmentally sustainable economy would be lacking if not accompanied by a discussion on what a sustainable capitalism and corporation might look like. Consequently, the next section considers the proposal contained in natural capitalism (Lovins et al., 1999; Hawken et al., 2000; 2010) as relevant for organisations willing to implement business practices that are more aligned with principles of ecological sustainability.

2.1.4 Natural Capitalism

The concept of natural capitalism is attributed to Lovins, Lovins and Hawken, following from their formative article in the Harvard Business Review in 1999. They define it as "what capitalism might become if its largest category of capital – the natural capital of ecosystem services – were properly valued" (Lovins et

al., 1999, p. 146). The case for natural capitalism follows from recognition that industrial capitalism has failed to take into account the full value of natural capital, and as consequence it has produced wasteful industrial processes (Hawken et al., 2000). To stop the wasteful use of natural resources, they advocate a different way of conceiving business processes, involving companies achieving competitive advantage from radically developing a more harmonious relationship with the natural environment (ibid). They suggest this can be attained by following some intertwined steps (ibid). First, they propose that companies improve natural resources productivity, becoming more eco-efficient (ibid). This step requires whole system design in order to find more efficient ways of using natural resources along the entire production processes, plus the implementation of pollution prevention technologies to reduce the amount of waste (ibid). Secondly, and fundamentally, natural capitalism aims at not just reducing waste but eliminating it (ibid). The approach they advocate to achieve this is for industrial practices to replicate the principles in natural cycles where waste does not occur (ibid). This implies implementing closed loop production processes, where disposed products at the end of their useful life are recovered and components are either reused as input materials for new production processes, or composted to produce nutrients for the natural environment (ibid). This approach would lead to eco-effectiveness according to Braungart et al. (2007), which "generates (…) a positive recoupling of the relationship between economy and ecology" (p. 1338).

Following the implementation of the first two steps, companies might modify further their business practices by shifting from selling products to selling services, bringing potential benefits to both producers and consumers (Hawken et al., 2000). Under this system producers preserve the ownership of products and are responsible for providing maintenance over time, and thus an incentive for designing more durable products is in place (ibid). Therefore, producers could benefit from reduced primary materials costs (products are returned to the manufacturer at the end of their useful life and thus secondary raw materials can be recovered), and from long lasting relationships with customers (ibid). The gain to customers is that they can rely on a flow of particular performances to satisfy their needs without buying expensive goods and appliances (ibid). For instance, Hawken et al. (2000) argue that consumers could benefit from the

service of having clothes cleaned via the payment of a monthly fee instead of purchasing a washing machine.

Natural capitalism also argues that not taking measures to restore the ecosystem can have both direct and indirect effects on companies profitability (ibid). The direct impact results from a shortage of ecosystem services which can impede human and business activities from taking place (ibid). The indirect impact results from poor company reputation and legitimacy that translate in customers' boycotts and sales decline (ibid).

In spite of the fact that the implementation of natural capitalism requires willingness to change and certain capabilities on the part of companies, Hawken et al. (2000) have argued that some regulatory changes are also necessary. To promote more resource efficient business practices they suggest a tax shift from labour and income towards depletion of natural resources and generated waste and pollutions. They argue that regulatory intervention would boost both measures for a more efficient use of resources (e.g. closed loop production processes), and the creation of employment opportunities because of the reduced labour costs. They also suggest that public policy should intervene to remove widespread subsidies to the primary sector in agriculture, coal, oil and mining, which encourage wasteful behaviours rather than an efficient use of natural resources. The persistence of subsidies locking the industrial system in an environmentally unsustainable development path is demonstrated by a recent study by the IMF (Coady et al., 2015). The IMF's study evidences that coal and petroleum are the most subsidised energy products globally amongst both developed and developing countries. Inevitably, this hinders the industrial system from making a transition to more sustainable sources of energy.

Although in the light of the serious ecological crisis natural capitalism can appear appealing, it has also been subject to criticism. Desrochers (2002 a) has criticised the reliance that the natural capitalism model places on public policy for advancing a more efficient use of natural resources, and also the representation of the traditional industrial capitalism as a system that neglects resource efficiency and recovery practices. Desrochers (2002 a) has argued

that closed-loop manufacturing and inter-firm waste recovery were well established by the end of the nineteenth century, thus not neglected in traditional industrial capitalism as Lovins et al. imply. He supports his argument by referring to a series of books published on the topic since the end of the nineteenth century, and a mass of practical examples drawn from the history of economic development (ibid).

In another paper, Desrochers (2002 b) has contended that the diffusion of inter-firm waste recovery by the end of the nineteenth century was robust enough to lead to the establishment of the American Industrial Waste Trade Industry Association in 1913 (with memberships rising from 20 to 450 by the 1928). Desrochers (2002 a) while concurring with Lovins et al. (1999) on the existence of subsidies discouraging resource-efficient business practices, has contended that putting too much faith in public policy to remove barriers might be ineffective since the policy-making process is subject to lobbying by powerful organisations. Desrochers (2002 b) also cites the introduction of environmental regulations driving managers in a compliance mindset rather than in a recovery one, and laws prescribing the use of a minimum content of virgin raw materials in the manufacturing of end products, as examples of public policy failures since these prevent industrial resource recovery from taking place.

Desrochers' (2002 b) essential argument is that it is not the market under the traditional industrial capitalism that is flawed in failing to support resource recovery, instead public policy is the problem. A recent report by McKinsey et al. (2015) is in concordance with Desrochers (2002 b) in arguing that waste regulation, which treats waste as something to be disposed, acts as barrier to effective materials recovery. Desrochers' studies are challenged by Boons (2008) who contends that Desrochers' analyses do not provide sufficient evidence to support his thesis of widespread adoption of inter-firm resource recovery from the second part of the nineteenth century. Though recognising the existence of some of the latter, nonetheless Boons (2008) argues that it is not correct to attribute the development of these practices to market mechanisms only. Factors relating to waste recovery are complex and understanding them require that due attention is given to the broader cultural, political and organisational contexts within which they lie.

In the decade following the publication of natural capitalism there was little evidence of the principles of natural capitalism being realised. In a tenth anniversary edition of the book, Hawken et al. (2010) suggest that only the first implementation principle, regarding eco-efficiency, has received substantial attention in theory and practice. In concordance, Winn & Pogutz (2013) also noted that business practices have failed to fully embrace the concept.

The lack of a widespread application of natural capitalism principles in the business community inevitably raises questions about why this is the case. Several studies have sought to understand what explains more environmentally sustainable approaches in the management of organisations and what might prevent the latter from taking place, but they do not address specifically natural capitalism. For instance, sustainability problems are framed as "wicked" issues (Haigh & Hoffman, 2012, p. 133; Waddock & McIntosh, 2011, p. 80), which means that they are considered as complex problems, with cause and effect difficult to establish, and thus hard to solve (Rittel & Webber, 1973). Similarly, Hahn et al. (2014) have argued that the management of sustainability concerns poses simultaneous yet contradictory demands on managers with the consequence that it could be difficult to interpret and act upon them.

While these studies emphasise the complications facing the economic agent in responding to environmental challenges, others (e.g. Bazerman & Hoffman, 1999; Beckert, 1999) have argued that it is institutions (rules, norms and beliefs) that guide the economic agent in the first place and define what is right, and that institutions play an important role in reducing complexity and uncertainty in the environment, thus creating the supporting conditions so that strategic agency can be exerted. In addition, Hoffman (2001 a) contends that corporate sustainability is the outcome of a complex process where the interplay between the organisational level and the wider institutional context within which companies operate, takes place. The latter view, which underlines the relevance of agency and structure to understand corporate environmentalism, is shared also by the transition management literature (e.g. Loorbach et al., 2010) whereby it is argued that addressing sustainability problems requires multiple and simultaneous changes at various levels. From this discussion, it can be thus inferred that a mix of institutional failures and the

difficulties of the economic agent in applying principles of ecological sustainability in the management of organisations, might have led to a very limited application of the natural capitalism framework within the business community.

Consideration of agency and structure is very pertinent to understand how economic transitions develop. However, it is also appropriate to consider whether relevant academic work in management and organisational studies has been encouraging the uptake of environmentally sustainable business practices. There appear to be some sources of concern on the practical relevance of those studies and one of these is the plethora of corporate sustainability definitions produced by the academic literature. Montiel & Delgado-Ceballos' (2014) study, which reviews the business and natural environment literature published between 1995 and 2013, has revealed that a common definition of corporate sustainability does not exist. This can cause confusion in the business community and thus it can hinder understanding and practical application.

While the abundance of corporate sustainability definitions and studies is well documented, nonetheless it is argued that management scholars' have not provided corporations with sufficient guidance to address ecological problems effectively (ibid). Gladwin et al. (1995) criticise corporate theories for portraying companies as disassociated from their organisational environment, which they broadly defined to include nature and society. The danger of this is that it might influence organisations to acquire a specular mindset, which is then reflected in business practices that do not consider their wider socio-ecological impacts. Consequently, they argue for theories enabling a different view of organisations, one that recognises the broader context within which they operate. Therefore, for them "integration may be the primary transformational challenge for management theorists as they strive for relevance in the new millennium" (p. 896). On a similar line, Starik & Kanashiro (2013) have argued that the majority of organisational and management theories employed in the study of corporate sustainability do not acknowledge the existence of a co-evolutionary relationship between economy and ecology. Co-evolution is a key concept within ecological economics (Kallis & Norgaard, 2010) whereby it is argued that

social systems (including organisations) co-evolve with each other and with the environment, in the sense that each part in the system is linked to the others, so that any change in one of these parts affects the other parts too (Norgaard, 1994). While almost neglected in the corporate sustainability literature, a co-evolutionary way of conceiving the relationship between economy and ecology is welcomed in theory and practice, to address more effectively the impact of human activities on the ecosystem (Boons, 2013). The co-evolutionary frame would enable to see the two systems as closely connected, which can be then conducive to the development of social and business practices that are more respectful of the natural world. This is at odds with the anthropocentric worldview, which sees nature exploited to serve human and organisational needs (Shrivastava, 1994). Nevertheless, how we see nature and our place in it is influenced by social values (Hoffman & Sandelands, 2005), which means that a more profound process of change involving the broader social structure (rules, norms and beliefs) might be necessary so that a co-evolutionary perspective to which Norgaard (1994) refers to as “additional template” (p. 135) or “new cosmology” (p. 174), can come into place. The authors who criticise management and organisational theories for not having supported the uptake of more environmentally sustainable forms of enterprise, challenge management scholars to become a lever in the transition to a more sustainable economy and the magnitude of the ecological crisis urges the research community to bring this responsibility forward. This means that management scholars, in line with the recommendations provided by Gladwin et al. (1995), are demanded to theorise in a more inclusive way which acknowledges the wider context (including the natural environment) within which businesses operate and the many implications this has for the management of organisations.

2.1.5 Part one summary

Part one has traced the evolution of corporate environmentalism and the development of the corporate sustainability literature. It has also evidenced that in the light of the ecological crisis, reforms of the market based economy and of the corporations within, are advocated. It is within this context that the proposal for a more environmentally sustainable economy contained in the de-growth

agenda has been appraised. Following from the consideration of a) the flaws contained in the de-growth proposal, b) the intrinsic features of capitalism (e.g. freedom of enterprise, innovation and creativity) as suited to promote innovation for a more environmentally sustainable economy, and c) the rising sustainability trend in the business community and the emergence of more sustainable forms of enterprise, part one has then delineated the perspective of this thesis on how corporate environmental sustainability might be attained within a free market economy. Notably, natural capitalism has been assessed. However, despite the fact that it can appear appealing as a potential win-win solution to solve the serious environmental crisis and to stay competitive, in the decade following the publication of natural capitalism there was little evidence of the principles of natural capitalism being realised. Only the first implementation principle, regarding eco-efficiency, has received substantial attention in theory and practice, which has then led the researcher to question why this might be the case.

Nevertheless, it might be argued that the desirability of natural capitalism for the achievement of a more environmentally sustainable economy remains, particularly when considering the more fundamental re-design of business processes it advocates. Natural capitalism aims at not just reducing waste but eliminating it with industrial practices that replicate the principles in natural cycles where waste does not occur (eco-effectiveness). Recognition that a more environmentally sustainable economy requires efforts going beyond eco-efficiency is gaining consensus in the academic literature (Bocken et al., 2013; Braungart et al., 2007; Garetti & Taisch, 2012; Jackson, 2009; Nair & Paulose, 2014; Roome & Louche, 2015; Shrivastava, 2013; Stead & Stead, 2013; Wells, 2013) and it is not discussed solely within the natural capitalism framework and the de-growth literature. Braungart et al. (2007) have argued that in a linear operating model characterised by a take-make-dispose logic, increasing levels of eco-efficiency not only do not resolve environmental problems, but also might potentially worsen them because of the rebound effect. Only if closed-loop production processes (eco-effectiveness) are implemented first then eco-efficiency is valuable in the long term (ibid). To conclude, the scale of the ecological crisis demands management scholars and practice to fundamentally rethink industrial and business processes so that a more harmonious

relationship between economy and ecology is established. But currently are there other structural conditions that can influence the agent willingness to experiment with alternative ways of conceiving their business practices? In addition, although natural capitalism originated in 1999, is its proposal currently being re-appraised under a new rhetoric at the policy and business levels? These questions will be considered in the following part two of this literature review chapter.

Part two
The Circular Economy, Business Models, Sustainable Business Models and Circular Business Models

2.2.1 Introduction

Part one of this chapter ended with some questions that have paved the way to the discussion of the literature in this second part. That section has asked whether other factors in addition to the ecological crisis are coming into place and influencing the development of business practices aligned with natural capitalism principles. The changing socio-economic, regulatory and technological landscapes would seem to suggest that this is the case. Escalating pressures on natural resources reservoirs, increasing resource price volatility, more middle-class consumers entering the market, the rise of the sharing/renting economy, rising regulatory pressures on climate change and waste, and advances in information and industrial technologies, are creating the conditions for moving beyond the industrial, linear operating model based on a take-make-dispose logic (Accenture, 2014; McKinsey et al., 2014). All of the above macro-economic and ecological trends are thus raising the attractiveness of more resource efficient business practices to stay competitive. Nevertheless, a new rhetoric concerning how more environmentally sustainable business practices can be achieved has started gaining consensus in the political, economic and business circles recently and it is represented by the circular economy with which natural capitalism is related. The latter is considered as one of the originators of the circular economy thinking (McKinsey et al., 2015) which from hereafter becomes the key theme in the subsequent sections of this thesis. The following paragraph introduces and reviews the literature on the circular economy (CE hereafter).

2.2.2 The circular economy

There are many definitions of the CE proposed in both political circles (e.g. EC, 2014; UNEP, 2010) and practitioner literature (e.g. Accenture, 2014; Aldersgate

Group, 2015; Aldersgate Group, 2014; Aldersgate Group, 2012; McKinsey et al., 2015; McKinsey et al., 2014; McKinsey & EMF, 2013; McKinsey & EMF, 2012).

McKinsey et al. (2015) conceptualise the CE as “an economy that provides multiple value creation mechanisms which are decoupled from the consumption of finite resources” (p. 23). Application of the CE thinking requires an engagement with three principles: a) protect and improve natural capital (using renewable energy and materials; enriching natural capital by returning to nature biological nutrients), b) maximise resources yields (remanufacturing, refurbishing, recycling, sharing, returning to nature), and c) promote elimination of negative environmental externalities (pollution in its various forms) (ibid). These three principles can be applied in the business context through six measures: “Regenerate, Share, Optimise, Loop, Virtualise and Exchange – together, the ReSOLVE framework” (p. 25). *Regenerate* demands a shift towards renewable materials and sources of energy as well as investments in natural capital. *Share* refers not only to the possibility of a shared utilisation of goods among users but also to the maximisation of resources use along the product life cycle through for instance reuse, increased durability and design for repair/upgrade. *Optimise* involves improving products and processes efficiency. *Loop* involves closing production loops, both technical and biological via returning resources to the production process or to the natural environment when a product reaches the end of its useful life. *Virtualise* refers to the possibility of delivering utility in the absence of physical products (e.g. on-line music, books). Finally, *Exchange* relies on the use of innovative technologies and materials enabling more resource efficient industrial processes. Table 2A represents the ReSOLVE framework and summarises what the application of these six measures entails from a business perspective.

Regenerate	**Re**	▪ Use renewable materials and energy; ▪ Invest in natural capital (protect, preserve and restore the natural environment).
Share	**S**	▪ Maximise extraction of value from resources so that they can circulate within the economy for longer through sharing, re-using and enhanced product durability.
Optimise	**O**	▪ Increase product and processes performances.
Loop	**L**	▪ Close the production loop via technical and biological cycles.
Virtualise	**V**	▪ Dematerialise products.
Exchange	**E**	▪ Adopt disruptive technologies and materials.

Table 2A: The ReSOLVE framework
Source: Adapted from McKinsey et al. (2015, p. 26)

A more detailed indication of what an industrial system in a CE would resemble can be found in the McKinsey & EMF's (2012) report where the CE is described as:

> an industrial system that is restorative or regenerative by intention and design [that] replaces the end-of life concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impairs reuse and aims for the elimination of waste through the superior design of materials, products, systems, and within this, business models (p. 7).

This report introduces the difference between "consumable" and "durable" (p. 7) elements of a product:

> consumables in the circular economy are largely made of biological ingredients and nutrients that are at least non-toxic and possibly even beneficial, and can be safely returned to the biosphere directly or in a cascade of consecutive uses (…) [whereas] durables such as engines or computers (…) are made of technical nutrients unsuitable for the biosphere, like metals and most plastics. These are designed from the start for reuse (p. 7).

Durables, in a CE, are not exchanged through a traditional sale transaction but rather are leased, rented or shared wherever possible (ibid). If customers' needs are satisfied through a sale transaction, agreements between producers and consumers should guarantee that at the end of their useful life durables can be returned so as to be remanufactured, refurbished, reused or recycled (ibid). In order to enable durables to enter again the production process a reverse

supply chain (from consumer to producer) has to be established which complements the traditional forward supply chain (Wells & Seitz, 2005). Together they form a closed-loop supply chain (ibid). Returning goods for remanufacturing, refurbishing and reusing is more economically and ecologically valuable than recycling as these actions preserve more of the product embedded labour, energy and natural resources (ibid). Consumables (e.g. food) and products with a short lifespan (e.g. textiles), when they reach the end of their useful life are not discarded to landfill (McKinsey & EMF, 2012). Notably, food waste can be used first to extract bio-derived nutrients for other production processes and then to produce bio-energy and bio-fertilisers (ibid). Textiles can be reused, re-manufactured in the production of new fibres, or recycled as stuffing material for upholstery furniture (ibid).

Although the transition to a CE is not without costs because investments in research and development, digital and recycling infrastructures and subsidies to new products and renewable energies would be needed (McKinsey et al., 2015), there are benefits that would be accrued by companies, end users and the whole economy. Potential employment opportunities in the tertiary sector whereby services need to be developed to support business models in a CE (e.g. financing, leasing and reverse loop services) are forecasted. For instance, WRAP & Green Alliance (2015) have estimated that there could be huge employment opportunities in repair and remanufacturing, recycling, reuse and biorefining if the British economy would shift to a CE. End users would benefit by accessing goods in a less expensive way (leasing rather than buying upfront expensive items), by the increased durability of products (because of reduced premature obsolescence) and by product secondary benefits (packaging that could be used by the end user as a fertiliser) (McKinsey & EMF, 2012). Benefits would be accrued by companies as well in terms of reduced costs, reduced supply chain and price volatility risks, new revenues streams and stronger and long-lasting relationships with end users (Accenture, 2014). For instance, McKinsey et al. (2015) have estimated that in a transition to a CE, consumption of primary materials in the European Union (EU) could fall significantly in the food, construction and mobility industries, particularly, “as much as 32% by 2030 and 53% by 2050” (p. 15). This would have a positive effect on the competitiveness of EU manufacturing firms given that materials and

components account for 40-60% of their total costs and that Europe depends hugely on imports of resources such as fossil fuels and metals in the measure of about 60% (ibid). Materials savings under a CE are not temporal. The adoption of CE principles will not simply reduce the consumption of resources in the short term but rather the benefits will be long lasting since these principles impact significantly on the rate of materials consumption within the economy (Aldersgate Group, 2015; McKinsey & EMF, 2012).

The CE would also deliver benefits for emerging market economies. In these countries the net material savings could be even higher than in advanced economies because the former are more materials intensive than the latter (McKinsey & EMF, 2012). In emerging market economies the adoption of business models based on CE principles could be even quicker because with respect to developed economies they have less established industrial systems and thus are less locked in the take-make-dispose logic (ibid).

The benefits of the CE that the practitioner reports have identified are in line with the emergent discussion on the CE in non-practitioner circles. For instance, it is argued that the CE can build prosperity without putting further pressure on finite natural resources (Preston, 2012; Schulte, 2013) and that given the existence of finite natural resources "on the longer term, humanity is probably better off when moving towards a resource-efficient and circular economy" (Domenech et al., 2013, p. 33). In addition, Mathews (2011) welcomes a '*naturalised capitalism'* characterised by more resource efficient business practices, renewable sources of energy and renewable-friendly investment tools. Protecting the stock of natural resources through circular business practices is also considered as one of the key aims of a more sustainable economy (CISL, 2015).

In addition to the practitioner reports targeting a business audience and the nascent academic literature in the area of the CE, the appropriateness and desirability of moving beyond linear industrial systems is welcomed in political and economic circles. The CE has gained a certain visibility at the *World Economic Forum* recently and it is receiving increasing attention at the European level where it is at the centre of the resource efficiency programme in

the *Europe 2020 Strategy* (EC, 2011). The EC has also recently released the new CE package to promote a more resource efficient economy. The package, for instance, includes measures that seek to promote product design for durability, recyclability and repairability and to develop quality standards for secondary raw materials especially for plastics, to enable the uptake of these materials usage in the manufacturing of products (EC, 2015 c). The EU is also supporting initiatives for the development of resource efficient business models (REBMs) through *REBus*, an *EU Life+* project which started in 2013 in the UK and the Netherlands to assist SMEs and large organisations in the implementation of these business models with a focus on textiles, electric, electrical, furniture and construction goods (EC, 2013 a).

The CE thinking, though gaining particular momentum now, is not new and apart from natural capitalism it has other originators in the economic, industrial ecology and management literature. The origin of the CE thinking can be traced back to the work of the economist Kenneth Boulding (1966), who in a famous essay titled *The Economics of the Coming Spaceship Earth,* used the metaphor of a spaceship to portray earth as a closed system. Such a metaphor is powerful to raise the issue of using finite natural resources more wisely: in a spaceship with limited resources available, waste has to be converted into subsistence. A closed economy would replicate the functioning of the ecosystem where the output of one process becomes the input of another process (waste is not conceived as such). Boulding's contribution acknowledges the implication for economic activity of the first law of thermodynamics (law of conservation): energy and matter cannot be destroyed but only transformed (Jackson, 1996). As materials and energy cannot be destroyed, environmental economists have contended that the CE will solve pollution problems by using waste as production process inputs (Revell, 2008). Another economist, Georgescu-Roegen (1971), considered the implications for economic activity of the second law of thermodynamics (law of entropy): some available energy is lost through its subsequent transformations (Jackson, 1996). Entropy is:

> a measure of the amount of energy no longer capable of further conversions to perform useful work. Entropy within any closed system inevitably increases over time; it is only the fact that our system is open to incoming

> solar radiations that prevents an inexorable decline into chaos (Porritt, 2007, p. 58).
>
> In order to bring the economic system into sync with the Earth's natural entropic processes, humankind must find ways to slow down the high-entropy energy, resource, and waste processes that result from current economic activities (Stead & Stead, 2014, pp. 54-55).

Because of the entropy law, ecological economists (e.g. Daly, 1992) argued that a CE based on fossil fuels is not sustainable in the long term unless it is based on renewable energies such as solar energy, as it will be using all its available energy (Revell, 2008). Subsequently, other two economists, Pearce & Turner (1990), saw economy as closed and circular and they first proposed the CE term and as a path for a sustainable growth.

The CE has also its roots in the area of industrial ecology (IE) where a more efficient use of resources and materials is advocated. Studies related to the field appeared in the literature in the 1950s and 1970s although IE as such was not yet born (Erkman, 1997; Lambert & Boons, 2002). The IE field emerged in the 1990s (Desrochers, 2002 b; Gibbs & Deutz, 2007) following the publication by Frosch & Gallopoulos (1989), two General Motors senior executives, launching the analogy between industrial systems and ecosystem whereby the former should work by replicating the functioning of the latter (Lifset & Boons, 2012). The distinctive contribution of the IE field is in recognising the biophysical and social dimensions of environmental problems, and in doing so it has brought a holistic perspective on how to frame and approach environmental sustainability (Lambert & Boons, 2002; Lifset & Boons, 2012). The research in the field of IE has mainly focussed on *industrial metabolism* involving "analysis of material flows on different levels and various scales" (Bringezu, 2003, p. 34), a concept first developed by the physicist Robert Ayres (e.g. Ayres, 1994). Within the field of IE another strand has developed: *industrial symbiosis* focussing on the exchange of by-products, materials and energy between companies in geographical vicinity, generally within eco-industrial parks, whereby the outcome of one industrial process becomes the input for a different process (Chertow, 2000). Empirical data concerning eco-industrial parks implementation are still missing despite the development of IE as a research area (Gibbs & Deutz, 2007). In addition, the

focus of IE has been the technical side: considerations of which technologies could make it possible to close materials and energy loops, rather than how such change could be enacted at the social level (Hoffman, 2003; Lifset & Boons, 2012; Sharpe & Agarwal, 2014; Tsvetkova & Gustafsson, 2012; Wells, 2013). IE thinking has rarely entered the organisational and management studies (Hahn et al., 2015).

In the management literature, in addition to natural capitalism, originators of the CE can be found in the work on closed-loop supply chains (e.g. Linton, Klassen, & Jayaramman, 2007; Wells & Seitz, 2005), biomimicry (Benyus, 2002) and cradle-to-cradle® (Braungart et al., 2007). Biomimicry is the study of nature and in the context of managing organisations biomimicry can be used to learn from natural process how to run businesses in a more environmentally sustainable way (Lovins et al., 1999). Cradle-to-cradle® (Braungart et al., 2007) promotes the shift from eco-efficiency to eco-effectiveness through the design of materials conceived either as “technical nutrients” (p. 1343) or as “biological nutrients” (ibid). Whereas the former can be used over and over again within subsequent production processes, the latter are designed to be safely disposed of to the natural environment as they do not contain any chemicals that could harm the ecosystem. Designing materials in this way allows to recover and preserve the value of resources over time, a process that the authors call “upcycling” (p. 1338) as opposed to “downcycling” (ibid) associated with the recycling of products that are not designed for disassembly and recovery. Closed-loop supply chains, consisting of forward and reverse supply chains (Wells & Seitz, 2005), are also related to CE principles insofar as they enable collecting back products at the end of their useful life for repairing, refurbishing, remanufacturing and recycling. Although closed-loop supply chains have received attention in the academic literature (Guide & Van Wassenhove, 2009) and practical application particularly in the automotive industry (Johnsen, Howard, & Miemczyk, 2014), it is argued that they are not yet fully integrated and explored within business processes and academic literature (ibid). This means that business practices and academic studies have concentrated on operational and technical sides while neglecting antecedents and implications (ibid).

Another originator of the CE thinking is the work of the architect and industrial analyst Walter Stahel on the performance economy (Stahel, 2006). The main argument behind the performance economy is that of suggesting the shift towards a functional service economy, based on selling services rather than products to reduce resource (materials and energy) consumption and boost job opportunities. For instance, consumers could benefit from the service of having clothes cleaned via the payment of a monthly fee instead of purchasing a washing machine (Hawken et al., 2000). The source of economic value creation in the CE thinking that McKinsey & EMF (2012) qualifies as "the power of the inner circle" (p. 7) to highlight economic gains deriving from reusing, repairing, refurbishing and remanufacturing, is not new to the performance economy. Indeed, Stahel (2006) argues that financial benefits, job opportunities and resource efficiency are higher when those options are preferred to recycling. This happens because the activities that can be implemented at the end of a product life cycle, reduce materials consumption, can save 75% of the energy embedded into a product and are labour intensive (ibid). Table 2B below summarises the antecedents of the CE thinking that have been reviewed in this paragraph.

Circular Economy	**Economics** (Boulding, 1966; Pearce & Turner, 1990).
	Industrial Ecology (Ayres, 1994; Bringezu, 2003; Chertow, 2000;Frosch & Gallopoulos, 1989; Gibbs & Deutz, 2007).
	Closed-loop Supply Chains (Linton et al., 2007; Guide & Van Wassenhove, 2009; Wells & Seitz, 2005).
	Biomimicry (Benyus, 2002).
	Cradle-to-Cradle® (Braungart et al., 2007).
	Natural Capitalism (Lovins et al., 1999).
	Performance economy (Stahel, 2006)

Table 2B: Originators of the CE thinking
Source: The researcher

Though the CE aims to reintegrate the economic system within the ecological one (McKinsey et al., 2015), the practitioner literature on the CE emphasises opportunities for economic value creation within circular business

models (e.g. reduced materials bills; establishing long-term relationships with customers etc.). However, it is worth stressing that the transition towards a CE could lead to the creation of environmental and social value as well. More resource-efficient industrial processes can build prosperity without putting further pressure on finite natural resources (CISL, 2015; Preston, 2012; Schulte, 2013). The elimination of toxic materials within consumables would have positive implications in terms of reduced water and soil contamination (McKinsey & EMF, 2012). Less wasteful business processes and consumers' attitudes towards products at the end of their useful life could reduce disposal to landfill and thus soil, water and air pollution, which are negative environmental externalities that the CE seeks to address (McKinsey et al., 2015). In addition, the CE is considered as an appropriate strategy for climate change mitigation not only because the CE aims to shift to renewable energies (McKinsey & EMF, 2012) but also because it is less wasteful and less virgin material intensive than a linear economy where disposal of waste to landfill and extraction of raw materials contribute to high carbon impact (ZWS, 2015).

From a social perspective, though the CE in its conceptualisation does not address explicitly inter and intra-generational equity (Murray et al., 2015), it is reasonable to argue that a less wasteful resource utilisation has positive implications for intergenerational resource distribution since reduced material intensity within the economy today means that valuable resources are more likely to be available for future generations (ibid). In addition, as noted in the previous sections of this paragraph, other positive social implications deriving from the shift towards a more CE are: a) the employment opportunities in the tertiary sector (WRAP & Green Alliance, 2015) whereby services (e.g. reverse logistics, financing) need to be developed to support the scaling up of circular business practices; b) increased availability and affordability of goods if accessed via usage based contracts (McKinsey & EMF, 2012) and c) increased product durability which postpones the need to buy a new product (ibid).

Overall, environmental, social and economic benefits could be realised in a transition towards a CE. But what exactly companies are demanded to do, given the changing macro-economic and environmental trends, to realise the potential opportunities, sustain their competitive advantage and accelerate the

transition to the CE? The practitioner literature emphasises that business model innovation is a key requirement within the CE proposition. As the business model (BM hereafter) is a central theme in the CE thinking, the next paragraph introduces the BM concept and reviews the related literature linking the latter with that on business model innovation (BMI hereafter).

2.2.3 Business models and business model innovation

The concept of the BM has become prevalent in business and management circles (Amit & Zott, 2012; Baden-Fuller & Morgan, 2010; Demil & Lecocq, 2010; Klang, Wallnöffer & Hacklin, 2014). A 2005 report by the Economist Intelligence Unit (EIU), based on a survey of more than 4,000 executives worldwide, highlighted that new BMs are considered as a source of competitive advantage more than product and service innovation are. BMI currently is also considered a key element for the attainment of environmental, social and economic sustainability goals (Kiron et al., 2013) and a crucial constituent to achieving a CE. However, there is little clarity and consensus in the literature on what a BM actually is (Casadeus-Masanell & Ricart, 2010; DaSilva & Trkman, 2014; Osterwalder, Pigneur, & Tucci, 2005). A thorough review of the academic and practitioner literature was conducted by Zott, Amit, & Massa (2011) who argued that regardless of the increased interest in the concept of the BM, as testified by the proliferation of related studies between 1995 and 2010, not only is it the case that there is no agreement on what a BM really is but also that studies on BMs are more developed in the practitioner rather than in the academic literature. The latter point is shared by Baden-Fuller & Morgan (2010) who have also noted that academic studies in management tend to neglect the importance of the construct preferring focussing on the more prominent concepts of competitive advantage, resources and capabilities.

The BM literature is relatively recent and is normally traced back to the 1990s, coinciding with the advent of the internet and the associated information and communication technologies, yet the first academic papers on the topic were published in 1957 and 1960 (Osterwalder et al., 2005). The development of both academic and practitioner related studies resulted from the opportunities

and challenges triggered by e-commerce according to DaSilva & Trkman (2014) and Markides (2013). Other authors, (e.g. Massa & Tucci, 2013; Zott et al., 2011), considered that the rise of interest in the concept of the BM was influenced by the emergence of business opportunities at the *'bottom of the pyramid'* (Prahalad & Hart, 2002) and post-industrial technologies such as biotechnologies which like e-commerce demand alternative ways to deliver value and to derive profit. Clearly, the term BM outlived the "dot-com bubble" (DaSilva & Trkman, 2014, p. 381) and between 2004 and 2007 academic papers on BMs changed their focus from Internet companies to traditional companies (ibid).

There have been various attempts to define what a BM is. Osterwalder et al. (2005) suggested that a BM is a "conceptual model that explicitly states how the business functions" (p. 3) and that "the business model can be seen as the conceptual link between strategy, business organization, and systems" (p. 10). Other studies have concentrated on 'value' to define what a BM is and 'value' is a key theme in the BM literature according to Zott et al. (2011). Richardson (2008) provides a BM framework based around the theme of 'value'. This includes: a) the value proposition (what a company offers to its customers); b) the value creation and delivery (how value is created and delivered) and c) the value capture (costs and revenues). Osterwalder & Pigneur (2010) defined the BM as "the rationale of how an organization creates, delivers, and captures value" (p. 14) and as made of "nine building blocks" (p. 16) namely *customer segments, value propositions, channels, customers relationships, revenue stream, key resources, key activities, key partnerships* and *cost structure*. Similarly, Zott et al. (2011) suggested that the BM refers to "the content and process of doing business" (p. 1037).

The Journal *Long Range Planning,* in 2010, dedicated a special issue on BMs with papers addressing the definition and the genesis of the concept, the determinants of BM success and BMs for sustainable development (Baden-Fuller et al., 2010). Within this, Baden-Fuller & Morgan (2010) have reflected on the purpose of BMs positing that they are "models" used to categorise businesses, that they can be object themselves of scientific enquiry and be considered as "recipes" (p. 157) to learn from. In the same edition and in

concordance with the studies by Osterwalder & Pigneur (2010) and Zott et al. (2011), Teece (2010) argued that “a business model describes the design or architecture of the value creation, delivery and capture mechanisms employed” (p. 191) noting that new BMs are often required with the emergence of new technologies and, in line with Baden-Fuller & Morgan (2010), that BMs can be object of innovation per se. Most of BM research is done at the firm level (Wikström et al., 2010). Nevertheless, the BM perspective would seem to go beyond the firm boundaries (Zott et al., 2011). Indeed, the authors define the BM as “a firm centric, yet boundary-spanning activity system” (p. 1037) which equals to say that the BM is “nested between the firm and the network” (p. 1036).

Other studies in the BM literature have explored the link between the former and strategy. Teece (2010) differentiated between BM and strategy with the former conceptual and the latter more practical, though intertwined in determining a sustained competitive advantage. Casadeus-Masanell & Ricart (2010) shared the same view of Teece in arguing that BMs and strategies are two different constructs though connected. They perceived that one element of strategy is the choice of the business model, with the latter influencing “tactics available to the firm to compete against, or cooperate with, other firms in the marketplace” (ibid, p. 196). On a similar line, Wells (2013) posited that BMs and strategy are not to be blended though they can co-emerge. DaSilva & Trkman (2014) have concurred with Teece (2010) and Casadeus-Masanell & Ricart (2010) by positing that BMs and strategy are two separate but linked concepts highlighting that strategy influences the development of capabilities which in turn may affect the configuration of the actual BM. This position is shared by Yip (2004) who makes a connection between strategy and BMI with the latter resulting from transformations in a company strategy.

In an attempt to summarise the use of the BM term in the literature, Demil & Lecocq (2010) make a useful distinction between a “static” (p. 227) perspective of BMs which aims to classify BMs and their components, linking typologies with value creation, and the “transformational” (p. 228) perspective which focuses on BMI. The distinction proposed by Demil & Lecocq (2010) is

instrumental for the development of the next section of this paragraph which concentrates on BMI.

DaSilva & Trkman (2014) have argued that BMI is more than just a reorganisation of business processes though not indicating what exactly a BMI involves. In a more specific articulation of the BMI construct, Amit & Zott (2012) suggested that BMI occurs when one or more of the BM elements are changed, with respect to either content (activities), structure (how activities are connected) or governance (who executes activities). Lindgardt et al. (2009) considered that the BM is made of two main components: "the value proposition and the operating model" (p. 1) which are then articulated into sub-components, namely, *target segments, product or service offering, revenue model, value chain, cost model* and *organization*. In a similar line with the study of Amit & Zott (2012), Lindgardt et al. (2009) posited that "innovation becomes BMI when two or more elements of a BM are reinvented to deliver value in a new way" (p. 2). Whereas these two latter studies seem to consider BMI as occurring only in the form of reconfiguration of BMs already established, Massa & Tucci (2013) maintained that BMI can take also the form of an entirely new BM in the case of emerging organisations.

The discussed literature on BMs is not without criticism. Over a decade ago, Porter (2001) argued that "the definition of a business model is murky at best" (p. 73). Ten years later, in their extensive review of the literature Zott et al. (2011) suggested that there had been little change lamenting that "researchers frequently adopt idiosyncratic definitions that fit the purposes of their studies but that are difficult to reconcile with each other" (p. 1020) and that "the term business model in its current use is not one concept; it is many concepts" (pp. 1034-1035). However, the authors also suggested that some common themes are emerging: the BM is now considered as a new object of investigation, as a system of activities, as a means to create and to capture value and as a holistic concept depicting the 'what' and 'how' of doing business (ibid).

Table 2C below summarises the key lessons that can be learnt from the BM literature examined within this paragraph.

The Business Model	The BM literature is relatively recent (can be traced back to the 1990s).
	'Value' is a key theme in the BM literature: the BM as "the rationale of how an organization creates, delivers and captures value" (Osterwalder & Pigneur, 2010, p. 14); the BM "describes the design or architecture of the value creation, delivery and capture mechanisms employed" (Teece, 2010, p. 191). BMs as means to create and capture value (Zott et al., 2011). A BM framework relates to the value proposition, value creation and delivery and value capture (Richardson, 2008).
	The BM is a holistic concept as it refers to "the content and process of doing business" (Zott et al., 2011, p. 1037).
	The BM perspective goes beyond the firm boundaries (Zott et al., 2011).
	The BM can be object of innovation (Teece, 2010).
	The BM differs from strategy though they can co-emerge with the choice of the BM as one element of the strategy (Casadeus-Masanell & Ricart, 2010; Wells, 2013).
Overall, the BM concept has become prevalent in business circles (Baden-Fuller & Morgan, 2010; Demil & Lecocq, 2010) but the academic literature does not agree on a what a BM is (Zott et al., 2011). There are many definitions.	

Table 2C: Key points in the BM literature
Source: The researcher with content summarised from the BM literature

After having defined the BM and the BMI concepts, it appears very pertinent to put them in relation with the corporate sustainability literature. A link between the corporate sustainability and the BM literature is being proposed in the nascent studies on sustainable business models. Therefore, the next paragraph introduces first the sustainable business model (SBM hereafter) concept and reviews the related literature and then it gives consideration to the practitioner studies on circular BMs.

2.2.4 Sustainable business models and circular business models

There is an emerging research agenda focussed on BMI for developing SBMs (e.g. Boons et al., 2013; Carayannis, Sindakis, & Walter, 2015; Short et al., 2014; Stubbs & Cocklin, 2008; Wells, 2013). This results from a recognition that a more environmentally sustainable economy requires efforts going beyond incremental innovation (the eco-efficiency agenda), as evidenced in part one, and entails new BMs as well (Beltramello, Haie-Fayle, & Pilat, 2013; Bocken et al., 2013; Garetti & Taisch, 2012; Nair & Paulose, 2014; Roome & Louche, 2015; Shrivastava et al., 2013; Stead & Stead, 2013).

Although the application of the eco-efficiency principle is valuable since more units of a product are obtained while using less inputs of materials and resources (Braungart et al., 2007), this leads to increased demand via the 'rebound effect' (Ayres, 2008). This happens because efficiency improvements reduce energy and resource inputs and thus the cost of goods over time, which inevitably stimulates demand and further growth (Jackson, 2009). Consequently, uptakes in production and consumption diminish the relevance of eco-efficiency gains (ibid). The shortcomings of the eco-efficiency principles make clearer the practical relevance of more resource efficient BMs, which on the other hand, would be more effective in decoupling economic growth from its impact on the natural environment.

BMI for the attainment of more environmentally and socially sustainable economies is very relevant from an academic point of view too. It can enrich the literature on sustainable innovation since to date this has focussed either on the micro level (product and process innovation) or on the macro level (much broader socio-technical transitions required for a more environmentally sustainable economy) (Boons et al., 2013). Socio-technical transitions have been defined as "a combination of technical, organizational, economic, institutional, social–cultural and political changes" (van den Bergh, Truffer, & Kallis, 2011, p. 2) and are complex, developing over the long-term and involving many players (Geels, 2011). Frameworks have emerged to analyse socio-technical transitions such as the Multi-Level Perspective approach (Geels, 2002) and the Transition Management approach (Loorbach, 2010) although Markard & Truffer (2008) argued that these theories are closely connected with regard to both theoretical background and empirical application. However, the role of businesses and BMs in contributing towards these transitions has not been much investigated (Boons et al., 2013; Loorbach & Wijsman, 2013). For instance, Loorbach & Wijsman (2013) contended that factors like organisations type, size and leadership can influence the possibility of exerting an active role, thus needing further exploration when relating businesses to socio-technical transitions. Wells (2013) also suggested that because transition theory is "ultimately aimed at being a policy tool for government regulation and intervention" (p. 38), it is in contrast with a BM perspective which emphasises more the role of business agency to realise change. Similarly, Loorbach &

Wijsman (2013) contended that “the approach of transition management [has been] simplified to a simple vision-led planning” (p. 24). Wells (2013) has also argued that transition theory “lacks the micro-scale mechanisms by which change happens (…) [whereas] business model innovation may constitute one of those neglected mechanisms” (p. 45). Boons et al. (2013) concurred with Wells (2013) in arguing that the BM perspective links the micro level with the macro level, thus representing the way through which the literature on sustainable innovation can be enriched.

Early propositions for SBM innovation can be found in studies on *Natural Capitalism* (Hawken et al., 2000) and in the *bottom-of-the-pyramid* literature (e.g. Prahalad & Hart, 2002). They contemplate respectively BMI for designing out waste and selling services and for meeting the needs of the poor. However, at this point in time, it appears that comprehension of SBMs is insufficient and inadequate (Bocken et al., 2014 a; Stubbs & Cocklin, 2008) and that research on SBMs is not well established yet (Boons & Lüdeke-Freund, 2013; Schaltegger, Hansen, & Lüdeke-Freund, 2015; Sommer, 2012) but rather requiring conceptual and empirical development (Lüdeke-Freund, 2009). The literature on SBMs is quite fragmented too. Studies have defined BMI for sustainability; others have attempted to conceptualise, categorise and identify the components of a SBM. Overall, studies on SBMs mostly look at environmental issues (Bocken et al., 2014 a) and are mainly conceptual (Evans, Rana, & Short, 2012; Roome & Louche, 2015; Short et al., 2014). In the following paragraphs a review of these studies is presented.

Schaltegger, Lüdeke-Freund & Hansen (2012), according to the scale of the change, classified BMI for sustainability into moderate (minor changes or no changes at all in the BM), incremental (might demand changes of some of its components) and radical (might entail change of the whole BM) depending on the relevance of environmental and social issues for the corporate strategy (the higher the relevance, the broader the changes affecting the BM). Not focussing on the scale of the change but rather on its outcomes, Bocken et al. (2014 a) and Bocken, Rana, & Short (2015) defined sustainability-oriented BMI as changes in the BM that create considerable positive outcomes for the

environment and/or society or diminish notably negative impacts of business activities upon society and/or the environment.

Other studies concentrated specifically on the definition and on the components of a SBM. Stubbs & Cocklin (2008) studied two organisations, *Interface Inc.* and *Bendigo Bank* and classified the characteristics of the observed BMs in cultural and structural. The cultural characteristics relate to beliefs and attitudes and include factors such as a long-term mindset and a relationship building approach based on trust. By contrast, the structural aspects relate to the 'how' of doing business, e.g. organisational processes and structures and contemplate a more collaborative approach with partners in doing business (ibid). On the basis of the two cases studied, they then highlighted that a SBM would imply the application of the following principles: a deeper purpose than profit maximisation; measuring performances along the triple-bottom-line (economic, social and environmental); adopting a stakeholders' approach in the management of the organisation recognising nature as a stakeholder; having a strong leadership that drives the change within the organisation and being committed towards not only the implementation of sustainability principles within a single organisation but working with players external to the organisation to promote a systemic shift towards a more environmentally and socially sustainable economy (e.g. through changes in the taxation and transportation systems).

Wells (2013) also attempted to clarify what a SBM should look like. Wells (2013) distinguished between "principles" and "components" (p. 65) of a SBM: what would be of support in the achievement of corporate sustainability and what could be considered as its building blocks respectively. Principles include: eco-efficiency measures (in presence of rebound effects, eco-efficiency alone "is not in itself a defining characteristics of a business model for sustainability" p. 142), addressing social needs, being embedded in the local context, promoting durability, ethical purchasing and supply and employees' welfare. The author suggested that such features could be incorporated as a stand-alone tool or in conjunction with others depending on the industry context and that such characteristics are not to be considered as an exhaustive list: "business models are many and varied and are contextualised (…) the

consequence is that categorisation is problematic" (pp. 134-135). With regard to the components, these are defined as follows: *product-service systems, design for remanufacture and circular value systems, open source innovation* and *network value creation systems*. Whereas in *product-service systems*, the provider sells the use of the product rather than the product itself, in *circular production systems* end-of-life product components are reused for the manufacturing of new products because of the materials and energy savings that is possible to achieve (ibid). Open innovation is a concept originally formulated by Chesbrough (2003) who argued that companies can bring innovative ideas to the market leveraging not only on their internal research and development units but also on collaboration with external partners. Open innovation, by bringing together various players with a sustainability mindset, is considered very relevant for promoting sustainable modes of production and consumption (Bocken et al., 2014 a) and particularly helpful in the case of closed-loop BMs as it facilitates the identification of opportunities for materials recovery and reuse (Sharpe & Agarwal, 2014). Finally, Wells (2013) considered *network value creation systems* as a SBM component. These systems are very pertinent to the context of eco-industrial parks and industrial symbiosis whereby companies in geographical proximity are connected through the exchange of materials and energy flows (Gibbs & Deutz, 2007).

In concordance with the studies by Stubbs & Cocklin (2008) and Wells (2013), Sempels & Hoffman (2013) proposed what a SBM should look like focussing on a typology of SBM based on an extended application of the BM *canvas* by Osterwalder & Pigneur (2010). Instead of simply considering costs and revenues streams for the focal company, the extended BM canvas, consisting of thirteen components, proposes a triple-bottom-line approach in valuing performances including costs and benefits accrued to the environment and society. Other normative requirements for a BM to be considered sustainable are in the study by Boons & Lüdeke-Freund (2013). Specifically, they contended that in a SBM the value proposition should aim at creating simultaneously economic, social and environmental benefits and that the operating model should be informed by sustainable supply chain principles. Customers relationships have to be built to take into account the needs of consumers in different markets and costs and benefits accrued to the

environment and the society have to be considered as well (ibid). They also proposed that SBMs can result out of innovations on technological (BM to market clean technologies), social (creating social value) and organisational (cultural and paradigm shifts) aspects.

Building on the classification of SBMs suggested by Boons & Lüdeke-Freund (2013), Bocken et al. (2014 a) identified SBMs archetypes. The rationale of these authors' study is in the shortage of research categorising concepts and mechanisms of the corporate sustainability literature (e.g. shared value, product-service systems, sustainable supply chains, industrial symbiosis) under the theme of BMI. These authors have argued that such shortage of studies might hinder the understanding and application of sustainability-driven BMI at the research and practical levels whereas the categorisation or *archetypes* of SBMs they proposed would be very useful in the development of SBMs. Notably, they classified SBMs *archetypes* in three main groups according to their prevalent innovative feature which can be technological, social and organisational. The *technological archetype* comprises: *maximise material and energy efficiency*; *create value from waste; substitute with renewables and natural processes*. The *social archetype* comprises: *deliver functionality rather than ownership; adopt a stewardship role; encourage sufficiency*. Finally, the *organisational archetype* comprises: *repurpose for society/environment; develop scale up solutions*. Each *archetype* can be used on its own though the development of SBMs might require the simultaneous adoption of different archetypes (ibid).

More recently Bocken & Short (2016) have suggested that a SBM should aim at reducing consumption following from considering that efficiency improvements in processes and products alone are not an appropriate response to environmental sustainability. Sufficiency is thus proposed as a complementary approach in BM design which means that excess consumption could be tackled by providing more durable, high quality and repairable/reusable products (ibid).

The fragmentation of the studies concerned with SBMs is confirmed within the recently published (2015) special issue on *Business Models for*

Sustainability of the *Organization & Environment* journal. Within this issue, though lamenting a lack of agreement among scholars on a shared definition of a SBM, Schaltegger et al. (2015) argue that:

> a business model for sustainability helps describing, analyzing, managing, and communicating (i) a company's sustainable value proposition to its customers, and all other stakeholders, (ii) how it creates and delivers this value, (iii) and how it captures economic value while maintaining or regenerating natural, social, and economic capital beyond its organizational boundaries (p. 4).

Schaltegger et al. (2015) also suggest that although the purpose of a traditional business model is to exploit resources and capabilities to create value for customers and capture value back, the purpose of a SBM needs to be extended. Indeed, in line with the views of Bocken et al. (2013), Boons & Lüdeke-Freund (2013) and Stubbs & Cocklin (2008), they argue that a SBM should create value for a broader range of stakeholders, beyond customers and shareholders and including nature and society. The founding father of stakeholder theory, R. Edward Freeman, has defined stakeholders as "those groups and individuals who can affect or be affected" (Freeman, 1984, p. 25) by the activities of organisations. Customers, investors/shareholders, employees, suppliers, government, trade associations, political groups and communities are generally referred to as stakeholders (Donaldson & Preston, 1995). One of the main tenets of stakeholder theory is in postulating that the purpose of doing business should go beyond that of simply maximising short-term shareholders' wealth towards creating value for all stakeholders (Hörisch, Freeman, & Schaltegger, 2014). Stakeholder theory is one of the most prominent frameworks used in the study of corporate sustainability (Montiel & Delgado-Ceballos, 2014). Though it is very appropriate in the context of corporate sustainability because managers are demanded to confront interrelated economic, environmental and social issues at the same time (Hahn et al., 2014), this thesis does not adopt stakeholder theory in the context of circular BMs.

Figure 2.1 below evidences the categories of stakeholders for whom value might be created by a SBM (arrows are directed from the organisation to its stakeholders) and it is anchored to the SBMs literature that has emphasised that a SBM should create value for a broader set of stakeholders including

nature and society (Bocken et al., 2013; Boons & Lüdeke-Freund, 2013; Schaltegger et al., 2015; Stubbs & Cocklin, 2008). Figure 2.1 includes the 'environment' and 'environmentalists' as stakeholders reflecting both the view that argues that nature should be given the status of stakeholder (e.g. Driscoll & Starik, 2004; Starik, 1995; Waddock, 2011), and the position that nature should be represented through the interests and concerns expressed by other human stakeholders respectively (Freeman, Pierce & Dodd, 2000). Both views have developed within the stakeholder theory literature (Hörisch et al., 2014). The inclusive stakeholders' map represented below shares the same line of reasoning as Starik (1995) who has argued:

> rather than overly-restricting the number of natural environment stakeholders, the continued human-caused environmental deterioration of the planet appears to call for all organizations to consider as stakeholders as many natural environment entities as possible (…). Adding non-human natural environment stakeholders could make an organization's stakeholders' map more nearly complete for total environmental problem identification, analysis, evaluation and resolution (p. 212).

Consideration of the environment as a stakeholder is not new to the SBMs literature. For instance, Stubbs & Cocklin's (2008) study of two organisations, *Interface* and *Bendigo Bank,* points out that "Interface acknowledges nature as a stakeholder" (p. 116). On a similar line, Bocken et al. (2013) propose "a novel value mapping tool (…) to support sustainable business modelling, which introduces (…) four major stakeholder groups (environment, society, customer, and network actors)" (p. 482). In the development of this tool the authors argue that "environmental NGOs and environment can be merged without significant loss of details" (Bocken et al., 2013, p. 491), thus implicitly recognising that both categories may exist.

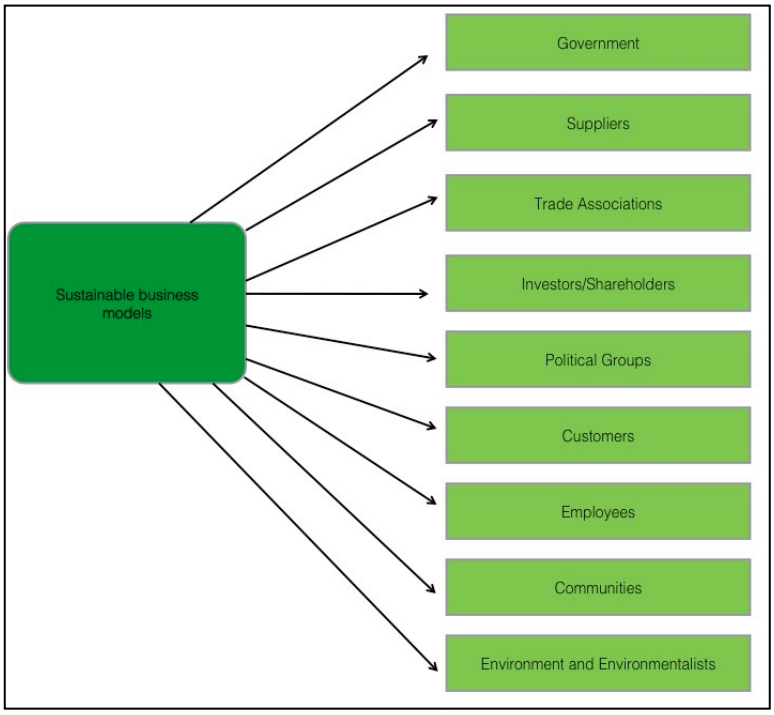

Figure 2.1: A stakeholders map
Source: The researcher and based on Donaldson & Preston (1995); Driscoll & Starik (2004); Starik, (1995) and in accordance with SBMs literature (e.g. Bocken et al., 2013; Stubbs & Cocklin, 2008)

As the literature on SMBs mainly focuses on environmental sustainability, it appears appropriate to highlight some of the contribution to the topic that is coming from this research stream. Sommer (2012) has concentrated specifically on green BMs. According to Sommer (2012) green BMs exhibit considerable environmental performances improvement through "resource efficiency, renewable inputs, low pollution, smart need satisfaction, and sufficiency" (p. 106) and create value by focusing on "cost, quality or reliability, innovativeness, design and style, health, ethics, and political support" (p. 106). By combining features to improve environmental performances and to capture value, the author suggests a green BMs categorisation to be considered not as an exhaustive list and with no clear cuts in some cases. Such categorisation displays, among others, BMs based on renewable inputs, reducing and/or preventing pollution and waste, servicising and performance-based models, socially relevant models (bottom-of-the-pyramid, fair trade, organic food). Beltramello et al. (2013) in a review of fifty-five case studies, identified eight types of green BMs classified as follows: *greener products/processes based business models; waste regeneration systems, alternative energy-based systems, efficiency optimisation by ICT, functional sales and management service models, innovative financing schemes, new*

sustainable mobility systems, industrial symbiosis, green neighbourhood and cities.

Despite the prevalence of studies with an environmental focus, the potential of new BMs to satisfy societal needs has been explored too (Seelos & Mair, 2007; Thompson & MacMillan, 2010; Yunus, Moingean, & Lehmann-Ortega, 2010). It was Hart & Milstein (1999) who suggested that to satisfy the needs of those living in deep poverty, companies had to rethink completely their BMs since simply shifting in these contexts existing BMs developed for the rich markets of the world would not have worked. Thompson & MacMillan (2010) and Seelos & Mair (2007) provided suggestions on how to bypass the difficulties associated with the development of BMs at the bottom-of-the-pyramid. Seelos & Mair (2007), in contrast with the prevailing view suggesting to adopt entirely new BMs, contended that a proper strategic approach would be, at least initially, to support with resources and capabilities the local bottom-of-the-pyramid BMs to facilitate the scaling up of these BMs. This approach would guarantee the establishment of trust with the supported local organisations and would be instrumental in the development of the subsequent stage of the penetration strategy. Partnerships with local organisations become fundamental when necessitating access to local resources and capabilities for the development of entirely new BMs aimed at wealthier customers with whom the core strategic competences and resources of the new entrants are more attuned. Yunus et al. (2010) proposed a framework for social BMI based on the experience of the *Grameen Bank*, the first micro-credit bank. According to Yunus et al. (2010) the main purpose of a social business model is to satisfy societal needs whilst guaranteeing fully payback of costs and capital through the provision of goods and services. They also argued that what distinguishes social BMI from common BMI is that value is created for all stakeholders including shareholders and that the profit generated is a social and not financial profit, entailing only full repayment of costs and investment.

In addition to academic studies, categories of SMBs have also emerged from industry-based reports. Clinton & Whisnant (2014) reviewed eighty-seven companies, identified twenty types of SBMs and grouped them under five categories. These were *environmental, social, financial, bottom-of-the-pyramid*

and *diverse impact* innovations. The models include: *closed-loop production, physical to virtual, produce on demand, rematerialisation* (Environmental innovation type); *buy one, give one, cooperative ownership, inclusive sourcing* (Social innovation type); *building marketplace, differential pricing, microfinance, micro-franchise* (Bottom-of-the-pyramid type); *crowdfunding, freemium, innovative product financing, pay for success, subscription model* (Financial innovation type); *alternative marketplace, behavior change, product as a service, shared resource* (Diverse impact type).

Table 2D below summarises the literature on SBMs analysed within this paragraph.

The Sustainable Business Model and Business Model Innovation for Sustainability	Sustainability-oriented BMI is defined as changes in the BM that create considerable positive outcomes for the environment and/or society or diminish notably negative impacts of business activities upon society and/or the environment (Bocken et al., 2014 a; Bocken et al., 2015).
	Structural and cultural traits of a SBM (Stubbs & Cocklin, 2008).
	Principles and components of a SBM (Wells, 2013).
	A SBM considers not only costs and reveneus streams for the focal company but also costs and benefits accrued to the environment and society (Sempels & Hoffman, 2013).
	Normative requirements of a SBM (Boons & Lüdeke-Freund, 2013).
	'Value' is created not just for customers and investors/shareholders but for a broader category of stakeholders (Bocken et al., 2013; Boons & Lüdeke-Freund, 2013; Schaltegger et al., 2015; Stubbs & Cocklin, 2008).
	SBMs archetypes classified in *technological, social and organisational* groupings (Bocken et al., 2014 a).
	Green BMs (Beltramello et al., 2013; Sommer, 2012).
	SBMs addressing the social dimension of corporate sustainability (Seelos & Mair, 2007; Thompson & MacMillan, 2010; Yunus et al., 2010).
	SBMs in the practitioner literature grouped under five categories, i.e. *environmental, social, financial, bottom of the pyramid and diverse impact* (Clinton & Whisnant, 2014).
Overall, academic research on SBMs is not well established yet, needing conceptual and empirical development. To date the literature on SBMs is quite fragmented too, it is mostly conceptual, it considers predominantly the environmental dimension of corporate sustainability and has not provided yet a shared definition of a SBM.	

Table 2D: Overview of the SBMs studies
Source: The researcher with content summarised from the SBMs literature

After having reviewed the literature on BMs and SBMs it is appropriate to put them in relation to the CE literature since the BM is a key theme in the CE thinking and BMI is considered a crucial constituent to achieving a CE. Nevertheless, despite acknowledgements that the transition towards a CE would require BMs transformation, (Aldersgate Group, 2012; McKinsey & EMF, 2012; Schulte, 2013; Sempels, 2013; Sempels & Hoffman, 2013) there is little understanding of circular business models in terms of concepts and categorisation, nor of the processes through which these business models emerge, are transformed and implemented within the academic literature (Diaz Lopez et al., 2014; Lewandowski, 2016; Planing, 2015; Roos, 2014). Overall, although an emerging research stream is focussing on the implementation of the CE in China, where the CE is by law an objective of the country's economic development policy (Mathews & Tan, 2011; Su et al., 2013), the CE "concept remains eclectic" (McKinsey et al., 2015, p. 23), its comprehension is fairly low and the forming of a common understanding would facilitate the scaling up of more circular business practices (Preston, 2012). However, the shortage of academic studies on the CE is paralleled by the emergence of related studies in the practitioner literature which identifies some elements and categories of circular BMs summarised in Table 2E.

Circular Business Models	
Categories/Elements	**Source**
▪ **Performance and usage based payments models** (e.g. leasing, hiring).	McKinsey & EMF (2012)
▪ **Usage-based service** (e.g. leasing or renting); ▪ **Result-based integrated solutions** (e.g. value proposition as a combination of products and services).	Sempels (2013)
▪ **Product-service systems**; ▪ **Dematerialised service**; ▪ **Hire and leasing**; ▪ **Collaborative consumption**; ▪ **Incentivised return and reuse**; ▪ **Asset management**; ▪ **Collection of used products**; ▪ **Long life**; ▪ **Made to order**; ▪ **Bring your own device**.	Innovative Business Models Map (WRAP e)
▪ **Incentivised returns** ▪ **Hire and Lease** (The 2 most popular REBMs)	Aldersgate Group (2015)
▪ **Circular supplies** (e.g. compostable or recyclable inputs to production processes); ▪ **Resource recovery** (e.g. material/energy recovery from disposed products); ▪ **Product life extension** (e.g. repairing and refurbishing); ▪ **Sharing platforms** (e.g. collaborative consumption); ▪ **Product as a service** (e.g. leasing rather than selling).	Accenture (2014)

Table 2E: Categories and elements of circular BMs
Source: The researcher with content summarised from the practitioner literature on the CE

Table 2F below includes a selection of case studies of companies that are implementing CE principles within their products and processes. These examples are derived from practitioner literature (e.g. Clinton & Whisnant, 2014; EMF, 2016; WRAP e).

Sectors	Case Studies
Built Environment	*Superuse Studios* applies a construction strategy based on the usage of waste materials. The reliance on internet-based applications, i.e. Google Earth, helps in the identification of waste stock in industrial areas so that materials and suitable locations for construction are easily identified.
Chemistry	*Aquafil* produces nylon yarn from post-industrial and post-consumer waste. Its products perform the same as nylon obtained from virgin oil.
Cross Sector	*Active Disassembly* designs products using materials that can be recovered and dismantled at the end of product life cycle in a non-destructive way.
Electronic and Electrical Equipment	*Bundles* offers its customers the service of having their clothes washed instead of selling washing machines. Fees are charged on a pay per wash basis. *Xerox* does not sell printers but rather printer services and its printers are designed so that at the end of their useful life they can be remanufactured.
Fabrics, Apparel, Carpet, Textiles	*Mud Jeans* allows its customers to lease instead of buying organic cotton jeans over the payment of a monthly fee. *Desso* has adopted Cradle-to-Cradle® principles in its production processes with the establishment of take back programmes for its carpets and products containing recyclable yarn that can be used over and over again without losing its quality. *Patagonia* designs sport clothing that last longer, is suitable for repair and recycling at the end of its useful life.
Fast Moving Consumer Goods	*Ecovative* produces packaging products from agricultural waste that are compostable at the end of their useful life and performs the same as packaging materials derived from synthetic sources. *Splosh* sells very innovative household cleaning products. They initially provide customers with a 'one-off starter box' which contains a range of bottles, each filled with a sachet of concentrated liquid that can be used to prepare detergents at home. Bottles can be used over time which contributes to reduce packaging waste and new sachets when needed are ordered and delivered by post.
Information and Technology	*FLOOW2* is a business-to-business asset sharing virtual platform where businesses can share equipments as well as skills.
Retail	*Rubies in the Rubble* collects surplus fruits and vegetables from supermarkets before they are discarded and convert them into chutneys.
Dematerialised services	*Spotify* sells and delivers music on-line.
Collaborative consumption	*Airbnb* enables home owners to rent spare bedrooms to travellers.
Machinery and Automotive	*Caterpillar* manufactures heavy machinery that is suitable for remanufacturing, repairing and upgrade.

Table 2F: Review of case studies applying CE principles
Source: The researcher with content summarised from Clinton & Whisnant (2014); EMF (2016); WRAP e

Within practitioner literature, ‘medium lived’ products (e.g. washing machines, mobile phones, light commercial vehicles) are examined more in-depth than ‘long lived’ products (e.g. buildings) and ‘short lived’ products (e.g. food, textiles) (McKinsey & EMF, 2012). This is the case because ‘medium lived’ products are considered as the “sweet-spot segment for circularity” (ibid, p. 36), which means that they offer the greatest opportunities for the application of CE principles since they are made of different components and thus are very suitable for refurbishment and disassembly (ibid).

Nevertheless, more recent studies (e.g. McKinsey et al., 2015) evidence that the European construction, mobility and food sectors are highly wasteful and thus that the application of CE principles within these sectors could lead to significant economic benefits, restorative business practices and reduced negative environmental externalities such as water, soil and air pollution. For instance, in the UK only, it is estimated that 15 million tonnes of food waste are produced annually mostly disposed into landfills (Downing, Priestly & Carr, 2015). Preventing food waste is one of the aims of a restorative and regenerative CE and it would have positive economic, environmental and social implications (e.g. reduced costs in the food supply chain, reduced GHGs emissions and better food security) (WRAP, 2015). However, the CE proposition differs from a linear economy with regard to how to dispose of unavoidable food waste. Notably, landfilling of agricultural waste is not contemplated but rather such waste is a) reused where possible (e.g. Ecovative example mentioned in the table above); b) used for the extraction of bio-chemical feedstocks (e.g. orange peels can be treated to obtain sugars and bio-ethanol) (Balu et al., 2012) and c) can be treated via anaerobic digestion (McKinsey & EMF, 2012). Anaerobic digestion is a natural process involving micro organisms such as bacteria, which in the absence of oxygen convert the organic waste into two different products (DECC & DEFRA, 2011). One of these is digestate, which is a fertiliser (ibid). The other one is biogas (a mixture of carbon dioxide and methane) which can be used in Combined Heat and Power (CHP) engines to produce both heat and electricity (ibid). Biogas can be also converted into bio-fuels or if cleaned can be injected in the gas grid (ibid). Anaerobic digestion is more environmentally friendly than disposing of food waste into landfill, as it avoids generation of further greenhouse gases

emissions, with additional benefits deriving from the production of renewable forms of energies and biological fertilisers (ibid). Soil degradation is one of the most serious environmental externalities deriving from food production, which also prevents soil from retaining carbon (McKinsey et al., 2015). Indeed, soil degradation is responsible for 10% of the European greenhouse gases emissions deriving from agriculture (ibid).

Within consumables, not only the food sector could benefit from the application of CE principles but also textiles whose major environmental impacts (e.g. energy use, use of toxic chemicals, water and soil pollution) (Allwood et al., 2006) could be mitigated. This would be achieved if a) their composition move from 'technical' nutrients to 'biological' nutrients so that at the end of their useful life can be used for a restorative purpose and b) reuse and usage across different loops are pursued before textiles are discarded into landfills (e.g. textiles can be used as filling for upholstery furniture) (McKinsey & EMF, 2012).

Opportunities for the scaling up of practices aligned with the CE principles also lie within the plastic industry which is very wasteful since 95% of plastic packaging is lost within the economy after its first use (WEF, EMF & McKinsey, 2016). This has not only negative economic implications but also environmental ones. Indeed, if no intervention is taken to reduce plastic waste, "there may be more plastic than fish in the ocean, by weight, by 2050" (ibid, p. 29). Plastic production has also a significant impact on GHGs emissions since it accounts for 6% of the global oil consumption and it may account for 20% of global oil consumption and 15% of the global annual carbon budget by 2050 in the case of a continuous growth in plastic usage (ibid). Therefore, opportunities exist within the plastic industry in general (not just plastic packaging) to reduce economic and environmental losses via increasing recycling and recovery of plastic materials which would then encourage uptake in the usage of secondary raw materials (ibid). Alternatives to oil-based plastics should be pursued too (ibid). The British economy could gain significant benefits from plastics recycling. The All-Party Parliamentary Sustainable Resource Group estimates that about 70% of plastics collected in the UK are sent abroad (China is receiving almost the 90% of the exported plastics) for reprocessing because of

the gap existing between collection and re-processing facilities (APSRG, 2013). They assess that “the amount of plastics collected is around four times greater than the volume of UK plastics reprocessing capacity” (APSRG, 2013, p. 29). Consequently, they argue that in the context of resource scarcity and resource price volatility, it would be appropriate to keep these waste streams within the UK to extract value from them domestically, thus contributing to a more resource resilient UK economy.

Finally, despite the fact that the tertiary sector could gain the most from the transition towards a CE, because of the services that need to be developed to support CE practices within the manufacturing sector (e.g. reverse logistics; financing of new BMs), and that service companies as buyer of products can be an important lever for the development of CE-oriented practices in the business context (McKinsey & EMF, 2012), services are not included in practitioner literature analyses. Therefore, there are significant opportunities to advance research in this area and to leverage on the service sector to develop more circular BMs within the business community. The importance of procurement and public procurement, for instance, is not overlooked in the recently released EC CE package (December 2015) which commits the European Commission to take action on green public procurement via revising or setting new standards that comply with CE principles so that innovation is catalysed across other sectors as well.

2.2.5 Part two summary

Part two has analysed the emerging practitioner literature on the CE while tracing back the origin of the concept in the management, industrial ecology and economic academic literature. It has also reviewed the BM literature whereby there is still a lack of agreement on a common definition of the BM concept, which makes any attempt to summarise or categorise the reviewed BMs concepts very difficult. Though the BM literature is quite fragmented with scholars not agreeing on what the BM refers to, it can be argued that the articulation of the BM concept around the core theme of ‘value’ suggested by several authors (e.g. Osterwalder & Pigneur, 2010; Richardson, 2008; Teece,

2010; Zott et al., 2011), is relevant academically and practically. As noted earlier, the academic literature on the BM and the business interest in the concept started developing in the 1990s with the advent of post-industrial and information and communication technologies that challenged management to find new ways of creating and capturing value in transforming competitive arenas. The rapidly changing socio-economic, regulatory, technological and environmental landscapes that businesses are now confronting are once again challenging value creation and capture. Therefore, placing the BM concept in relation to 'value', continues to be of interest to the business community. Academically, linking the BM to the creation of competitive advantage, is an opportunity to complement the strategic management field and its more established frameworks (e.g. resource-based-view of the firm). As noted earlier, the BM concept has received less attention compared to resources and capabilities within the management literature (Baden-Fuller & Morgan, 2010).

The literature discussed in part two also stressed that SBMs studies, mostly conceptual, are still in their early stages, needing conceptual and empirical development. The notion of 'value' is central to the SBMs literature too, which emphasises a broader perspective in the value creation (value created for a number of stakeholders including the natural environment) than that characterising a traditional BM (value created for customers and investors/shareholders) and that only a shift in the purpose of doing business and in the mechanisms of value creation can lead to a more environmentally and socially sustainable economy (Bocken et al., 2014 a; Roome & Louche, 2015; Stubbs & Cocklin, 2008).

Part two also evidenced that although the CE agenda is gaining momentum at the business and policy levels, the academic literature on the topic does little in terms of facilitating the understanding of the concept, its relation with BMs and how these BMs can be implemented. The reviewed practitioner studies identify some elements and categories of circular BMs and these suggest some overlapping themes with the broader SBMs literature of which circular BMs can be considered as a category. The CE is acknowledged a) within the *Create value from waste* archetype (Bocken et al., 2014 a); b) *product-service systems* and *circular value systems* are considered as

components of a SBM (Wells, 2013) and c) Boons & Lüdeke-Freund (2013) suggest that a normative requirement of a SBM is the establishment of an operating model informed by sustainable supply chain management criteria, which are clearly attuned to the underlying principles of an economy in loops characterising the CE proposition. However, it would appear that a conceptualisation of the circular BM providing a clear articulation of what a circular BM looks like is still missing from the literature on SBMs and from the practitioner literature on the CE. Hence, this thesis seeks to make a contribution to the literature on SBMs by answering to the following question:

1st RQ: *How can circular business models be conceptualised?*

Likewise Stubbs & Cocklin's (2008) study, which is considered as one of the first attempts to conceptualise a SBM (Upward & Jones, 2015), this study could be considered as one of the first attempts to conceptualise BMs for a CE given the little academic evidence existing on the topic to date (Diaz Lopez et al., 2014; Lewandowski, 2016; Planing, 2015; Roos, 2014). The resulting conceptualisation of BMs for a circular economy is neither a typology (purely theoretically driven) nor a taxonomy (purely empirically driven) but can be considered closer to Weber's 'ideal type' (Weber, 1904), which according to Baden-Fuller & Morgan (2010) represents a construct sitting between the two. This means that the resulting conceptualisation of circular BMs is derived from both evidence emerging from the data, and themes from the BM, the CE and the SBMs literature. Notably, it is believed that Richardson's (2008) BM framework centred on 'value' (value proposition, value creation and delivery, value capture) is useful to articulate the characteristics of the investigated BMs from which it will follow a conceptualisation of circular BMs built on 'value', the key theme in the BM, CE and SBMs literature. Specifying which definition of BM is used in this study is important to develop and to add clarity to the BM literature as it appears that studies employing the BM concept do not specifically address its definition (Zott et al., 2011) which, according to the authors, might hinder the understanding of what the studied BM is referring to. In addition to Richardson's (2008) model, propaedeutic to the articulation and then conceptualisation of the circular BM will be the use of both the ReSOLVE framework (McKinsey et al., 2015), and the SBMs archetypes (Bocken et al.,

2014 a). The choice of these two frameworks is justified by the following reasons: a) the ReSOLVE framework groups under one umbrella a set of measures (*Regenerate, Share, Optimise, Loop, Virtualise, Exchange*) that can be implemented to align business practices with CE principles and it is thus a useful tool to describe how the activities of the organisations investigated fit with the CE proposition; b) the SBMs archetypes offer additional elements to reflect on the process of value creation within the organisations investigated as they are useful in unveiling additional initiatives that are not mentioned in the ReSOLVE framework. Figure 2.2 below summarises the frameworks that are used for the conceptualisation of the investigated circular BMs within the empirical chapters.

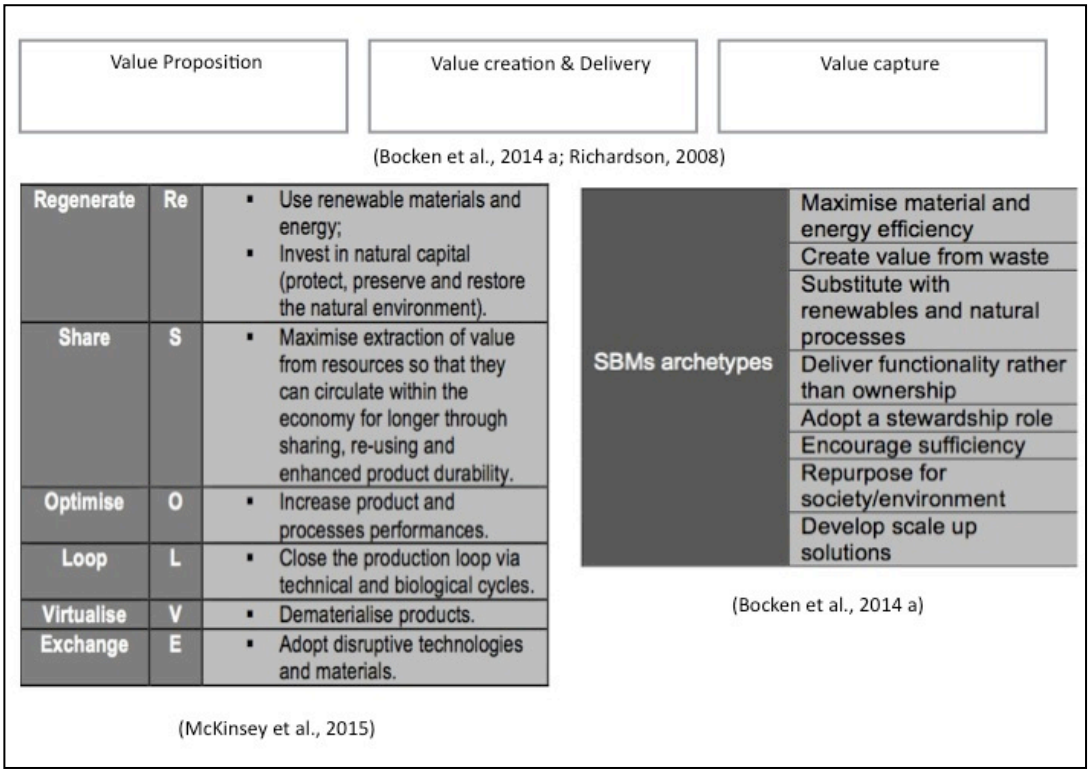

Figure 2.2: Frameworks used for the conceptualisation of circular BMs
Source: The researcher with content summarised from the BM, the CE and the SBMs literature

The first research question recalled from chapter one in this second part of the literature review chapter is complemented by a second research question. The latter is recalled in the following third and final part of this literature review chapter which also presents the conceptual framework used to answer to the second research question.

Part three
Organisational and Institutional Theories in the Study of Corporate Environmental Sustainability

2.3.1 Introduction

Part two of this chapter has evidenced that BMI is a crucial constituent in the achievement of a CE and that there are opportunities to advance the rather limited academic development of the literature at the intersection between the CE and BMs. Part three complements the discussion developed in part two by recalling the second and final research question and by presenting the conceptual framework that is used to answer to this question. Given the limited adoption of SBMs in the business community (Laukkanen & Patala, 2014) and the importance of BMI for a transition to a CE and thus to a more environmentally sustainable economy, it is urged to understand what explains the emergence and development of circular BMs. Hence, the second research question is framed as follows:

2nd RQ: *How can the emergence and development of circular business models be understood?*

The choice of the conceptual framework comprising the natural-resource-based view of the firm (Hart, 1995) and the neo-institutional theory (Di Maggio & Powell, 1983) can be justified by many reasons. Not only is it the case that opportunities exist to advance those theories (Delmas & Toffel, 2012; Hart & Dowell, 2011; Menguc, Auh, & Ozanne, 2010) but also that it is likely that multiple influences drive the emergence and development of BMs for a CE, including organisational and institutional ones. Indeed, it is argued that "no single intervention on its own will create the tipping point for a circular economy. It is a systems problem that needs a systems solution" (Green Alliance, 2013, p. 28) and that more resource efficient modes of production can only be attained through a combination of innovative efforts that span organisational boundaries (Machiba, 2010).

Part three starts from the organisational level by reviewing studies linking corporate sustainability to internally developed resources and capabilities,

particularly those applying the natural-resource-based view of the firm (Hart, 1995). Internally developed resources and capabilities are believed to be conducive to the development of BMs for a CE: key companies resources are involved in the value creation and delivery mechanisms (Osterwalder & Pigneur, 2010) and the value proposition itself reflects the bundle of resources and capabilities exploited to create value (Amit & Zott, 2001). Secondly, part three introduces institutions and institutional theories and within the latter the neo-institutional theory (Di Maggio & Powell, 1983) before turning to the business and natural environment studies that have employed an institutional lens to explain corporate environmentalism. The last section evidences how the SBMs literature discusses institutions and highlights the relevance of the latter for the emergence and development of circular BMs. Then conceptual and graphical representations of the institutional influences unfolding within the UK context with regard to the CE are presented.

2.3.2 The organisational level

In part two of this chapter it was argued that the search for new ways to achieve and sustain competitive advantage in the changing natural, socio-economic, technological and regulatory contexts is increasing the attractiveness of the CE and within this of new BMs. Understanding the determinants of a company competitive advantage and how to sustain it over time, is the focus of the strategic management field (Barney, 1991) and one of its most influential theories is the resource-based-view (RBV hereafter) of the firm (Barney, 1991; Wernerfelt, 1984). Before moving to the RBV of the firm, it is worth stressing that this paragraph focuses more specifically on the strategic management literature that has given consideration to the natural environment in the attainment of a sustained competitive advantage through the natural-resource-based-view of the firm (Hart, 1995).

The RBV of the firm, with its focus on a company internal environment, has represented an interesting turn in the literature concerned with an understanding of the sources of a sustained competitive advantage. Indeed, it is in contrast with the field of industrial organisation (Bain, 1968) of the 1950s and

1960s, which, on the other hand, stressed the importance of a company external environment (industry structure) in determining its strategies and performances, through the so-called structure-conduct-performance paradigm. Building on Bain's framework, Porter (1979) defined the factors that determine an industry structure, namely the negotiating power of suppliers and consumers, the threat of new entrants and of alternative products and the competition among existing incumbents. He also suggested that to establish their competitive positions within the industry, companies could adopt cost leadership, differentiation and focus strategies (Porter, 1980).

Prominence to the role of resources began with the seminal contribution of Penrose (1959) who saw companies as set of resources in contrast with other theories viewing companies as set of contracts or transactions (Demil & Lecocq, 2010). However, it is argued that resource-based theories developed properly since the 1980s (Barney, Ketchen Jr, & Wright, 2011) thanks to many influential contributions. Among the latter, Wernerfelt (1984) introduced the RBV term and pretty much in line with the work of Penrose (1959), suggested to see firms as a set of resources rather than in terms of its products and linked resources to a company competitive positioning.

Barney (1991) specified the conditions under which companies resources are a source of a sustained competitive advantage, through the so-called VRIS framework. The latter represents a landmark in resource-based literature as demonstrated by the fact that subsequent studies have either applied this framework or extended it (Priem & Butler, 2001). Barney posited that resources must be rare, inimitable, non-substitutable and a source of value (together these characteristics form the VRIS acronym). Valuable resources are those that allow either, exploiting an external opportunity drawing upon internal strengths, or neutralising internal weaknesses and threats coming from the company macro environment (Barney, 1991). Rare resources are considered as firm specific, thus coming from a combination of factors that are peculiar to a given company (ibid). Inimitable resources are those that cannot be easily replicated by competitors (ibid). It is then argued that resources are inimitable because they can be tacit, casually ambiguous or socially complex. Tacit resources are those based on skills and experience accumulated through

hands on practice. They are invisible to the outside, thus difficult to imitate. Casual ambiguity can make resources inimitable because in this case it is not clear to external competitors how company resources are linked to its competitive advantage. Socially complex resources derive from the interaction between the different components of an organisation engaged in actions for the delivery of the companies objectives. Such resources are once again inimitable because a competitor might find it difficult to understand how such interaction takes place and the many forms through which a company might organise itself to exploit opportunities and strengths while neutralising weaknesses and threats. Finally, it is proposed that non-substitutable resources are those that cannot be replaced with substitutes by competitors. The underlying assumptions, as opposed to that of industrial organisation, in this model are: firms' heterogeneity with regard to the resources they control and no perfect mobility of resources across firms (ibid). The latter explains why firms heterogeneity can be enduring (ibid).

The RBV of the firm has been object of considerable attention in the field of the strategic management literature. Amit & Schoemaker (1993) developed the concept of capabilities, defined as company competences in taking advantage from its resources including physical assets and human capital among other things. Subsequent studies have questioned the applicability of this theory in more complex competitive environments since it seems to be suitable to explain the process through which companies acquire and sustain competitive advantage only in relatively stable competitive arenas (Teece, Pisano, & Schuen, 1997). To compete in the former, the authors suggested to develop *dynamic capabilities* defined as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (p. 516). A useful definition of hyper-competitive environments is provided by Wirtz, Mathieu, & Schilke (2007) who contended that these environments are characterised by "rapid, discontinuous and simultaneous change in demand, competitors, technology and regulation" (p. 297). Others (e.g. Maurer, Bansal, & Crossan, 2011; Oliver, 1997) argued that resource-based theories have failed to take into account how the broader institutional environment affects firms heterogeneity and consequently suggested an integrated perspective which acknowledges that both the internal and the

external environments influence the achievement of a sustained competitive advantage.

To consider how the resource-based theories have relevance for corporate environmental sustainability, the natural-resource-based-view (NRBV hereafter) of the firm developed by Hart (1995) is pertinent. Hart (1995) contended that in managing their interface with the natural environment (confronting opportunities and challenges) companies develop new capabilities, thus enhancing their competitiveness. More specifically, *pollution prevention, product stewardship* and *sustainable development* are the new organisational capabilities/strategies that underpin the achievement of a sustained competitive advantage (ibid). For instance, *pollution prevention*, which focuses on the manufacturing stage of a product life cycle, can lead to reduced costs because of enhanced resources productivity, reduced waste and lower compliance costs (ibid). Meanwhile, *product stewardship* seeks to minimise environmental pollution along the entire product life cycle (ibid). Through life cycle assessment and design for the environment a better appraisal of the product ecological impact is achieved and new green product development stimulated (ibid). In this case, the source of competitive advantage is not reduced costs but, according to Hart (1995), "competitive pre-emption" (p. 994), which equals to gaining access to scarce resources or setting new industry standards. Finally, a *sustainable development* strategy is concerned with addressing both environmental and social issues at the same time, which implies producing in a way that goes beyond minimising pollution towards doing no harm at all and producing affordable products for those in the less developed parts of the world (ibid). Competitive advantage in this case is built through innovation and new market spaces (ibid).

The NRBV of the firm has received particular attention in the literature with respect to the capability of pollution prevention (Amores Salvadó et al., 2012; Hart & Dowell, 2011). Hart & Dowell (2011) noted that both the influence of management cognitive frames and organisational capabilities have been studied to explain how firms achieve competitive advantage through pollution prevention strategies. For instance, Russo & Fouts (1997), empirically testing the capability of pollution prevention and its link with profitability, suggested that

the former is leading to better profitability than pollution reduction because of the significant change in the resource base that the implementation of a pollution prevention strategy is going to produce, with industry growth as a moderator of the relationship between environmental and financial performances, such that there are better returns in high-growth industries. Christmann (2000) emphasised the role of resource heterogeneity in determining different competitive outcomes when pursuing cost advantages from environmental strategies. She contended that advantages in pollution prevention strategies are likely to occur when companies develop complementary assets, a concept introduced by Teece (1986). In exploring the link between innovation and profitability, Teece contended that profiting out of product/process innovation is more likely to occur when the latter is coupled with complementary assets such as resources and capabilities that allow to take advantage from innovative products and processes (e.g. the successful commercialisation of a new drug demands that the public is well informed so the use of information channels is crucial). The impact that organisational context and managerial perceptions of environmental issues can have on corporate environmental behaviour was studied by Sharma (2000). He found that environmental problems could be considered as either threat or opportunity with a more environmentally proactive strategy (from pollution prevention to natural environment restoration) more likely implemented if environmental concerns are considered as an opportunity. This is more probable when natural environment protection is part of organisations core values. Menguc & Ozanne (2005) empirically validated the existence of a positive link between propensity to proactive green innovation/commitment to the natural environment and financial performances, and more recently Eccles, Ioannou, & Serafeim's (2014) study confirmed that positive link. However, further studies are needed particularly to understand the antecedents of the positive relationship between pollution prevention and better financial performances, e.g. what is the bundle of key resources that lead to this positive link and how these resources emerge in the first place (Hart & Dowell, 2011).

Product stewardship strategies are less investigated in the literature although some developments are emerging from the operations management and marketing fields (Hart & Dowell, 2011). However, in one of the few studies

addressing this Hart's (1995) proposition, there is empirical evidence that capabilities in stakeholders' integration are relevant among firms implementing product stewardship strategies and that a positive link between these strategies and competitive advantage exists (Sharma & Vredenburg, 1998). The importance of stakeholders' integration for product stewardship strategies is confirmed in more recent studies testing NRBV propositions (Amores Salvadó et al., 2012; Fowler & Hope, 2007). Generally, the academic literature has devoted a certain attention to the link between the capability of stakeholders' integration and the development of an environmentally proactive strategy (Delgado-Ceballos et al., 2012). Various studies have found that when management gives consideration to stakeholders' pressures, this results in more environmentally proactive strategies (e.g. Buysse & Verbeke, 2003; Henriques & Sadorsky, 1999; Murillo-Luna, Garcés-Ayerbe, & Riviera-Torres, 2008; Sharma & Henriques, 2005).

Finally, the sustainable development capability is divided in Hart's subsequent works (e.g. Hart, 1997; Hart & Milstein,1999; Hart & Milstein, 2003) into two different strategies such as *clean technologies* and *bottom-of-the-pyramid* (BoP). Nevertheless, little has emerged with regard to both categories so far (Hart & Dowell, 2011).

Despite the fact that the NRBV of the firm represents one of the "most prominent spin-off perspectives" originated from resource-based theories (Barney et al., 2011, p. 1303) and that its content has become even more relevant today in the light of the so evident ecological crisis (Hart & Dowell, 2011), in this thesis it is argued that there is a notable omission in its original formulation and subsequent conceptualisations. Particularly, there appears to be no direct acknowledgement of the potential of BMI for creating sustainable competitive advantage, a means that is not explicitly addressed in Hart's works. It is noted that Hart made this important point:

> sustainable economies and sustainable corporations (…) cannot be based on continuing growth in the consumption of non-renewable energy and virgin raw materials. Nor can they create hazardous waste and polluting emissions. Environmental sustainability requires the complete redesign of organizations and strategies (Shrivastava & Hart, 1995, p. 157).

Although from this statement it can be inferred that 'the complete redesign of organizations' would involve BMs as well, the authors do not explicitly mention BMs. Subsequently, Hart (1997) suggested a divide of corporate environmental strategies into *greening* strategies (pollution prevention and product stewardship) and *beyond greening* strategies (clean technologies and BoP) but again any discussion of the implications of these strategies for BMs is missing. In another study, Hart & Milstein (1999) identified sustainability as a new source of *creative destruction* in the business environment and proposed different corporate strategies to gain advantage. Whereas in a consumer economy (developed economy) companies must find ways to reduce their ecological burden and in emerging economies companies have to provide goods and services to new consumers without exacerbating the ecological health of the planet, in the survival economy (the BoP) strategies are needed that enable to meet those basic needs. Yet in explaining how to implement these three strategies there is no direct mention of BMI except that in addressing the needs of those at the BoP it is argued that "simply transplanting business models from the consumer or even the emerging economy will not work" (p. 29). Arguably, consideration of a change in BMs is presented implicitly in another part of the paper where they maintained that:

> in the long run, however, the dynamics of creative destruction will work against firms that rely only on incremental improvements and fail to change the fundamental manner in which they provide products, processes, and services (p. 24).

This thesis criticism of a lack of proper consideration of BMI for sustainable value creation in the NRBV and its subsequent developments is shared by Lüdeke-Freund (2009) who, in commenting the Hart & Milstein's (1999) study, has argued:

> Hart and Milstein primarily refer to business strategy in the contexts of continuous improvement ("greening") and creative destruction ("global sustainability"); nevertheless, implications for the business model level are evidently given but not directly addressed by the authors (p. 30).

The original conceptualisation of the NRBV strategies is also articulated in another study (e.g. Hart & Milstein, 2003). The study focused on creating "sustainable value" (p. 65) and it showed how the pursuit of pollution prevention, product stewardship, clean technologies and BoP strategies enhance shareholders' returns in addition to contributing to the sustainability

challenges. Unfortunately, no implications for companies BMs are contemplated in this study too. Acknowledgement of BMI at the BoP is confirmed in a more recent work (e.g. Hart, 2010) where again it is contended that in these new markets it is not possible to use practices developed elsewhere but rather to engage with local players to co-create new solutions that are suited to the new business context: "a more inclusive commerce thus requires innovation not just in technology, but also in business models, business processes, and mental frames" (p. 42). Implicit consideration of BMI is also given in the author's definition of a sustainable development strategy:

> a sustainable development strategy does not merely seek to do less environmental damage but, rather, to actually produce in a way that can be maintained indefinitely into the future (Hart & Dowell, 2011, p. 1466).

Such a statement, although referring to clean technologies, implies modification of a company operating model which is one of the components of a BM as evidenced in part two of this chapter. Finally, when attempting to define the 'third generation' or 'sustainable corporation' (Hart, 2012), the role of BMI is not fully acknowledged. Hart has again focussed on clean technologies and BoP strategies to advance the corporate sustainability agenda, recognising that only for BoP strategies new BMs based on distributed rather than centralised solutions (e.g. small scale, localised projects that lead to affordable products and services) are needed. Apart from some direct considerations of BMI for BoP strategies, sustainability-driven BMI is not adequately addressed in the NRBV and its subsequent conceptualisations. In most cases, it is only possible to infer from what the author calls 'transformations of organizations/strategies' or of the *'fundamental manner* in which companies provide product, processes and services' that these involve BMs as well. In these cases, however, the BM concept can be mistakenly blurred with that of strategy whereas the two concepts are related but distinct as explained earlier.

Overall, it seems pertinent to assert that a proper recognition of BMI for sustainability within the NRBV of the firm is required. Notably, circular BMs sit well within that framework because of the rationale of both the NRBV of the firm and the CE. Hart (1995) argued that in a natural resource constrained world managing the interface with the natural environment is crucial for building and sustaining competitive advantage and this is very relevant today, twenty years

after, in the light of the exacerbated ecological crisis. The CE, which aims to reintegrate the economic system within the ecological one (McKinsey et al., 2015), does not contrast with the assumptions of the NRBV of the firm and circular BMs are an opportunity to advance that framework and to enable companies achieving a sustained and sustainable competitive advantage.

To sum up on the organisational level of this thesis analysis, companies resources will be considered in the empirical chapters as one of the many levers influencing the emergence and development of circular BMs. The empirical chapters will seek to understand how circular BMs provide opportunities for value capture and what are the organisational resources that are critical to value creation and delivery. This process is instrumental to strengthen the argument posed above, specifically that circular BMs can expand the range of strategies that Hart (1995) was suggesting as sources of sustainable and sustained competitive advantage in his NRBV of the firm and that were identified in pollution prevention, product stewardship and sustainable development.

2.3.3 The meso level: an institutional perspective

Corporate environmentalism is analysed not only from a resource perspective but also from an institutional one in the business and natural environment literature (Delmas & Toffel, 2012; Hahn et al., 2015; Hahn & Lülfs, 2014) and the argument raised by Bazerman & Hoffman (1999) is very pertinent to explain the relevance of the institutional perspective in the study of corporate environmental sustainability. They highlighted that although human activities are the direct causes of ecological problems, it is institutions (rules, norms and beliefs) that guide those activities in the first place. Though the NRBV of the firm takes a resource perspective, it was Hart (1995) that raised the important point that the institutional context can act as a driver of proactive environmental strategies. While acknowledging that the opportunities and challenges deriving from finite natural resources can push companies towards the development of new internally developed capabilities, Hart (1995) argued that to achieve a sustained competitive advantage companies cannot ignore issues of legitimacy

and reputation. Understanding the role of institutions in corporate sustainability requires dealing first with the meaning of institutions on the one hand, and on the other hand with how institutions affect choices at the individual level. These themes are now explored in the following paragraph.

2.3.3.1 Institutions and institutional theories

Vatn (2005) suggested that there are two main orientations in the literature that puts in relation institutions with behaviour, the "individualist" and the "social constructivist" ones (p. 25). In the former Vatn considered that individuals' choices are driven by maximisation of utility only; their preferences are given and therefore independent from the institutions. In this perspective, the role of institutions is to establish the constraints within which choices can be made, reducing uncertainty and the transaction costs faced by individuals satisfying their personal needs. This view is adopted by new institutional economics in which institutions are explained in the light of neo-classical economics (Granovetter, 1985). In this field, seminal contributions are those of Coase (1960) on property rights, North (1990) on transaction costs and Williamson (1985) on bounded rationality. Within this research tradition, the Nobel Prize winning economist, Douglass North (1990) defined institutions as "the rules of the game in a society or, more formally, (…) the humanly devised constraints that shape human interaction" (p. 3). He proposed that institutions can be divided into two categories: formal (laws, regulations and rules) and informal (norms, cultures and ethics).

In contrast, the social constructivist approach has contended that individuals' preferences and choices are shaped and influenced by the society (Vatn, 2005). The following quote explains clearly such a view:

> the general use of given preference functions to model individuals is rejected by institutionalists [under this perspective]. Individuals interact to form institutions, while individual purposes or preferences also are molded by socio-economic conditions. The individual is both a producer and a product of her circumstances (Hodgson, 1998, p. 177).

Most sociologists and classical institutional economics have shared this perspective (ibid). For instance, the sociologist Scott (1995) classified

institutions as “cognitive, normative, and regulative structures and activities that provide stability and meaning to social behavior” (p. 33). Regulative institutions take the form of regulations (ibid); the normative level contains an evaluative dimension (Scott, 2008 a), which means it takes the form of values and norms reflecting what is generally perceived as an appropriate conduct (Doh et al., 2010); the cognitive level represents the “shared conceptions that constitute the nature of social reality and the frames through which meaning is made” (Scott, 2008 a, p. 57). The divide between the individualist and social constructivist perspectives in explaining behaviour and institutions has also been framed in terms of methodological individualism versus methodological holism (Mantzavinos, 2011) as well as in terms of under/over socialised view of individual choices in relation to the wider society (Granovetter, 1985).

Relevant to an institutional analysis is an understanding of the process through which institutions emerge and change over time. According to methodological individualism, which is a prominent approach in the study of institutions (Mantzavinos, 2011), institutions emerge because they serve as a means to solve social problems and reduce the uncertainty associated with environmental complexity (ibid). Social problems, situations where the outcome of one’s actions depend on the strategies of other agents, are likely to arise in the pursuit of maximisation of individuals’ utility (Mantzavinos, 2001). Secondly, institutions emerge because of individuals’ limited cognitive ability (ibid) and thus to facilitate cognitive processes as the next quote illustrates:

> because of the perceived complexity of the social environment, people adopt –consciuosly or unconsciously – rules as solutions to social problems rather than deciding each time anew how to act and react to the settings where coordination with other individuals is needed (ibid, p. 87).

Only if a new problem arises, do individuals look for a different solution (ibid). There are different processes that lead to the emergence of formal and informal institutions. Whereas formal institutions are externally dictated on society, informal institutions arise as a by-product of the decision of free individuals (Mantzavinos, North, & Shariq, 2004). The cognitive aspect aids in the explanation of institutional change as well. Accordingly, because of reduced cognitive capability, individuals have an interest in perpetrating the available institutional framework, which leads to institutional path dependence

(Mantzavinos, 2011).The latter refers to the fact that “once an institutional mix has been established, then there are increasing returns since agents adapt to their social environment, according to the prevailing institutional framework, at decreasing individual costs (adaptive efficiency)” (p. 407). Institutional path dependence results also from resistance to change by organisations whose survival is dependent upon the endurance of the prevailing institutional framework (ibid).

New Institutional Economics has given prominence to the role of institutions in determining economic performances in contrast with neo-classical economics focussing only on accumulation of capital and technological advancement (Mantzavinos, 2011). Mantzavinos (2011) has contended that institutions determine the incentive framework which in turn affects the economic agents conduct, thus ultimately determining economic outcomes. To this extent, studies (e.g. Acemoglu & Robinson, 2012) have highlighted that political and economic institutions are responsible for the creation of prosperity. Mantzavinos (2011) has also argued that informal institutions too matter for economic development though the research in this area has not well developed so far. Overall, cognitive, institutional and economic processes are tightly linked: “cognitive and institutional path dependence will ultimately lead to economic path dependence” (Mantzavinos et al., 2004, p. 81). This is argued also by McCloskey (2010) who contends that changes in rhetoric and beliefs are relevant in the explaining of innovation and economic growth. The linkage existing between institutional and economic processes is further explained by Mantzavinos. Within neo institutional economics, institutions are seen as the “rules of the game (…) that shape human interaction” (North, 1990, p. 3). The latter can manifest itself in two forms: markets and organisations (Mantzavinos, 2001). Markets arise out of the spontaneous interactions of agents, whereas organisations are constituted by individuals who voluntarily decide to share their resources for a common purpose (ibid). The stability of the institutional framework over time determines how the market process evolves: institutions serve as selection mechanism for markets (ibid).

The strategy literature also has given consideration to institutions via the institution-based-view (IBV) of the firm (Peng, 2002). The latter has risen for two

reasons (Peng et al., 2009). Firstly, as a result of the new institutionalism movement in the social sciences developed in the last three decades documented above, and secondly because of the lack of consideration of the wider context in influencing corporate strategies in both the RBV of the firm (Barney, 1991) and the industrial organisation economics (Bain, 1968; Porter, 1979). The IBV of the firm suggests that not only industry structure and internally developed resources and capabilities but also formal and informal institutions influence corporate strategies (Peng, 2002).

Interest in institutions has also developed within the organisational studies literature. In the latter, the 'old' and 'new' institutional theories have emerged, both concerned with an understanding of the reasons behind structural and organisational change (Scott, 2008 b). Whereas the old institutional theory (Michels, 1962; Selznick, 1957) has posited that it is a company internal environment such as values, culture and power structures that determines organisational structural change, the new institutional theory (Di Maggio & Powell, 1983; Meyer & Rowan, 1977; Oliver, 1991) has given more prominence to the influence exerted by the wider institutional environment and sees organisations as embedded within the former. The new institutional theory, "one of the most important developments in the understanding of organizations" (Beckert, 1999, p. 777), has then unfolded into three different approaches (Hasse & Krücken, 2008). The macro perspective (Meyer & Rowan, 1977) has contended that organisations are affected by global social and cultural influences (Hasse & Krücken, 2008); the meso perspective (Di Maggio & Powell, 1983) while concurring with the macro-sociological one on seeing organisational action as mediated and shaped by the institutional environment, has delimited the influences to those coming from the 'organisational field' (organisations are shaped by other organisations in the field); the institutional entrepreneurship perspective (Oliver, 1991) has introduced agency within institutional approaches via positing that organisations can respond to institutional pressures in different ways and not only through conformity (Boxenbaum & Jonsson, 2008), thus overcoming one of the criticisms that neo-institutional theory has received. While the macro and meso perspectives explain diffusion, meaning that they explain how organisational forms and practices are replicated within organisational fields with an emphasis on

homogeneity and convergence, the institutional entrepreneurship approach accounts for heterogeneity and variation, namely divergent organisational change (D'Aunno, Succi, & Alexander, 2000; Hasse & Krücken, 2008). The latter approach has brought more dynamism in the study of institutional contexts as agency and rational decision making combine with institutional pressures to explain corporate actions (Hasse & Krücken, 2008).

In their seminal article, Di Maggio & Powell (1983) explained the process through which organisations might conform to their organisational fields, thus becoming more and more similar and conformity stems from *coercive, normative* and *mimetic* pressures. The authors defined the organisational field as follows:

> those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produces similar services or products (ibid, p. 148).

Organisational fields vary in relation to the composition of the field itself and to the power of these components (D'Aunno et al., 2000). The high level of organisations interaction, information load, existence of coalitions and networks and awareness of being part of the field denote the existence of a field structure (Di Maggio & Powell, 1983). Coercive influences arise from regulatory bodies (state agencies) and public opinion (ibid). Normative pressures stem from what is considered as an appropriate conduct (ibid). They originate from organisations like universities, consulting firms and professional networks which try to define what is the norm such as the appropriate organisational and professional conduct (ibid). Finally, mimetic influences develop under conditions of uncertainty whereby it becomes common to imitate successful strategies implemented by other organisations (ibid). Overall these pressures lead to organisational "homogeneity in structure, culture and output" (ibid, p. 147) and "the concept that best captures the process of homogenization is isomorphism" (ibid, p. 149). Conformity to institutional pressures increases legitimacy, thus favouring a company "ability to mobilize cultural support and resources for the organization" (Oliver, 1991, p. 174).

Scott (1995) contributed to define an organisational field such as "a community of organizations that partakes of a common meaning system and whose participants interact more frequently and fatefully with one another than with actors outside the field" (p. 56). In his view the field incorporates any actor exerting regulatory, normative or cognitive influences upon organisations. Overall, within fields, agency is structured by the forces populating the fields: relational ties, the prevailing institutional form and beliefs systems (Beckert, 2010). As a consequence, "a local order emerges where actors develop mutual expectations with regard to each other's behavior" (ibid, p. 609). The predominant view of how fields form in the institutional theory see the former as materialising around common products, markets or technologies (Hoffman, 1999). However, Hoffman (1999) contested this view, suggesting that fields form "around the issues that become important to the interests and objectives of a specific collective of organizations" (p. 352). His field definition leads to a more dynamic understanding of the organisational field as opposed to the prevalent view of stability propounded by institutional studies (ibid). Indeed, it is the field dynamic interaction between its constituencies that determines how the issue is framed and how institutional pressure is formalised (ibid).

The institutional entrepreneurship perspective (e.g. Oliver, 1991) proposed a completely different view of the relationships between organisations and institutional pressures, particularly one that gives relevance to the role of agency in the context of institutional analysis. Oliver (1991) suggested that conformity is just one of the responses to institutional pressures and that *compromise* (negotiation with the institutional environment)*, avoidance* (claims to adapt but in reality this is not the case, e.g. *window dressing), defiance* (rejection of the pressure), and *manipulation* (attempt to change or influence the source of pressure) are also possible. An understanding and evaluation of "why these pressures are being exerted, who is exerting them, what these pressures are, how or by what means they are exerted, and where they occur", determine the response to the institutional pressure (ibid, p. 159). For instance, when either social legitimacy or economic efficiency deriving from conformity is expected to be high, then conformity is very likely to occur (ibid). The work on institutional entrepreneurship, which Oliver (1991) has contributed to, is a significant turn in the institutional theory. More recently a further development of

this research stream has given rise to the 'institutional work' which analyses actors' involvement in the persistence and change of institutions over time (Hwang & Colyvas, 2011). Although the institutional entrepreneurship has contributed to overcome some of the institutional theory weaknesses, such as its over-socialised depiction of organisations, it is argued that clarification is still needed to understand how the relationship between structure and agency shapes organisations' activities (Beckert, 1999). Particularly, the following question is asked: "why do institutionalized rules play such an important role in organizations, despite the fact that actors try to act on the basis of their perceived interests?" (ibid, p. 779). Beckert (1999) has offered an anwer to this question by suggesting that institutions play an important role in reducing complexity and uncertainty in the environment and that only under these ameliorated environmental conditions strategic agency can be exerted. However, institutions might pose constraints as well on corporate decision making (ibid). Thus, they could be challenged if more positive economic outcomes are possible out of alternative institutional settings; such a stance towards the institutional settings is more likely to emerge when the level of complexity and uncertainty is so low that field members do not fear experimentation (ibid).

2.3.3.2 Institutional influences on corporate sustainability

Neo-institutional organisation theory has been applied to explain corporate environmentalism too (Lounsbury, Fairclough, & Lee, 2012). In the business and natural environment literature, the influence of regulatory, normative and cognitive institutions has been examined (e.g. Delmas & Montes-Sancho, 2011; Hoffman, 2001 a, b; Jennings & Zandbergen, 1995; Rugman & Verbeke, 1998) though with a prevalent focus on the regulatory and normative ones (Susse & Hoffman, 2013; Wirth et al., 2013).

Jennings & Zandbergen's (1995) research is one of the first studies which justifies the appropriateness of institutional theories in explaining corporate sustainability (Susse & Hoffman, 2013). Jennings & Zandbergen (1995) maintained that ecological sustainability, both in terms of meaning and

practices, is socially determined, thus an institutional analysis is very pertinent in order to understand the process through which such meanings and practices emerge. They suggested that the process of institutionalisation of ecological sustainability starts with its conscious recognition, which then enters languages, produces schemes and then affects moral aspects. “The more typified and rationalised the concepts of sustainability becomes, the greater the likelihood that some of its components will be accepted and legitimized by action in society, including business organizations” (p. 1025). The implementation and diffusion of corporate sustainability is then dependent on the creation of organisational fields around ecological sustainability and on the emergence of related practices in the field. Influences on organisations in the field and their ecological responsiveness are mainly produced by coercive pressures followed by mimetic and normative ones (ibid).

One study testing empirically the influence of institutional pressures on corporate environmentalism in the Canadian context is that of Henriques & Sadorsky (1996). They contended that environmentally proactive firms, namely those adopting an environmental plan, respond to a variety of institutional pressures (e.g. consumers, community pressures) although regulatory pressures are the most relevant in determining corporate action. Other studies share the same view of the authors above on the role of the regulatory environment in triggering corporate responses. For instance, Ekins (2010) noted that among European firms eco-innovation is mostly driven by environmental public policies. Montalvo (2008), drawing on a survey of the literature in the period between 1990 and 2007, showed that government regulation, e.g. environmental policy and enforcement mechanisms, are the most significant drivers of corporate ecological responsiveness. Michael Porter, who within the strategic management literature addressed the relation between environmental regulation and competitive advantage, has given prominence to the role of regulation in triggering corporate ecological responses. An environmental regulation appropriately designed improves companies competitiveness since it pushes them to be ecologically innovative so that they either reduce their cost base through a more efficient use of resources or enhance the value of the products they market (Porter & van der Linde, 1995 a; Porter & van der Linde, 1995 b). Such regulation is effective when it sets the

standards to achieve, the mechanism to make companies accountable for not meeting the targets while companies decide which instruments to use to meet such targets. In effect they favour market based policy measures over command and control approaches.

Studies have also proposed institutional pressures as moderators of the relationship between corporate sustainability and companies performances and economic outlook (Campbell, 2007). The author argued that investments in corporate sustainability are more likely to occur when companies have positive financial performances and the expectations on short-term profitability are good because of positive economic and business prospects. It also suggested that such actions would be less likely when competition is perceived as being either too high or too low. However, institutional factors moderate this relationship. More specifically, the existence of effective regulation and enforcement systems, industry self-regulation, NGOs and media effectively monitoring companies behaviour catalysing public concerns for bad practices, responsible business practices as a norm and trade associations encouraging changes in corporate practices, are all positively affecting the above relationship (ibid).

Normative influences can trigger corporate sustainability too. For instance, studies have looked at environmental management programmes and voluntary initiatives as drivers of corporate environmentalism. Delmas & Montes-Sancho (2010) studied the voluntary participation of US national electric utilities between 1995 and 2000 to the Climate Challenge program, a voluntary agreement for the reduction of greenhouse gas emissions established in 1995 by the US Department of Energy. Their study contested the overall effectiveness of the scheme in reducing greenhouse gas emission because early movers obtained better result than laggards, the latter engaged with more symbolic than actual efforts to improve their performances. Differences in performances were explained linking the former to institutional pressures and investments in environmental improvement. Particularly, early movers faced more regulatory pressure, had higher visibility and higher involvement with trade associations and invested more in pollution prevention measures prior to the participation to the scheme. King, Prado, & Rivera (2012) have suggested that industry-level voluntary measures addresses two market failures:

asymmetry of information and externalities. Whereas when dealing with the former companies opt for certifications, thus signalling stakeholders their effort to behave more responsibly, in the latter case they adopt industry-level self-regulation. However, they contended that empirical studies, mainly focusing on ISO 14001 in the USA context, while assessing the existence of benefits for those who participate such as for example an increase of the sales volume, provide little evidence of the effectiveness of certification in improving environmental performances. On the other hand, industry-level agreements seem to provide benefits for participants (e.g. avoidance of both customers boycotts and more stringent regulation) and have mixed results in terms of improved environmental performances (ibid). Overall, the effectiveness of industry self-regulation is dependent upon the existence of enforcing and sanctioning systems, thus stressing the role of the other institutions as complementary for the achievement of some results (ibid). Short & Toffel (2010) tested empirically how regulatory institutions moderate the relationship between commitment to self-regulation and implementation based on a sample of US companies subject to the Clean Air Act in the period between 1993 and 2003. They demonstrated that the lower the regulatory threat the higher the commitment, which means that regulatory enforcement has a negative effect on normative motivations to adhere to self-regulation whereas regulatory surveillance is linked to positive commitment.

Cognitive institutional influences have been considered to a much lesser extent, compared with studies examining the influences of regulatory and normative institutions. For instance, Lounsbury, Ventresca, & Hirsch (2003) argued that a change on how the field framed waste treatment determined the shift from energy recovery to recycling in the US solid waste management since the 1990s. “Field frames provide the context within which shared and cognitively meaningful models of appropriate action are constructed and diffused” (p. 96). Although recycling movements gained a certain attention in the 1960s and 1970s, the prevalent field frame was that of resource recovery through waste to energy (ibid). Only regulatory changes (e.g. the 1976 Resource Conservation and Recovery Act) highlighting the issue of hazardous waste and the emergence of environmental movements that actively opposed the construction of new waste to energy plants determined a de-

institutionalisation of the field frame, which led to the emergence of the recycling industry as new field frame. The importance of discursive frames is stressed by Maguire's (2004) study on the substitution of the insecticidal DDT. According to this author, *marketing, policy, popular* and *technical* discourses determined the uptake and the dismissal of DDT use. For instance, Rachel Carson's book, *Silent Spring*, which highlighted the harmful impact of pesticides use on human and other species health, dramatically changed into negative the stance of the media on the DDT use. A more recent study focussing on biogas technologies in four Austrian regions, demonstrated how informal institutions (particularly farmers' professional culture) moderate the relationship between public subsidies and the uptake of the above technologies, accounting for variation in adoption of practices (Wirth et al., 2013). The authors have contended that formal institutions, geographical and agricultural structural differences alone cannot explain why the uptake of biogas plants takes place among the examined regions. The study focuses on farmers' professional culture as they are the owners and operators of biogas plants. In one of the observed regions, the way in which the subsidies were designed (e.g. there was no need to establish large biogas plants) was supported by the local farmers' culture characterised by "mentality of dissociation" (p. 32) whereby farmers are not willing to cooperate with others. As no cooperation to produce feedstock was needed, a high level of diffusion of biogas plants in the region took place.

Although not much investigated in relation to corporate environmentalism, cognitive institutions play an important role in explaining individual and organisational behaviour, e.g. action or inaction. Indeed, it is argued that "socio-cultural conditions (…) serve as key determinants of the values that motivate individuals' action as organization members, consumers and citizens" (Starik & Rands, 1995, p. 926). Within socio-cultural conditions, information on ecology and environmental problems shapes values and attitudes towards the environment (ibid). Unfortunately, a negative environmental rhetoric seems to prevail advanced by environmentalists and amplified by the media with the consequence of simply creating confusion and inaction about environmental issues rather than generating an empowering attitude (Hollander, 2003). This fear is shared by conservation biologists as well with Swaisgood & Sheppard (2010) stating that the lack of hope among

conservation biologists will negatively impact upon the capability to influence the general public toward taking conservation actions. To more adequately address environmental problems, Princen (2010) argued that we need "a better metaphor (…) a better language (…) that enables living with nature" (p. 12) as "the doom and gloom approach does not work" (p. 180). Princen sees metaphors as really powerful since they influence how we view things and the type of activities we are engaged with, which, in the case of the environment, means that they can influence how we view the former and how we approach it. He also noted that transformational shifts in things from *normal* to *abnormal* (e.g. the case of smoking) in the twentieth century "depended not on gloom and doom (…) [but on] coordinated action" (p. 180) and "new understanding, strong moral stance and [on confronting] power" (p. 183).

Overall, "as institutional pillars are not analytically and operationally distinct but rather, overlapping, so that development of one aspect will influence the development of other aspects" (Hoffman, 1999, p. 353), the study of their collective influences on corporate environmentalism is welcomed (Colwell & Ashwin, 2013; Lounsbury et al., 2012). Therefore, this study, acknowledging the different sources of institutional pressures, examines collective institutional influences upon the implementation of BMs for a CE in the UK context. Considering field-level influences upon corporate environmental responsiveness is also an opportunity to advance field level studies since Wooten & Hoffman (2008) argued that:

> field research has largely provided an explanation of macro to macro transitions, [namely] field-level interactions leading to changes in structure, culture, and output at the aggregate field levels. Moving forward, field research will serve as a bridge between the macro and micro by providing detailed explanations of how field-level interactions influence internal organizational phenomena (p. 141).

2.3.3.3 Combined approaches to explain corporate environmentalism

The literature review presented so far demonstrates that both resource-based and institutional theories are used to explain corporate environmentalism. However, despite the fact that "applications of organization theory within work on organizations and natural environment necessitate and facilitate the bridging

of theories that are often treated independently" (Bansal & Roth, 2000, p. 733) and that corporate sustainability is the outcome of a complex process whereby the interplay between the organisational level and the wider institutional context within which companies operate takes place (Hoffman, 2001 a), few studies have combined resource and institutional perspectives (Clemens & Douglas, 2006). This is not surprising and reflects the "much lamented micro–macro chasm in the field of management" (Aguinis & Glavas, 2012, p. 954). Resource-based and institutional approaches in corporate environmentalism research have mainly given rise to two different research streams leading to contrasting and incomparable results (Menguc et al., 2010).

Nevertheless, it is argued that to advance the business and natural environment literature, combining both perspectives would be very pertinent and fruitful (Bansal, 2005; Bansal & Roth, 2000) since this could represent an opportunity for those theories to "cross-fertilize each other" (Bansal, 2005, p. 214). In addition, since "in the case of sustainability, the postulated isomorphism (…) has not fully materialized" (Caprar & Neville, 2012, p. 233), linking organisational characteristics with institutional theory could strengthen the applicability of the latter to explain divergent corporate responses (Delmas & Toffel, 2012). Institutional pressures are enacted out of filtering and interpretation processes (Wooten & Hoffman, 2008) and organisations characteristics could be used as "moderating factors, which can magnify or diminish the influence of institutional pressures" (Delmas & Toffel, 2012, p. 241). This approach employing a dual focus resembles Gidden's duality of agency and structure which proposes the integration of micro and macro perspectives rather than separation in social analysis (Pozzebon, 2008).

One of the first attempts to combine resource-based and institutional theories under the same conceptual framework can be traced back in the strategic management literature and it is the study by Oliver (1997) on the determinants of a sustained competitive advantage. In her study she contended that the institutional context at the individual (normative rationality), firm (culture and beliefs) and inter-firm (field level influences) levels affects resource selection, thus firms heterogeneity and that both resource capital and institutional capital account for a sustained competitive advantage. Institutional

capital is defined as “the context surrounding resources and resource strategies that enhances or inhibits the optimal use of valued resource capital” (p. 709).

Of the few studies that have combined resource and institutional perspectives in the business and natural environment literature, Bansal (2005) studied the Canadian oil and gas, forestry and mining industries between 1986 and 1995 to explain to what extent resource and institutional influences determined the emergence of sustainable practices. Notably, he demonstrated that both perspectives had influences. The study evidenced that when a sustainability concern is first emerging, the role of institutional pressures (more specifically coercive and media influences) is particularly useful in eliciting corporate responses as they contribute to reducing uncertainty and ambiguity on the meaning and impact of the emerged issue. At this stage, companies resources are instrumental to the adoption of corporate responses too. Because of resources characteristics and market imperfections (e.g. no perfect mobility of resources) companies might generate rent from developing resources and capabilities for the management of the interface with the natural environment. Overall, the study found that over time the importance of institutional pressures in shaping companies responses diminishes, particularly the role of the media, while resources continue to support companies efforts towards sustainability. Indeed, because of the increased institutionalisation of the practice resulting from companies mimicking peers in their organisational fields, it becomes clearer how to use resources to gain competitive advantage. Clemens & Douglas (2006) applied resource-based and institutional theories to explain the adoption of voluntary green initiatives in the US steel industry finding that both regulatory pressures and companies resources and capabilities were positively associated with these initiatives. When companies acquired resources and capabilities to manage their impact upon the natural environment (e.g. environmental training), they also implemented voluntary practices such as the standard ISO 14000, because the development of these resources and capabilities a priori may have facilitated their understanding of the benefits deriving from these voluntary initiatives. The study also proved that where coercive pressures exist, companies implemented voluntary practices because, for instance, a competitive advantage could be gained from preempting further regulations. In addition, the authors found evidence that in the case of

companies with highly developed resources and capabilities in the management of the interface with the natural environment, the influence of coercive pressures for the implementation of voluntary green initiatives was not so significant as opposed to the case of companies with less developed environmental resources and capabilities. A different approach from the last two studies is the one employed by Menguc et al. (2010), who, like Bansal (2005) and Clemens & Douglas (2006), employed the RBV and the institutional theory to explain the adoption of pollution prevention strategies by manufacturing companies in New Zealand but with institutional pressures as moderating factor. They demonstrated that government regulation moderated the relationship between the internal environment, specifically entrepreneurial orientation "(i.e. innovativeness, proactiveness, risk-taking)" (p. 284) and the adoption of the above strategies. The moderating effect was found to be significant as the pressure from the regulatory environment increases.

Organisational characteristics and neo-institutional organisation theory have been used too to explain corporate ecological responsiveness. For example, Hoffman (2001 b) has proposed that the genesis and the diffusion of corporate environmental practices can be better explained linking field and organisational dynamics. The field can frame environmental issues as a matter of risk management, market demand, regulatory compliance, and operational efficiency among others. Once the issue is culturally framed in a particular way it is channelled to organisations functional departments whose culture mirrors that of the constituency in the field, e.g. if the issue is perceived as a matter of regulatory compliance it is the legal department that will handle it. The next quote summarises this organisation-field dynamics:

> The form of organizational response is as much a reflection of the institutional pressures that emerge from outside the organization as it is the form of organizational structure and culture that exist inside the organization (p. 136-137).

Organisational characteristics have been considered also as moderators of the relationship between institutional pressures and corporate environmental responses. Delmas & Toffel (2004) contended that the way in which managers perceive institutional pressures at plant level moderates the relationship between the latter and the adoption of environmentally proactive corporate responses. Organisational characteristics such as the plant organisational

structure and its past environmental performances affect managerial perceptions (ibid). For instance, if the plant suffered from environmental scandals in the past, it is likely that management will develop a more proactive approach to handle environmental concerns involving organisational restructuring so that to avoid and/or respond more quickly to future concerns (ibid). Similarly, Delmas & Toffel (2008) demonstrated empirically that differences in organisational structures account for differences in corporate adoption of environmental practices given the same level of institutional pressure. In their view, organisations can be seen as a bundle of functional departments, like the legal and the marketing one. Such departments are connected to both the market (e.g. consumers, suppliers) and non-market (e.g. government) constituencies of the organisational field (ibid). This engagement produces how an environmental issue is framed (ibid). It is then the power of these functional units that influences managerial decisions regarding which corporate environmental practice to adopt (ibid). For instance, it is argued that in organisations with powerful legal departments, responses to pressure coming from the regulatory environment are more likely to occur whereas with powerful marketing departments responses to market pressures are more likely. More specifically, they demonstrated that in the case of more influential legal departments, organisations adopted government-led voluntary programmes whereas in the case of more influential marketing departments adoption of the standard ISO 14001 occurred.

Apart from organisational characteristics, managerial perceptions/commitment are considered too as moderating factors. Roxas & Coetzer (2012) demonstrated, in the case of small-medium firms, that when managers perceived the institutional context (particularly community level influence) as supportive for the development of ecologically responsive practices, this influenced positively their attitudes towards the natural environment and the development of environmentally proactive strategies. Colwell & Ashwin (2013), in their empirical analysis, showed that top management commitment moderates the relationship between institutional pressures and corporate environmental practices such as pollution prevention/control and restoration of natural capital. Top management commitment is defined “in terms of both commitment to reform and capacity for

change" (p. 78). They found that when top management commitment is high this affected positively the relationship between institutional pressures and corporate ecological responsiveness with institutional pressures attended and change enacted.

This thesis shares the same view as Hoffman (2001 a) in believing that corporate sustainability is the outcome of a complex process whereby the interplay between the organisational level and the wider institutional context within which companies operate takes place. Consequently, this study employs both resources and institutional lenses in the conceptual framework explaining the emergence and development of circular BMs in the UK context.

Following from the discussion presented in this paragraph, this study dual approach is relevant from an academic point view, in the light of the paucity of corporate sustainability studies adopting simultaneously resource and institutional perspectives. This thesis broad approach in the study of circular BMs is also quite distinctive from that taken by IE and closed-loop supply chains studies, considered as originators or related to the CE thinking. As discussed in part two of this chapter, IE studies have pretty much neglected the business and institutional sides because of a prevalent focus on technical aspects for closing materials and energy loops (Hoffman, 2003) with the consequence that those studies have not yet explored what is needed from business and wider institutional perspectives to enable industrial processes incorporating principles of ecological sustainability. The same applies to the research on closed-loop supply chains (e.g. Wells & Seitz, 2005), a field where Johnsen et al., (2014) have argued that the prevailing focus has been the operations side (its technical part).

The practical relevance of this study's dual approach cannot be overlooked either. Part one of this chapter has evidenced that sustainability problems are framed as wicked issues (Haigh & Hoffman, 2012; Waddock & McIntosh, 2011), which means that they are considered as complex problems, with cause and effect difficult to establish, and thus hard to solve (Rittel & Webber, 1973). Therefore, using multiple lenses to comprehend how environmentally sustainable practices are enacted within companies might

reveal many insights on the process through which businesses make sense of complex phenomena. This in turn might serve to illustrate how more environmentally sustainable business practices can be brought forward in the business community. Having discussed how institutional influences explain corporate environmental sustainability, it is now appropriate to illustrate why these influences may be relevant in explaining the emergence and development of circular BMs. This task is accomplished in the next paragraph which starts with a consideration of how the institutional context is appraised within the SBMs literature.

2.3.4 Circular business models: appropriateness of an institutional lens

The SBMs literature gives consideration to the institutional context. Wells (2013) has emphasised that studies on BMs cannot exclude the context within which such BMs emerge because "in the debate between structure and agency (…) business models are a form of agency that arises from and flourishes (or fails) within a distinct structure" (ibid, p. 61). Wells has also stated that the BM literature has focussed on agency while giving little or implicit consideration to the context including the natural environment. This argument is also shared by Randles & Laasch (2016) who contend that "the business model literature (…) ignores spatial and temporal contingency" (p. 68). In concurrence with Wells, Clinton & Whisnant (2014) have argued that:

> new business models can't just be willed into existence. (…) Any model - sustainable or not- is dependent on surrounding conditions, and (…) new models are often enabled by, or arise organically from, changes in those conditions (p. 11).

A recent study has also stressed that a different set of rules enabling more sustainable forms of value creation is required given market failures, notably the weakness of price signals in driving changes in the economic agents behaviour (CISL, 2015).

While the academic literature is constrained, the practitioner literature has highlighted what is needed, from an institutional perspective, to facilitate the transition towards a CE in the UK context. The Aldersgate Group, a forum of

business leaders and members of parliament/civil society that seeks to drive initiatives for a more sustainable UK's economy, has emphasised how the shift towards a CE has great potential to build competitive advantage in a natural-resource-constrained world (Aldersgate Group, 2012) and has identified some of the conditions that would support the shift towards a more CE in the UK. These include increased level of cultural and consumer acceptance of access over ownership, improved end-of-life regulation so that an increasing number of products are prevented from being disposed into landfill, and differential VAT to support products containing recycled or remanufactured components (Aldersgate Group, 2012). The problem of split incentives acting as a market barrier for the scaling-up of CE business practices has also been identified (Green Alliance, 2013). For instance, where manufacturers do not have responsibility for end-of-life recovery, there is no incentive for them to design a product that is suitable for materials recovery at the end of its useful life because the benefits would be accrued by those involved in the recovery stage unless cooperation is developed within the supply chain (ibid). Therefore, it is suggested that amendments to competition law to allow for cooperation would be beneficial and that strengthening individual producers responsibility and design metrics would support the emergence of BMs for a CE (ibid). The UK, along with other EU countries, has adopted a collective producer responsibility for collection, treatment and recycling of the electrical and electronic equipment waste (WEEE) rather than an individual producer responsibility (IPR Working Group, 2012) whereby each producer faces the same cost per tonne for the end of life treatment of this waste on the basis of their market shares (Axion Recycling, 2014). Unfortunately, this collective producer responsibility acts as a barrier to design for recyclability as each producer has no incentive to increase the recyclability of products and thus this system hinders the scaling up of BMs aligned with CE principles (ibid). According to Green Alliance, a charity and think thank working to drive policies for a more environmentally sustainable UK's economy, what is also needed is an improved recovery and recycling infrastructure (Green Alliance, 2014). They argued:

> addressing the structural barriers to high value recycling is the first step in moving the UK to a more circular economy. Once these barriers are removed, existing technology and business practices could very rapidly raise the UK's stagnating recycling rates (ibid, p. 18).

Recycling infrastructure is currently developed on a local base rather than on material flows and based on the assumption of dealing with waste rather than with resources (ibid), which consolidates a distorted view of waste as something to dispose of as opposed to something from which extract valuable materials. As a consequence, there is a lack of feedstock that could be used in manufacturing and valuable recyclable waste is exported abroad (ibid).

> The UK could support around 45 high quality, closed loop plastics recyclers, up from the five that operate in the UK today. These would be made up of five to eight plants for each polymer type and format, e.g. bottles, clingfilm, trays etc, implying that each plant would have to draw on efficiently separated materials arising from a wide region (ibid, p. 10).
>
> Unlike electronics and plastics, anaerobic digestion (AD) can be managed at the local authority scale. The UK currently has 135 AD plants but produces enough biodegradable waste to feed approximately 500 (ibid, p. 13).

The UK's government could also design incentives to encourage use of recycled materials (e.g. plastics) via offsetting the use of recycled plastics against producers' packaging waste obligations (ibid). This would support private investments for better material and product design, increase collaboration and the adoption of more CE-aligned practices within plastics supply chains (ibid). Government intervention is also welcomed to support the development of modules and courses in remanufacturing at universities since it is argued that there is a shortage of training opportunities in this area in the UK (APMG & APSRG, 2014). Recommendations to the UK's government on how to facilitate the transition to a CE have been proposed also by the House of Commons Environmental Audit Committee. Notably, the following measures have been suggested:

- introducing differential VAT and tax allowances for products that are in line with the CE principles;
- standardisation of waste collections and banning food waste from being disposed into the landfill;
- setting standards for eco-design;
- establishing standards for new products so that they must be made from materials that can be recycled;
- strengthening public procurement rules that support the development of more circular business practices (e.g. buying

standards considering recyclability of materials and recycled/re-used content);

- encouraging the Green Investment Bank to finance projects supporting technologies for a CE (e.g. investments in anaerobic digestion plants);
- removing trade barriers for remanufactured products (House of Commons, Environmental Audit Committee, 2014 a).

Overall, it appears that government intervention could facilitate the emergence of business practices that are in line with the CE thinking by creating a supportive environment for companies wishing to implement CE principles within their products/ processes. Such intervention, helping in creating incentives and removing barriers as noted in the previous sections of this paragraph, does not stand in contrast with the view of a free business initiative within a market-based economy. Rather it acknowledges, in accordance with Wells (2013), that "business models are a form of agency that arises from and flourishes (or fails) within a distinct structure" (p. 61). A lack of strong policy signals to promote behavioural change is generally recognised as an example of regulatory failure (Bastein et al., 2014) and as barrier to the development of circular BMs. McKinsey et al. (2015) in their analysis on the benefits of a European transition to a more CE have stated that a lack of clarity on policy proposals for the CE in terms of vision, targets and investments discourages businesses to move towards that agenda. Public policies are also the focus of a study analysing European policies for resource efficiency (Domenech et al., 2014). According to Domenech et al. (2014), those policies have concentrated on the output side of resource efficiency, e.g. measures to cut down GHGs emissions, whereas a shift to the throughput side, e.g. policies to decrease material use and increase the circular flows of materials, is still missing and much needed since the former alone are relevant but not sufficient to produce the absolute decoupling of economic growth from resource use. This paragraph has discussed the reasons why institutions are relevant to understand the adoption of SBMs and which institutional changes might be needed to support the transition to a CE within the British context. The next paragraph presents the institutional influences that have been developing in the UK in relation to the CE. This is done conceptually and graphically recalling the

definition of organisational field within neo-institutional theory developed in paragraph 2.3.3.1.

2.3.5 The UK's circular economy field: a conceptual and graphical representation

A core assumption in the institutional theory is that "context or higher-order entities influence the actions or character of lower-order entities" (Schneiberg & Clemens, 2006, p. 217). In this thesis, the core assumption of the institutional theory is applied in the sense that the aim is to understand whether 'high-order entities' in the organisational field influence the action of 'lower-order entities (adoption of circular BMs within the business community). This is done recalling both the definition of organisational field as "a community of organizations that partakes of a common meaning system" (Scott, 1995, p. 56) and that incorporates any actor exerting regulatory, normative or cognitive influences upon organisations (ibid), and Hoffman's (1999) view of fields forming around common issues. It might be argued that an organisational field around the 'issue' of the CE has recently started forming in the UK through the unfolding of some field forces. A significant lever in the development of the UK's CE field has been the EMF, a third sector organisation which has worked with education and business partners to promote the transition to the CE since 2010, whose work has been instrumental in the establishment of well renowned initiatives described in the next sections of this paragraph. A description of this CE field and of its constituents is presented next but it does not intend to be an exhaustive list of all the institutional influences that have been developing in relation to the CE in the UK context.

Starting from the regulatory context, a landfill tax is charged in the UK and since 1996, when it was introduced, the amount of waste sent to landfill has halved (UK Government, 2014). In 1999, a landfill tax escalator was introduced which established that the standard rate of landfill tax would have increased each year (Seely, 2009) and from the 1st of April 2015 the standard and lower rates of the landfill tax increase in line with inflation (UK Government, 2014). The waste hierarchy emanating from the EU Waste Framework Directive also

governs waste policy. The hierarchy encourages giving priority to waste prevention which is then followed by reusing, recycling, energy recovery and as last option landfill disposal (ibid). The UK's government in 2012 adopted the Resource Security Action Plan. The latter funded closed-loop initiatives in the local economy through the support of the Technology Strategy Board and launched the Circular Economy Task Force, an industry-led group gathered by the Green Alliance with the purpose to suggest policy recommendations on the issue of resource scarcity (DEFRA, 2012). The UK's government also recognised the importance of the CE for the national manufacturing industry in the 2013's Future of Manufacturing Report and measures to encourage more responsible and efficient use of resources are taken in the 2013's Waste Prevention Programme for England. The latter, among other things, launched the Innovation in Waste Prevention Fund which supports projects for waste prevention in local communities through the Waste and Resources Action Programme (WRAP) and introduced a minimum 5p charge for single use plastic carriers from October 2015 to elicit behavioural change (DEFRA, 2013). In the Waste Prevention Programme for England, the UK's government committed itself to the review of the current producer responsibility regulations covering packaging, batteries, electrical and electronic equipment and vehicles (ibid). Revision of buying standards at the government level has been initiated too in 2014 with new rules now contemplating reuse of furniture, purchase of refurbished or easy to reuse items, and a 'swap shop' facilitating reusing and exchange of items across department is going to be initiated (DEFRA, 2014). The UK's government also supports the Product Sustainability Forum, which brings together academics, NGOs, UK's government representatives and grocery retailers/suppliers, to improve the environmental credentials of grocery products (WRAP a).

Support to CE initiatives is also given through the government-endorsed Innovate UK and WRAP. For example, Innovate UK launched (spring 2015) a funding competition for investments up to £800k in studies exploring the business case of innovative BMs based on remanufacturing, leasing and reuse and under its previous name as Technology Strategy Board has financed the Supply Chain Innovation towards the Circular Economy project (Innovate UK, 2015).

WRAP is in charge of the Courtald Commitment aimed at reducing food waste in manufacturing, retail and households through a voluntary agreement with the retail industry (WRAP b). It also supports the Love Food Hate Waste campaign which focuses on giving suggestions to individuals on how to avoid food waste (ibid). WRAP in 2012 also started a collaboration with the Hospitality and Food Service sector aimed at reducing members food and packaging waste by 5% by the end of 2015 (ibid). Other initiatives managed by WRAP include the Electrical and Electronic Equipment Sustainable Action Plan (ESAP) and the Sustainable Clothing Action Plan (SCAP) aimed at improving respectively the environmental sustainability of electric and electronic products and clothing along their life cycles, by identifying actions including how to extend product durability, improve re-use and recycling, and influence consumer behaviour (WRAP c; WRAP d). WRAP has also developed a BMs map featuring innovations that accord with the principles of the CE to be used as a tool for businesses that want to innovate their BMs (WRAP e). WRAP is also supporting and coordinating the Plastics Industry Recycling Plan (PIRAP) launched in June 2015. PIRAP is a network of industry associations representing the plastic packaging supply chain and that works to identify which actions need to be developed to guarantee that the industry meets the UK plastic packaging recycling targets, which are due to increase from 32% of 2012 to 57% by 2017 (WRAP f).

Similar to the work promoted by WRAP is that carried by Zero Waste Scotland (ZWS), the Scottish Government supported authority which works to assist the implementation of the Scottish Zero Waste Plan, resource efficiency and low carbon policies (ZWS web site). The UK's government is also involved in the Action Based Research, a collaborative research approach among businesses, NGOs and the third sector that explore barriers for a transition towards a CE with a focus on manufacturing, business models and supply chains (UK Government, 2014). In addition, the UK's government responded to a series of recommendations proposed by the House of Commons Environmental Audit Committee report on Growing a Circular Economy. Notably, the government stressed the landfill tax effectiveness at diverting waste from landfill, welcomed the suggestions on promoting the adoption of clear eco-design standards at the European level and it is committed to engage

with industry representatives to understand how to remove trade barriers for remanufactured products (House of Commons, Environmental Audit Committee, 2014 b). However, the UK's government response received criticism for not having embraced the most important recommendations (e.g. standardisation of waste collection systems, banning food waste from going to landfill, introduction of lower VAT on recycled products and requirements of recyclability for all new products) contained in the Environmental Audit Committee report (Environmental Audit Committee News, 2014).

Evidence of engagement with CE thinking is also visible at both the industry level, through professional networks such as the Aldersgate Group, the All-Party Parliamentary Sustainable Resource Group (APSRG), the CE 100, the Sustainable Business Model Group, the Resource Event, and at the education level. The APSRG, established in 1995, convenes representatives from the business community, the third and public sector to guide policy intervention than can drive more resource efficiency and in 2014 published a report which underlines the economic, environmental and social benefits that the UK could gain from remanufacturing (APSRG). The CE 100 is a forum launched in 2013 by the EMF. Leading global companies, governments, higher education institutions (the so-called pioneer universities) and SMEs innovating in products, services and BMs, are part of the CE 100 and they collaborate and network for the development of practices based on CE principles (EMF, 2015 a). An initiative similar to the CE 100 is the Sustainable Business Model Group launched by the Forum for the Future, a non-profit British organisation working with businesses and public organisations to develop more sustainable practices mostly in the food and energy systems (Forum for the Future). The Resource Event is the British most prominent event for businesses interested in the CE and resource efficiency, gathering annually businesses across sectors with opportunities to share best practices and to learn more about BMs for a CE (Resource web site).

From the education perspective, the EMF undertakes analyses of the economic rationale of the CE in partnership with McKinsey & Company and it develops on-line teaching and learning resources to support education for a CE (EMF, 2015 b). In 2013 these on-line training resources were used by "2,200

schools in the UK (…) (over 50% of all UK schools) *[with]* the UK *[becoming]* the most advanced practice space for piloting circular economy teaching and learning" (EMF, 2015 c). Leading British higher education institutions (the University of Bradford, Cranfield University and the University College of London) are members of the CE 100 as pioneer universities, and they contribute with research and with the provision of professional courses, to advance understanding and development of practices aligned with CE thinking (EMF, 2015 d). For instance, the University of Bradford launched the world first Circular Economy MBA and the University College of London the Circular Economy Lab, a cross-disciplinary initiatives for the design of products and buildings that accord with the principles of the CE. Design for the CE is also promoted by the Royal Society for the Encouragement of Arts, Manufactures and Commerce (RSA) through *the Great Recovery Project* launched in September 2012 (RSA 2013). This project has created a network of professionals (e.g. manufacturers, materials expert, design experts, policy makers and academic among others) to explore how to design products that accord with the principles of the CE and has identified four design typologies, namely *design for longevity, design for service, design for re-use in manufacture* and *design for material recovery* (ibid). In addition to the universities directly engaged with the EMF, other British higher education institutions are working to promote the scaling-up of CE practices in the business context. Examples include the Institute for Manufacturing at the University of Cambridge that has developed the Circular Economy Toolkit and the University of Exeter Business School that has launched the Circular Economy Business Forum (CEBF) to promote the uptake of circular BMs in the South-West England.

Other important market and non-market developments in the field emerging around the CE are consumers' attitudes, business engagement, grassroots innovations and the media coverage. Regarding the latter, The Guardian has launched The Guardian Circular Economy Hub in 2013, and Edie.net, a platform dedicated to sustainable business, covers the CE among other things. In addition, the EMF launched Circulate News, a web platform publishing news on the CE in spring 2015. Leading UK businesses such as Marks&Spencer, Kingfisher, Rolls-Royce, to cite few, are taking steps towards

BMs for a CE. In addition to these large organisations, there is some evidence that British SMEs are implementing innovations to improve resource efficiency according to a Eurobarometer (2013) survey. This survey shows that 94% of British SMEs are taking measures to minimise waste and 83% are reusing materials or waste within the company. The signals coming from the business environment are coupled with the trends in the ethical purchases market. Data show that the sale of ethical products across a range of sectors including food, travel, housing, personal products and finance has grown by more than 12% between 2011 and 2012 within the UK (Ethical Consumer Research, 2013). Data also show that British consumers are willing to buy second-hand goods and to consider alternatives to buy (Eurobarometer, 2014). Finally, the Transition Town movements, a UK-based international network which seeks to promote sustainable living at the community level (IPPR, 2013), has importance for the development of the CE. The network, which in the UK has the most developed representatives in the towns of Totnes and Lewes and in the city of Bristol, engages in many projects such as the promotion of local currencies to support local products, the promotion of locally grown food through community gardens with some initiatives that specifically support the development of CE thinking (ibid). For example, they have promoted car share schemes and clothing swopping/repairing (ibid).

Overall, although the UK's CE field cannot be considered as highly structured yet (though not new the concept of the CE has gained momentum in the very recent years), from its constitution and the relationships that are coming into place, it might be argued that the prevailing institutional form is normative alongside regulatory and cognitive influences. The configuration of the prevailing institutional form within the organisational field is deduced from the analysis presented in this last paragraph, which has highlighted the existence of networks of professionals that are working to accelerate the transition to the CE within the UK, at the education and business levels. Professional and education networks are considered as the main sources of normative pressures by Di Maggio & Powell (1983). The prevailing institutional form in the organisational field (the normative one) appears to be consistent with the role that the UK's government has decided to play in relation to the CE. While acknowledging the desirability of a more CE and that ultimately market

mechanisms (demand and resource scarcity affecting prices) will drive more resource efficient business practices, the UK's government has stressed that the transition to the CE has to be business led and that the government should intervene only to remove barriers and address market failures (UK Government, 2014).

Figure 2.3 below summarises the emerging institutional developments in the CE field grouped under regulatory (government intervention), normative (professional networks at the business and education levels) and cognitive (consumers' attitudes, businesses engagement, grassroots innovations, values in relation to the natural environment) influences dicussed in this last paragraph. The relevance of Figure 2.1 is in summarising the unfolding of 'high order level constructs' (institutions) that might influence 'lower level constructs' (circular BMs) emergence and development within the British context. There are some organisations/initiatives that are placed between the regulatory and normative circles because they are government supported but working to promote change in the business community (e.g. WRAP, ZWS). The size of the circles represents the relative importance of the forces in the field; accordingly, the circle representing normative influences is the biggest. In the cognitive circle, the expression British *'oikophilia'* is used. This word stands for "the love and feeling for home" (Scruton, 2013, p. 3) which, according to Scruton, is very strong in British people and it is the most relevant reason explaining the success of the country in preserving the beauty of its natural environment.

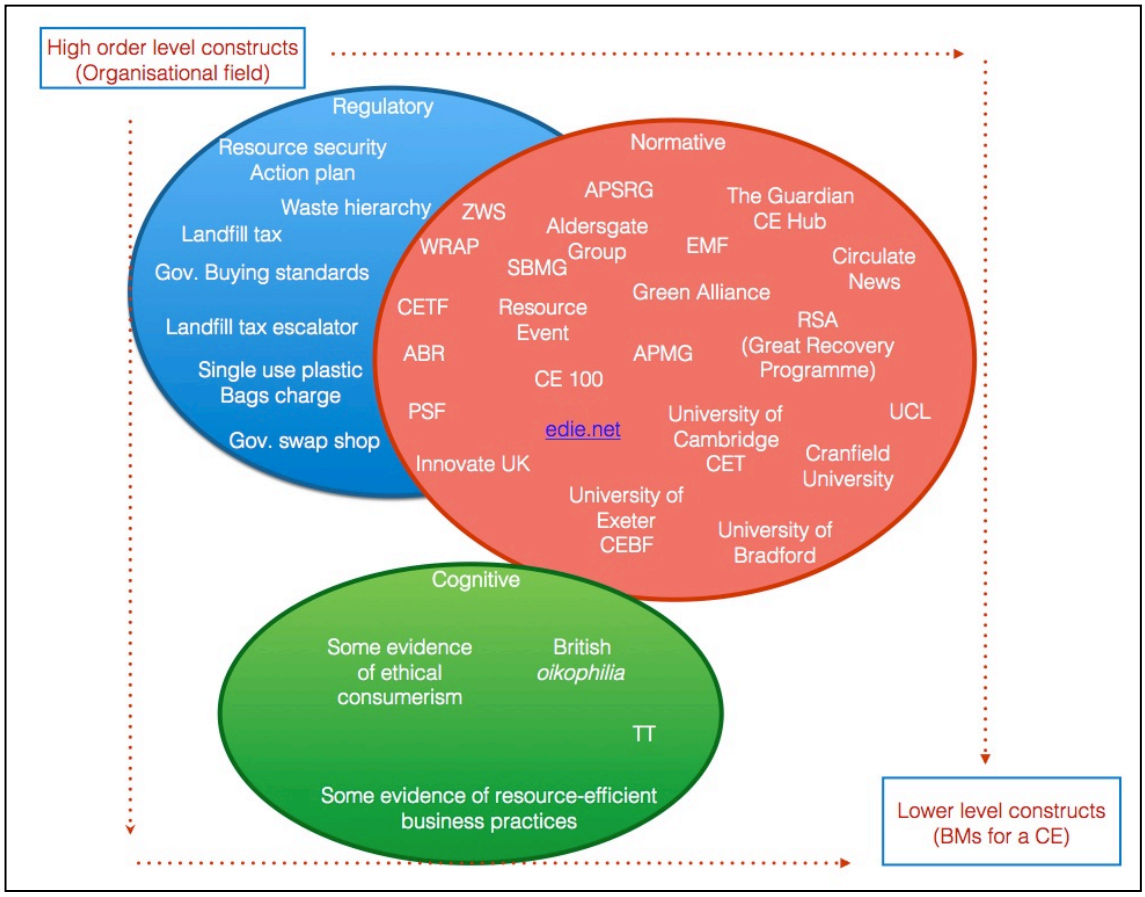

Figure 2.3: The UK's CE field
Source: The researcher

2.3.6 Part three summary

Part three has recalled the second and final research question as well as presenting the conceptual framework used to answer to this question, which comprises the NRBV of the firm (Hart, 1995) and the neo-institutional theory (Di Maggio & Powell, 1983). The analysis of the relevant literature has started from the organisational level and a criticism of the NRBV of the firm has emerged, since within the latter there seems to be missing a clear acknowledgement of the potential of SBMs for creating a sustainable and sustained competitive advantage. The argument that circular BMs could sit within the NRBV of the firm has been put forward. This has followed from considering that CE practices, which aim to reintegrate the economic system within the ecological one

(McKinsey et al., 2015), do not contrast with the assumptions of the NRBV of the firm and that circular BMs can be an opportunity to advance that framework.

Then attention has been given to institutions and institutional theories, particularly to the neo-institutional theory and to the business and natural environment literature employing an institutional perspective to explain corporate environmental sustainability. The institutional analysis was considered pertinent because as Bazerman & Hoffman (1999) and Beckert (1999) have argued, it is institutions (rules, norms and beliefs) that both guide agency in the first place, and reduce complexity and uncertainty in the environment, thus creating the conditions for enabling strategic agency. Part three has also reviewed the studies that adopt a simultaneous organisational and institutional perspective to explain corporate environmental sustainability. This has followed from agreeing with Hoffman's (2001 a) view, who has argued that corporate sustainability is the outcome of a complex process whereby the interplay between the organisational level and the wider institutional context within which companies operate takes place.

The last two paragraphs have discussed the appropriateness of an institutional lens for the development of circular BMs and the CE institutional influences emerging within the UK. This has necessitated first a diversion in the SBMs literature, to explore how this literature has given consideration to institutions and from there it has emerged that BMs are defined as a "form of agency that arises from and flourishes (or fails) within a distinct structure" (Wells, 2013, p. 61). Consideration has been given to what is needed to encourage the transition to a more CE within the UK context from an institutional perspective (e.g. improved recycling infrastructures, increased cultural acceptance of remanufactured/recycled products, differential VAT for recycled products, banning food waste from landfill).

Finally, part three recalling the definition of field as "a community of organizations that partakes of a common meaning system" (Scott, 1995, p. 56) and that incorporates any actor exerting regulatory, normative or cognitive influences upon organisations (ibid) and Hoffman's (1999) view of organisational fields forming around common issues, has developed conceptual

and graphical (Figure 2.3) representations of the UK's CE organisational field with the identification of some regulatory, normative and cognitive field forces. The analysis of those field influences has revealed that the prevailing institutional form is the normative one because of the growing number of professional and education networks that are leading on initiatives to accelerate the transition to a CE. Part three is the final section of the literature review chapter which is followed by the research method chapter.

Chapter 3
Research method

3.1 Introduction

Chapter three discusses the philosophical research approaches adopted in social sciences, particularly positivism and interpretivism. Within interpretivism, it focuses on contemporary philosophical hermeneutics because the latter is this research philosophical approach. Chapter three also presents this research strategy (case studies), the methods employed for both data collection (participant observations, semi-structured interviews and shadowing), and analysis (narrative and comparative analyses) and the debate over the issue of quality in qualitative studies. The latter is conducive to the identification of criteria that assess the quality of hermeneutical studies. The discussion of this thesis research paradigm, strategy and methods is placed in relation to the research approaches taken in management and business and natural environment studies. This chapter also gives an initial overview of the four British organisations that are investigated along with the indication of how the cases have been selected. The final part of this chapter discusses how the ethical aspects of doing research have been dealt with.

3.2 Paradigms for the social enquiry

Social reality is approached in different ways by social sciences on the basis of broader philosophical perspectives or paradigms (Blaikie, 2007). Guba & Lincoln (1994) argued that the choice of the research paradigm precedes that of methods since the latter, both quantitative and qualitative, can be used within any of the former. Silverman (2010) has defined paradigms as a frame of reference guiding how we make sense of the reality. Paradigms differ in terms of their ontological and epistemological assumptions (Blaikie, 2007). Whereas the former refer to the nature of social reality, the latter relate to the way in which knowledge of the social reality is acquired and produced (ibid). Two main ontological stances can be identified: objectivism/realism and

subjectivism/idealism (Blaikie, 2007; Saunders, Lewis & Thornhill, 2009). The objectivist ontology considers the social reality as existing independently from the social agent observing it whereas under the subjectivist ontology social reality is not independent from the social agent's thoughts and perceptions (ibid). With regard to the epistemological assumptions, it is possible to distinguish between rationalism, empiricism and social constructionism (Blaikie, 2007). A rationalist epistemology gives prominence to reason in producing knowledge, which means that knowledge about the social reality is produced by the social agent's reason independently from the reality itself (ibid). An empiricist epistemology attributes prominence to observations in the knowledge production process: only what can be confirmed through observations conducted in an objective manner can constitute knowledge (Alvesson & Sköldberg, 2009). The assumption that the social reality exists independently out there is rejected by the social constructionist epistemology, which considers knowledge about the social reality as socially constructed, as the product of the meanings that actors assign to their actions (Easterby-Smith, Thorpe, & Jackson, 2008 a).

Research paradigms result from the combination of the above discussed ontological and epistemological assumptions (Blaikie, 2007) and some classifications of research paradigms for social sciences have been proposed. For instance, Burrell & Morgan (1979) have suggested four research paradigms: radical structuralist, functionalist, interpretive and radical humanist. Guba & Lincoln (1994) proposed four paradigms for research too, namely, the positivist, the post-positivist, the constructivist and the critical. Blaikie (2007) distinguishes between classical research paradigms (e.g. positivism, critical rationalism, classical hermeneutics and interpretivism) and contemporary research paradigms (e.g. critical theory, ethnomethodology, social realism, contemporary hermeneutics, structuration theory and feminism).

Positivism, a philosophy of science that regards the methods of the natural sciences as appropriate for the social sciences (Blaikie, 2007), considers the social reality as a collection of facts that are observable and quantifiable (this is why a positivist research philosophy is often associated with quantitative research methods) (Johnson & Duberley, 2000). The relationship

between the researcher and social reality is characterised by objectivity interpreted as separation, which implies that the external reality is considered as given independently from the subject (ibid). Positivism has been criticised by Karl Popper, one of the foremost philosophers of science of the twentieth century and the founding father of critical rationalism (Blaikie, 2007). Popper in the *Logic of Scientific Discovery* (1959) has rejected the primacy of observations in formulating scientific theories and has argued that all observations are inevitably theory-led (Blaikie, 2007). Observations are to be used to test a hypothesis which must be subjected to falsification and, if false, rejected (ibid). Positivism has been the prevailing research paradigm in management and organisational studies for a long time (Johnson & Duberley, 2000; Prasad & Prasad, 2002; Sandberg & Targama, 2007). Such dominance is justified by the desire to develop more universal knowledge in management and organisational studies to overcome these fields fragmentation, caused by the variety of disciplines influencing the studies of organisational and management phenomena (Johnson & Duberley, 2000; Prasad & Prasad, 2002). Despite its prevalence as a research paradigm in these fields, positivism has attracted also some criticism. It is argued that the adoption of positivist approaches has contributed to create a relevance gap in the organisational studies and management studies in particular (Johnson & Duberley, 2000; Sandberg & Tsoukas, 2011) since these approaches have produced a simplified representation of the reality that does not mirror the complexity of the phenomena characterising the fields (ibid). Positivist research approaches are often associated with quantitative methods which have attracted some criticism too. For instance, Prasad & Prasad (2002) have claimed that the latter are "often proved to be somewhat simplistic, ahistorical, decontextualized, reductionist, aphilosophical, and non reflexive" (p. 5). These criticisms have led to the emergence of interpretive research approaches in the organisational and management fields which have gained increasing relevance over time (Prasad & Prasad, 2002; Sandberg, 2005; Sandberg & Targama, 2007).

Interpretivism rejects the appropriateness of the methods of the natural sciences to study phenomena in the social sciences (Lee, 1991). It is based on both a subjectivist ontology, that is to say that the social reality does not exist independently of the social actor's thoughts and perceptions, and a

constructionist epistemology, which means that the social reality is socially constructed through the meanings that agents attach to their own actions (Prasad & Prasad, 2002). This philosophy also rejects the possibility of achieving an objective knowledge and truth (Sandberg, 2005). Despite the variety of interpretive approaches (Prasad & Prasad, 2002; Sandberg & Targama, 2007), e.g. critical theory, hermeneutics, phenomenology, institutional theories and feminism among the most relevant, the roots of interpretivism are in hermeneutics and phenomenology (Blaikie, 2007; Lewis-Beck, Bryman, & Futing Liao, 2004). Thus, these different approaches have in common their "phenomenological base, which stipulates that person and world are inextricably related through lived experience of the world" (Sandberg, 2005, p. 43).

The origin of the phenomenological philosophy can be attributed to the German philosopher Edmund Husserl (e.g. Husserl, 1964). In Husserl's work pure understanding about phenomena is achieved through the person's experience or pure consciousness of phenomena as they appear (Blaikie, 2007; Moran, 2000), the so-called *principle of presuppositionlessness* (Moran, 2000). This implies that in order to recover the genuine essence of things in themselves, the experience of phenomena must be freed from prejudices deriving from science, culture, religion or history (ibid).

Phenomenology has been criticised by one of Husserl's students, the German philosopher Martin Heidegger (e.g. Heidegger, 1927) who is considered as the "transformer" (Moran, 2000, p. 4) of phenomenology and the founder of contemporary hermeneutics (Blaikie, 2007). Heidegger contested Husserl's *principle of presuppositionlessness*, arguing that understanding cannot be achieved out of context and history (ibid). Hermeneutics is seen as a development of phenomenology (Moran, 2000) and its main tenets and strands are discussed in the next paragraph.

Traditionally, hermeneutics has been studied as the art of interpreting sacred texts but also juridical and classical texts (Blaikie, 2007; Lee, 1991; Prasad, 2002). However, it is argued that the scope of hermeneutics, particularly contemporary hermeneutics, can be extended to complex social

phenomena (Blaikie, 2007; Lee, 1991) and to the study of organisational and management practices (Prasad, 2002). The latter can be considered as texts though not in physical but in metaphorical terms as they need to be interpreted and understood (Prasad, 2002). It was Dilthey who first sought to apply this approach to social sciences (Blaikie, 2007). Dilthey (1900) made an important contribution to the hermeneutical school. For Dilthey hermeneutics provides the basis for interpreting and understanding not only social phenomena but also "all the expressions of human life" (Blaikie, 2007, p. 118). Heidegger shared Dilthey's view of understanding and it is with Heidegger that the contemporary hermeneutics is said to begin though it was fully accomplished with Gadamer's 1960 *Truth and Method* (Blaikie, 2007). However, it is important to note that Gadamer's project differed from Dilthey's methodological approach in that he rejected Dilthey's view of hermeneutics as a discipline capable of providing human sciences with an objective status, because in that case the intrinsic subjective nature of human sciences is not recognised (Blaikie, 2007).

Gadamer (2004) argued that the text or the historical event that we interpret is only understood out of our questions, our tradition and our prejudices. Prejudices have no negative meaning in Gadamer's philosophy; on the contrary they represent the inevitable background starting from which any understanding is possible. Understanding, according to Gadamer, comes from the *fusion of horizons* between the interpreter with all his history, tradition and culture, and his or her object. However, Gadamer was aware that not all prejudices allow us to achieve the best understanding of a phenomenon, but he distinguished between productive and unproductive prejudices, with the former facilitating the understanding and the latter impeding understanding. In Gadamer's view it is only through the dialogue with a text that questions the validity of our own prejudices that we become aware of the unproductive ones: if the text does not answer the questions posed by the interpreter, this is due to a failure of the interpreter to free himself or herself from unproductive prejudices. Hence, the prejudices that had initially informed the interpretation have to be dismissed to allow the truth to emerge. Therefore, the process of understanding is transformed in a "dialogue" between the interpreter with his or her questions and the text or event with its partial answers: this is what Gadamer calls the *hermeneutical circle*. Another contribution to the

hermeneutical school comes from the French philosopher Ricoeur (e.g. Ricoeur, 1971) who regarded human activities as a text more explicitly than Gadamer with the consequence that they can be 'read' and 'understood' through a hermeneutical approach (Francis, 1994).

In addition to positivism and interpretivism, management research is also characterised by the adoption of pragmatism (Easterby-Smith et al., 2008 a; Saunders et al., 2009). In the case of pragmatism, researchers employ approaches that fall between positivism and interpretivism because of the difficulties, in practical terms, posed by the strict adherence to one of the two (ibid). Pragmatism often translates into the adoption of mixed research methods (qualitative and quantitative) (Saunders et al., 2009) because researchers give priority to the research issue rather than to the philosophical one, thus concentrating on all the available methods that allow the most appropriate means of tackling the issues at hand (Creswell, 2014).

3.3 Selected research paradigm

The philosophical debate revealing the role of pre-understandings in the interpretation of social reality and more contemporary criticism (e.g. Alvesson, 2003; Alvesson & Kärreman, 2011) of grounded theory and some forms of post-positivism because they give a prominent role to data in the production of knowledge in organisational research, would seem to suggest that contemporary philosophical hermeneutics is more appropriate to achieve a correct understanding of social phenomena and it is so also when compared with social constructionism.

Social constructionism is associated with different research philosophies (e.g. grounded theory, hermeneutics, critical theory, post structuralism and post modernism) (Alvesson & Sköldberg, 2009). Among the adherents of social constructionism, the authors distinguish four different orientations, from a weaker to a stronger version of constructionism: critical, social, epistemological and ontological. The critical orientation argues that what are usually considered as natural concepts (i.e. race) are in fact socially constructed; the social one

emphasises that society as well is the product of social construction by means of shared meaning and institutions; the epistemological orientation assumes that knowledge about the social reality is socially constructed; and finally the ontological one argues that the reality itself is the product of social construction, the latter being the stronger version of social constructionism which is not shared by all adherents of the movement (ibid).

Social constructionism is often assimilated to hermeneutics (Schwandt, 2003; Woolfolk, 1992). Though there are some overlapping features due to the shared phenomenological roots that are evident in some authors as Berger and Luckmann (e.g. Berger & Luckmann, 1981), there are also some differences and it is because of the latter that this thesis has adopted contemporary hermeneutics as a research philosophy rather than social constructionism. While both share the critical and epistemological orientations discussed above, it can be argued that hermeneutics differs from social constructionism because it rejects its ontological orientation, which is to say that the reality itself is the product of social construction. This has important implications for how the research about the social reality is conducted. For social constructionists, what really matters is to understand 'how' the construction of the social reality takes place with the result that the role of theory in the production of scientific knowledge is neglected (Alvesson & Sköldberg, 2009). As a consequence, in some authors as Latour (e.g. Latour, 2005), the analysis is conducted merely with a focus on the individual unit of investigation (Alvesson & Sköldberg, 2009), with similar dangers as with relativism and positivism, which social constructionism purports to overcome. By contrast, hermeneutics relies on the fusion of the intrepreter's and of the interpreted horizons to produce knowledge about the social reality and thus the interpreter's theories, culture, tradition are inherent to the interpretation process. This *fusion of horizons* characterises this thesis which rests on the conceptual frameworks identified in the literature review chapter and guiding data collection, analysis and reporting and on empirical data to conceptualise circular BMs and to explain the processes leading to their adoption.

Research methodologies that give an important role to the researcher's pre-understanding, which includes theoretical themes used to engage in a

dialogue with empirical data, lead to the development of more interesting theories (Alvesson & Kärreman, 2007). In this process of theory development, it becomes important to establish a broad "repertoire of theories and vocabulary used reflexively" (Alvesson & Kärreman, 2007, p. 1273) guiding the dialogical process with the empirical data, which is helpful in preventing biases deriving from narrow theoretical frameworks (ibid). Such theory development process is cyclical, iterative rather than linear (ibid) and this is in line with the concept of the *hermeneutical circle*:

> the logic of question and answer is special to the hermeneutic sciences (...) they do not build generalizations from particulars in a linear, incremental, and inductive manner, but rather begin with the whole, the general, the prediction and work toward the part and then return to the whole again (Weinsheimer, 1985, p. 22).

However, the above definition of *hermeneutical circle* is the methodological one (Schwandt, 2007) of Friedrich Schleiermacher who proposed hermeneutics as a theory for the interpretation and understanding of texts (Prasad, 2002). On the other hand, Gadamer gave an ontological interpretation of the *hermeneutical circle*: understanding is not a way of knowing but a way of being experienced by all the human beings not just the social researcher, and such understanding is cyclical as it is the result of the dialogical relationship between the interpreter with his own questions arising out of tradition, history and theoretical background and the text or the event with its answers (Schwandt, 2007). According to Alvesson & Sköldberg (2009), these two views of the hermeneutical circles, though differing from each other, are not conflicting and can be used simultaneously in the act of interpreting. This means that the circular process of interpretation is characterised by the interplay between the whole and the parts and between pre-understandings and understanding. Figure 3.1 represents the circle metaphor in hermeneutics.

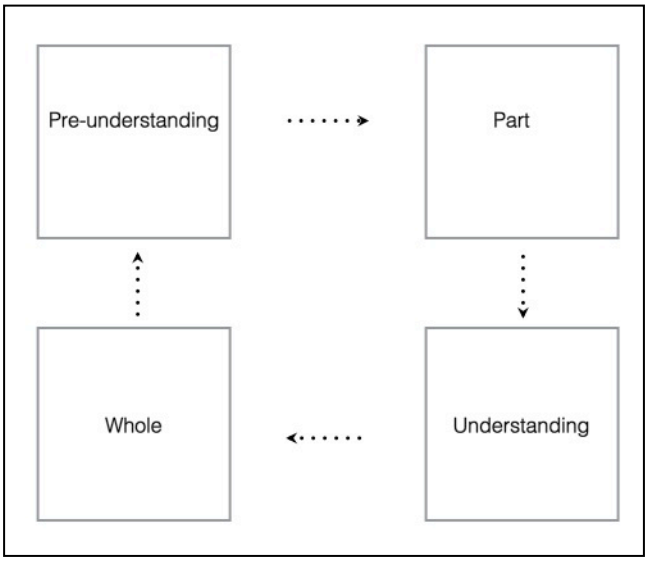

Figure 3.1: Hermeneutic circles
Source: The researcher and based on Alvesson & Sköldberg (2009, p. 104)

Hermeneutical research approaches have already been adopted in organisational and management studies in the areas of marketing, information systems and accounting among others (e.g. Arnold & Fisher, 1994; Lee, 1991; Llewellyn, 1993; Meyers, 1994; Phillips & Brown, 1993). Criticism of the positivist paradigm and quantitative research methods has emerged in business and natural environment studies. The latter welcome the advent of more interpretive approaches and qualitative methods, employing multiple levels of analysis and recognising the importance of context, to better understand corporate sustainability (e.g. Hoffman & Bansal, 2012; Poldner, Shrivastava, & Branzei, 2015; Purser, Park, & Montuori, 1995). Hence, hermeneutics, which gives a prominent role to context in the interpretation, is particularly suited to studies advancing the business and natural environment literature.

3.4 Research strategy

Having highlighted this research paradigm in the previous section of this chapter, this paragraph presents this research strategy. The suitability of the research strategy is discussed via placing it in relation to the research strategies used in the SBMs literature.

Business and natural environment studies are characterised by the predominance of quantitative methods and, at the same time, by the quest for more qualitative approaches to gain a better comprehension of corporate sustainability (Hoffman & Bansal, 2012). Turning more specifically to the research strategies in the SBMs literature, although "a robust body of research on sustainable business models (…) is not yet available" (Sommer, 2012, p. 93) and SBMs studies are mostly theoretical (Evans et al., 2012; Short et al., 2014), the few empirical studies have adopted qualitative, case-based approaches (e.g. Carayannis et al., 2015; Short et al., 2014; Roome & Louche, 2015; Stubbs & Cocklin, 2008). Qualitative case-based investigations are also welcomed by the recent call for papers for a special issue of the *Organization & Environment* journal on the topic of BMs for sustainability (Schaltegger, Hansen, & Lüdeke-Freund, 2014). Therefore, this study's research strategy and methods (multiple case studies and qualitative methods respectively) contribute to complement the nascent empirical studies in the area of SBMs and are consistent with the path identified to further advance understanding of corporate sustainability and SBMs.

Qualitative case studies are among the most popular research strategies in the management field (Welch et al., 2013). The distinction between qualitative and quantitative methods refers to the nature of the data collected with the former expressed in terms of non-numerical data and the latter as numbers (Easterby-Smith et al., 2008 a). Qualitative methods are often associated with interpretive research paradigms and quantitative methods with positivist paradigms despite the fact that such distinction can be misleading since qualitative and quantitative approaches can be used with both research paradigms (ibid). The case study as a research strategy is very pertinent when "a how or why question is being asked about a contemporary set of events over which a researcher has little or no control" (Yin, 2014, p. 14). Hence, for the nature of the phenomenon studied and the type of research questions ('how' questions), the choice of the case study as this research strategy is appropriate. According to Yin (2014) there are some other features of case studies:

- they can accommodate both exploratory and explanatory research designs;

- they employ multiple sources of data, which can be qualitative, quantitative or both;
- they encourage the establishment of theoretical propositions prior to the beginning of data collection and because of this they are distinct from other research strategies such as grounded theory (Corbin & Strauss, 2007) and ethnography (Lincoln & Guba,1985 a);
- they can be used with objective and subjective ontological stances;
- case study research based on organisations can include a *single* or *multiple* organisations and can be *holistic* when the focus is on the organisation as a whole or *embedded* when the focus is on multiple units of analysis within the organisation.

Another important element in assessing the case study as a research strategy is to consider its contribution to theory development. With regard to theorising from case studies, a thorough literature review on case-based research by Welch et al. (2011) has suggested that there are different approaches, namely "inductive theory-building, natural experiment, (…) interpretive sensemaking (…) [and] contextualised explanation" (p. 745).

The inductive (building theory from data), exploratory approach in case study research is associated with the work of Eisenhardt (1989). Under the inductive perspective, the aim of case-based research is to derive testable propositions from data acquired through objective observations that can be generalised to different contexts; no prior development of theories or propositions is required since this can bias the research outcome which is context-free and accounts for regularities rather than causal explanations (Welch et al., 2011).

In case studies considered as 'natural experiment', which are associated with the work of Yin (2014), theory development can take the form of both theory building (with exploratory designs) and theory testing (with explanatory designs); in the latter case context free causal relationships are established (Welch et al., 2011). According to Yin (2014), generalising from case studies involves theoretical or analytical generalisation rather than statistical generalisation. This means that case studies cannot be considered as a sample

representative of a population towards which the research findings can be extended but it is possible to generalise at a conceptual level to accept, modify or reject the propositions established at the outset of the enquiry or to provide new ones (ibid).

The positions of both Eisenhardt (1989) and Yin (2014) differ from the view of the case study as 'interpretive sensemaking' proposed by Stake (1995) which falls within an interpretive stance towards social reality as opposed to the more positivist approaches of Eisenhardt and Yin. According to Stake (1995), the aim of case study research is not to provide generalisable and context-free explanation but to provide an in-depth understanding of the case itself: "the real business of case study is particularization, not generalization" (p. 8).

Finally, a case study can be considered as a 'contextualised explanation' in accordance with the critical realism of Roy Bhaskar (e.g. Bhaskar, 1998). Bhaskar's approach to social enquiry proposes a realist ontology, that is to say a reality that exists independently of our thoughts and perceptions, and a constructionist epistemology, which means that understanding cannot take place without acknowledgement of the interpreter's values, culture and theoretical insights (Welch et al., 2011). For these reasons, it can be argued that the critical realism of Bhaskar's falls between positivism and hermeneutics (Blaikie, 2007). The main implications of this particular view of the case study are that causal and context-related explanations are provided which means that research findings should be interpreted to assess whether they can be applied across different contexts; theory development is neither deductive nor inductive but rather takes place through abduction (Welch et al., 2011). Abduction, which is proposed by the pragmatist philosopher Charles Peirce (e.g. Peirce, 1978), as opposed to deduction and induction based on linear reasoning (from theory to data and from data to theory), is based on an iterative, circular process of reasoning between theory and data to generate theory that is attentive to the context (Polsa, 2013).

A review by Welch et al. (2013) of the approaches to qualitative studies published in the *Academy of Management Journal* and in the *Journal of Management Studies* between 1999 and 2011, suggests that the majority of

case-based research adopts a theory-building, exploratory approach. However, their review revealed some inconsistencies in exploratory case-based research because for instance, such studies did not exclude a priori theorising, which means that despite the fact that such approach requires no prior development of theories and propositions, in some cases this has occurred. Welch et al. (2013) have also contended that the predominance of this view in case-based research may hinder variety in contribution to theory development through qualitative research in the management field, since publications based on approaches rejecting the positivist view are more likely to encounter barriers.

To sum up the discussion concerning theorising from case studies, this thesis adopts the 'contextualised explanation' perspective which has already been adopted in management case-based research (e.g. Clark & Soulsby, 1999; Perlow, Okhuysen, & Repenning, 2002). Although this thesis rests on a philosophical approach different from critical realism, which is the paradigm associated with the contextualised explanation perspective, the researcher has felt that of the former this thesis shares some other features. This thesis approach is neither deductive (developing propositions from current theories and test them in the empirical setting) nor inductive (theory is built from data) but rather it relies on abduction. Using abductive reasoning means for the researcher to move constantly between the existing literature and the empirical findings to produce theory that is context specific, a process also defined "systematic combining" (Duboise & Gadde, 2002, p. 555). Particularly, this thesis elaborates on the conceptual frameworks presented in chapter two and combines these with data to conceptualise BMs for a CE and to explain how their emergence and development take place. Application of the *hermeneutical circle* previously discussed will be crucial in the process of correct understanding of the phenomenon under investigation and it can be argued that the *hermeneutical circle* shows similarities with the abductive reasoning associated with the 'contextualised explanation' perspective. Of the contextualised explanation perspective, this thesis also shares that the knowledge produced has a contextual connotation. This is suited to the studies of BMs since as Wells (2013) has argued "business models are many and varied and are contextualised" (pp. 134-135). By showing consistency between its philosophical approach and the selected stance in theorising from case

studies, this thesis will also attain an enhanced methodological accuracy. Though case-based research has received some criticism because of the weaknesses that have been associated with it (e.g. less rigorous than surveys and experiments when no systematic procedure is followed; limited generalisability of the research findings) (Yin, 2014), the strengths of this research strategy cannot be overlooked. Particularly, it offers a deep understanding (e.g. description, explanation) of phenomena within their context (Saunders et al., 2009) and thus it is very appropriate in corporate sustainability studies since "sustainable development is understood as a context-dependent phenomenon" (Roome & Louche, 2015, p. 6).

Four British organisations are investigated in this research whose names are not disclosed in accordance with the ethical research procedures established at the outset of this enquiry. The researcher has shared the same argument as Thorpe & Holt (2008) who have posited that respecting anonymity is one of the most important ethical issues to consider when conducting research. Therefore, the names used in this thesis to identify the organisations investigated are not real but fictitious. Two of these organisations, 'FurnitureCo' and 'PlanksCo', are small-medium enterprises (SMEs) manufacturing furniture and scaffolding boards respectively. The EC defines SMEs as organisations that employ fewer than 250 employees with an annual turnover equal to or lower than 50 million € (EC, 2015 a). Focussing on SMEs is relevant from an academic perspective, as the majority of studies in the field of business and natural environment has concentrated on large corporations (Bocken et al., 2014 b; Hoffman & Bansal, 2012) with the consequence that there is little understanding to date about sustainable innovative business practices within SMEs (Halme & Korpela, 2014). Researching on SMEs is also pertinent from a practical point of view, because they account for 99% of EU's businesses and for more than half of the EU's GDP (EC, 2013 b). Appropriateness of the focus on SMEs is also justified by the existence of research suggesting that they are more suited to pursue radical innovation compared to large organisations (Klewitz & Hansen, 2014) and that they engage not only with reactive but also with environmentally proactive strategies (Aragón-Correa et al., 2008).

In relation to the type of product manufactured, the chosen SMEs contribute to advance practitioner studies on the CE. Chapter two has highlighted that 'medium lived products' (e.g. washing machines) are studied more in depth than 'consumables' (e.g. textiles, food) within practitioner analyses, despite the fact that the latter as well could benefit from the application of CE principles and thus from reduced negative environmental externalities (water, air and soil pollution). In relation to this, FurnitureCo is an example of a company that manufactures mattresses (non-clothing textiles) with 100 % natural and organic raw materials and thus the product composition rests on 'biological' rather than 'technical' nutrients which is considered as the first step for textiles wishing to accord with CE principles (McKinsey & EMF, 2012). In addition, recent research (WEF et al., 2016) has highlighted that opportunities for the scaling up of practices aligned with the CE principles also lie within the plastic industry. The latter is very wasteful with negative economic and environmental consequences that can be reduced via increasing recycling and recovery of plastic materials which would then encourage uptake in the usage of secondary raw materials (ibid). PlanksCo manufactures scaffolding boards using recycled plastics. Its boards can be further converted into other boards at the end of their useful life and it is thus a positive example of how the plastic industry could benefit from the implementation of CE principles.

So as to account for the wide contribution of the tertiary sector to the UK GDP composition (ONS, 2014) and to achieve a more comprehensive picture of the phenomenon under investigation, this thesis data set includes two large service organisations, 'RailCo' and 'UniCo' operating in the rail industry and higher education sector respectively. Inclusion of the service sector is very relevant from an academic point of view because it has received little attention compared to manufacturing companies in corporate sustainability studies (Carmona-Moreno, Céspedes-Lorente, & De Burgos-Jiménez, 2004; Etzion, 2007; Maas, Schuster, & Hartmann, 2014). Consideration of the tertiary sector is also very appropriate in the context of the CE. Notably, despite the fact that service providing companies can be an important lever for pushing the development of CE-oriented practices in the business context (McKinsey & EMF, 2012), services are not included in the related practitioner literature analyses (e.g. McKinsey & EMF, 2012) as emerged in chapter two.

With regard to how the four organisations have been selected, Yin (2014) suggested that when conducting case-based research is inappropriate to refer to the selected cases as a sample because this can be misleading in the sense that the reader may think that they are representative of the larger population and that the findings will be generalised statistically to the overall population. Nevertheless, though not using sampling terminology, it is important to clarify that cases have been selected by employing a purposive rather than random logic, which accords with the nature of qualitative enquiries (Miles & Huberman, 1994). This means that they have been chosen because they were considered relevant to this research design (Guest, Bunce, & Johnson, 2006). Two of them, those operating in the soft furniture and rail industries were chosen prior to the beginning of the fieldwork because recommended by an expert in the area of business and sustainability who has also provided assistance via contacting directly the site (in one case) and via providing the contact details for the other site. In this case, the so-called *reputational case selection* (LeCompte, Preissle, & Tesch, 1993, p. 76) has been applied. The remaining two organisations were chosen once the fieldwork had already started. In this latter case comparability with the previously selected organisations has been considered, hence it can be argued that *comparable case selection* (LeCompte et al., 1993, p. 78) has been applied. In conclusion, this thesis concentrates on four qualitative cases selected with a purposive logic, considered as *holistic* and as a form of 'contextualised explanation'.

3.5 Data collection and analysis techniques

This paragraph introduces the methods used for collecting and analysing data and specifies the data collection time frame of this research. With regard to the research methods, this thesis adopts multiple qualitative methods. Specifically, this thesis has employed secondary data, consisting of publicly available (e.g. web-sites) information on the organisations that are investigated and corporate documents made available (e.g. market surveys; policy documents), and primary data collected through interviews, participant observations and shadowing.

Given the nature of this investigation based on multiple and interconnected levels of analysis and the better flexibility guaranteed by semi-structured interviews, this research employs the latter as opposed to structured and open-ended interviews. Whereas structured interviews take the form of questionnaire with pre-established answers and are suited to gather data that can be quantified, and open-ended interviews simply require having an idea of what to examine without being forced to adhere to a pre-arranged set of questions, semi-structured interviews fall between the two (Saunders et al., 2009). They are based on a set of questions with no predetermined answers, that can vary in accordance with the organisational context and that not necessarily have to be asked in the order in which they are placed depending on the flow of the conversation (ibid).

Overall, the researcher has conducted 33 semi-structured interviews mostly face-to-face, which were informed: a) by the BM and SBMs literature; b) agency and structure perspectives and c) by themes relating to the specific role of the person interviewed. An example of the questions asked and of a transcript is provided in appendix one. Although the researcher has always aimed for in-depth interviews, the actual length of the interviews has depended on both the role of the person interviewed (interviews with those responsible for organisations sustainability strategy lasted the longest, up to one hour), and on interviewees' availability. Almost all the interviews (31) have been recorded and transcribed verbatim by the researcher soon after the end of the interview. Each of this transcription has required between one hour and sixteen hours depending on the length of the interview, the clarity of the recording and the speed of the interviewee's speech. In the two cases where the interviews have not been recorded, note taking has been used. After each interview or contact with the research site, a contact summary sheet has also been filled in to record the key points emerged from the contact with the site or with the interviewee.

In deciding on the number of interviews, quality was preferred to quantity, which means that the researcher has felt that it was important to have an in-depth understanding of the research problem via interviews with key informants. This technique, known as "intensive interviewing" (Sanders, 1982,

p. 356), was considered by the researcher very pertinent to this thesis philosophical approach. The issue of quality over quantity is particularly pertinent to hermeneutical studies whereby it is not quantity that counts but the thorough examination of the studied phenomenon and the contribution of the interpretation in expanding understanding of the phenomenon (Smith, 1991). Saturation has been also taken into account in deciding how many interviews to conduct. Saturation occurs when no new information emerges from the field under investigation (Guest et al., 2006). Hence, when there was no further addition to the data set, no more interviews were conducted. Key informants within each organisation investigated were the people having higher level decisional roles but also responsible for the corporate environmental sustainability strategy or having knowledge of that strategy. In the case of the two SMEs these were represented by the companies managing directors. Within the large organisations, those people were the head of environment (RailCo), the sustainability manager and operations executives/coordinators (UniCo). Nevertheless, the researcher always aimed at gaining a broader representation of the corporate realities analysed and at a deeper understanding of the phenomenon under investigation. Therefore, where access has been provided, the researcher has interviewed also other people (e.g. employees in different roles; suppliers; corporate sustainability consultants).

In addition to interviews, primary data collection within the two service organisations has involved shadowing and some participant observations. Participant observations (Gill & Johnson, 2002) have consisted of attending some organisational meetings (three in total) and staff's environmental training sessions (two in total). In these circumstances, my role was that of observing the meetings and taking notes on the content of the discussion, so I mostly acted as a spectator. On one occasion only, during one of the training sessions attended, I was personally involved in one of the exercises testing attendees' knowledge of environmental problems and of their associated financial and social impacts.

In the case of the train operating company, I have also shadowed the head of environment and one of the company employees involved with the

implementation of the company environmental strategy over two weeks time. Shadowing is a data collection tool whereby the researcher spends some time closely accompanying an organisation member (McDonald, 2005). In my case, shadowing has involved following people (mostly the head of environment) in their working schedule and taking notes on the tasks performed by these individuals. This has enhanced my immersion in the organisation being investigated. The nature of the tasks performed by these two people involved a lot of travelling between different train stations in which I was constantly following them. This further brought opportunities for asking questions during the journey time to gain a deeper understanding of the reality being observed.

With regard to its temporal frame, this study can be considered as cross-sectional having involved the investigation of social phenomena within four organisations at a specific point in time (Saunders et al., 2009). Overall, data collection has been carried between November 2013 and January 2015 for the four cases (only two interviews were conducted between August and September 2015). Fieldwork has been preceded by preparatory activities, started in April 2013, aimed at introducing the research and the researcher and at negotiating access. A summary of the data collection activities (people interviewed, location of the interview, type of interview, participant observations and shadowing) can be found in appendix two.

With regard to how data are managed and analysed, a Computer Aided Qualitative Data Analysis Software (CAQDAS) is not employed despite the potential advantages of using it, such as assistance with data management. The researcher has felt that a CAQDAS is not suited to this research design and has shared the same concerns as Thorpe & Holt (2008) on the limitations of a CAQDAS. Notably, these tools tend to create distance between the researcher and the researched; they may encourage to put too much faith in the software capabilities to the detriment of the researcher's critical thinking and reasoning; they may detract from understanding the real meaning of data in an attempt to produce data reduction (ibid). On the other hand, such tools are useful for generating codes and categories from qualitative data and to determine frequencies among other things (Easterby-Smith et al., 2008 a). The fact that they produce "quantitatively framed summaries" (Thorpe & Holt, 2008,

p. 37) is the most important reason why those conducting qualitative research adopt them, since such 'quantification' is associated with enhanced credibility of the research findings (ibid). Hence, they are very suited to studies using grounded-theory and positivist research designs (Gephart, 2004) but not to this thesis which rests on a different philosophical approach and on a different research strategy.

Analysis of data resulting from interpretive research approaches is not without problems. Despite their increased relevance in management and organisational studies and their better suitability to comprehend complex phenomena, there is still limited understanding of their methodological implications with regard to both specific methods for conducting fieldwork, and the criteria to assess the outcomes of the research process (Alvesson & Kärreman, 2011; Sandberg, 2005). Methodological issues associated with interpretive research philosophies affect also hermeneutics since there is no specific method for conducting hermeneutical research (Arnold & Fisher, 1994; Given, 2008; Moules, 2002). This consideration is very pertinent to the nature of contemporary hermeneutics because the aim of hermeneutics "is not to develop a procedure of understanding but to clarify the conditions in which understanding takes place" (Gadamer, 2004, p. 295). To this extent the contemporary hermeneutics of Gadamer differs from the hermeneutics of Schleiermacher and Dilthey, the latter consisting of a set of rules for guiding text interpretation in the attempt to discover the author's intended meaning (Prasad, 2002). As stated above, the contemporary hermeneutics of Gadamer cannot be conceived of as a method but rather as a philosophy of interpretation according to which understanding is the result of the *fusion of horizons* between the interpreter and the text: neither the interpreter prejudices prevail on the text nor does the author's intended meaning (Prasad, 2002). Even though hermeneutics has to be considered as a philosophy for guiding understanding rather than as a method, Arnold & Fisher (1994), Moules (2002) and Prasad (2002) have suggested some guidelines for organisational researchers wishing to follow an hermeneutical approach in conducting research:

- in the light of Ricoeur's (1971) contribution to the hermeneutical school, hermeneutics can be used not only to understand texts but also social phenomena, thus organisational practices too;

- the hermeneutic research starts because the researcher experiences a sensation of being attracted, absorbed by a topic and let the topic guide him/her and not a particular interpretation of it, which means that the hermeneutician is in search for a true understanding;
- due attention to the context has to be given when adopting hermeneutics;
- the hermeneutical research is self-reflexive: understanding is the outcome of the *fusion of horizons*;
- the 'text' in the hermeneutical approach preserves its autonomy: the aim is not to discover the author's intended meaning of the 'text' but to focus on the 'text' itself with the consequence that understanding does not necessarily lead to what was originally meant by the author. The position of the interpreter towards the text is "neither dominance nor prostration" (Alvesson & Sköldberg, 2009, p. 99);
- the process of understanding is iterative because of the *hermeneutical circle.*

Table 3A summarises the methodological features of hermeneutics.

Research problem	Concern with a specific research problem: the researcher is absorbed and guided by the topic.
Literature review	Review and command of relevant literature to identify concepts and theories guiding data collection, analysis and reporting stages.
Data collection	Quality over quantity: intensive interviewing. Pre-understandings inform the data collection. Close attention to the context of the analysis should be given.
Data analysis & reporting	Reflexivity/ pre-understandings are part of the interpretation process.
	Narrative approach to text analysis.
	Understanding comes from the fusion between the interpreter and the 'text' horizons.
	Autonomous text.

Table 3A: Methodological features of hermeneutics
Source: The researcher and based on Arnold & Fisher (1994), Mules (2002) and Prasad (2002)

To accomplish the methodological features of the hermeneutical approach, an in-depth analysis of the empirical material is needed and the researcher has carried such analysis manually. Therefore, the researcher has transcribed verbatim and personally all the interviews to preserve as much as possible of the contextual conditions and as an opportunity to dig into data at

first glance, despite the relevant amount of time that has been devoted to this. It has also been thought that a CAQDAS would have not provided any help in dealing with the *hermeneutical circle* and the *fusion of horizons* above discussed, both demanding a deep comprehension exercise acknowledging the role of the researcher's pre-understandings in making sense of complex organisational phenomena. As a consequence, data were analysed and processed by the researcher.

Analysis of the text in the hermeneutical approach requires a reflexive interpretation (Gadamer, 2004). Interpretation takes the form of a dialogue with the text initiated by the researcher's pre-understandings, which are going to be transformed through the encounter with the 'text' (Alvesson & Sköldberg, 2009). This process has been implemented through subsequent readings of all the available texts in the light of the hermeneutical circles described above. "Each re-reading of the text is an attempt to listen for echoes of something that might expand possibilities of understanding" (Moules, 2002, p. 14). Careful and close reading and re-reading of the text contrasts with the data reduction approach of grounded theory enabled by coding (Miles & Huberman, 1994; Moules, 2002). Whereas the latter gains relevance when repetitions occur, in hermeneutic analysis attention is paid to "the instance, the particular, the event of something that does not require repetition to authenticate its arrival" (Moules, 2002, p. 14). Analysis of the text, therefore, has aimed at preserving the integrity of the textual data rather than at fragmenting them, which is in line with a narrative approach to textual analysis (Langley, 1999; Saunders et al., 2009). Such narrative approach entails some organisation of the data, namely they are reported acknowledging the time frame within which data are collected as well as participants' social and organisational contexts (ibid). The intention of this narrative approach is to achieve an understanding of the phenomenon studied in its complexity (Langley, 1999). In addition, understanding of organisational phenomena based on narrative analysis offers a very close representation of the processes studied (Pentland, 1999). The use of a narrative approach to textual analysis is thus consistent with the main tenets of contemporary philosophical hermeneutics. Indeed, narrative analysis is characterised as follows: a) it is interested in producing a rich description and explanation of the experiences lived by people; b) it recognises that meanings are context

dependent with the reader that has to interpret the findings to determine whether these can be applied to different contexts and c) the researcher's reflexivity cannot be removed from gathering, analysing and reporting data, which means that researcher and researched are interdependent (Etherington & Bridges, 2011). There is also another aspect in the dialogue between the text and the interpreter. The interpreter establishes a fictional dialogue with the reader of the interpretation to persuade him on the fact that the given interpretation is the most plausible through a logic of argumentation and not of validation (Alvesson & Sköldberg, 2009).

The strategy followed to analyse empirical material is characterised by a cyclical pattern (Yin, 2014) involving for the researcher to move backward and forward between research questions, conceptual frameworks, data, evidence-based interpretations, findings and conclusion. This is in line with the abductive reasoning and the *hermeneutical circle* described in the previous paragraphs of this chapter. Analysis of the empirical material has started from the secondary data available as a first stage of the interpretation process. Next, the field notes (observations plus reflections on observations), where available, have been taken into account before moving to the contact summary sheets. Then, a close analysis of the interviews transcripts has followed consisting of reading parts and the whole text more than once. This has involved considering what appeared as very significant, drawing on the theories and frameworks used within this thesis, the researcher's pre-understandings and the description of the reality provided by the interviewees in line with a narrative approach to textual analysis (Etherington & Bridges, 2011). A preliminary reporting of the key points emerging from the analysis of data has taken place by using multi-coloured pens and large, poster size sheets of papers. These initial findings, in one case, have also been presented and discussed within the internal PhD students conference and the external conference I attended. The presentation of the findings has been valuable to gather feedback to inform further reflection on the use of the conceptual framework and on interpretation of the empirical materials. Careful reading and re-reading of interview transcripts and other data has then followed and informed the writing up of the empirical chapters (chapters four, five and six). To increase the validity of the research account produced, data were triangulated across different data sources (note taking

during participants observations and shadowing, secondary data, interviews content). This means that the researcher has cross-checked the content of the interviews and of the notes taken during participants observations and shadowing with that of secondary data. When more than one interview has been conducted with the same informant, this has been taken as an opportunity to clarify points emerged in previous interviews. Both narrative and comparative analyses have been used to discuss the research findings. Chapter four describes how the features of the operating models and value propositions of the two manufacturing SMEs relate to the CE and the SBMs literature whereas chapter five refers to the two large service-providing organisations. Within chapter six the fusion of the researcher's and the 'text' horizons is conducive to the conceptualisation of the investigated BMs and to the discussion of the processes leading to their emergence and development.

Table 3B summarises the features of the methodological approach of this thesis and Figure 3.2 identifies the phases of this research.

Research philosophy	Contemporary philosophical hermeneutics.
Research strategy	Four holistic case studies representing the manufacturing (two SMEs) and the service sectors (two large organisations).
Cases selection criteria	*Purposive* selection with *reputational* and *comparable* case selection. Opportunities to advance the practitioner literature considered.
Case study type	Cases as contextualised explanation.
Data collection methods	Multiple qualitative methods. Semi-structured interviews, participant observations and shadowing have been used to collect primary data. Interviews were informed by themes derived from the BM and SBMs literature as well as from agency (organisational level) and structure (institutional level) perspectives. The research also relies on secondary data (publicly available information, corporate surveys and documents).
Data analysis techniques	Narrative and comparative analyses. An in-depth analysis of the empirical material has been conducted manually by the researcher without the use of a CAQDAS since the aim was not to produce data reduction (e.g. coding) but preserving the integrity of the textual data to better understand the phenomenon in its complexity. Close and careful reading and analysis of empirical data has started from secondary data. Next field notes and contact summary sheets have been analysed. Then a close analysis of the interview transcripts has followed consisting of reading parts and the whole text more than once. This has involved considering what appeared as very significant, drawing on the theories and frameworks used with this thesis, the researcher's pre-understandings and the description of the reality provided by the interviewees. Internal and external conferences have been used as an opportunity to gather feedback on the initial interpretation of the research findings. Triangulation across different data sources has been applied to increase the validity of the research account produced.
Research temporal frame	Cross-sectional.

Table 3B: Summary of the research methodological features
Source: The researcher

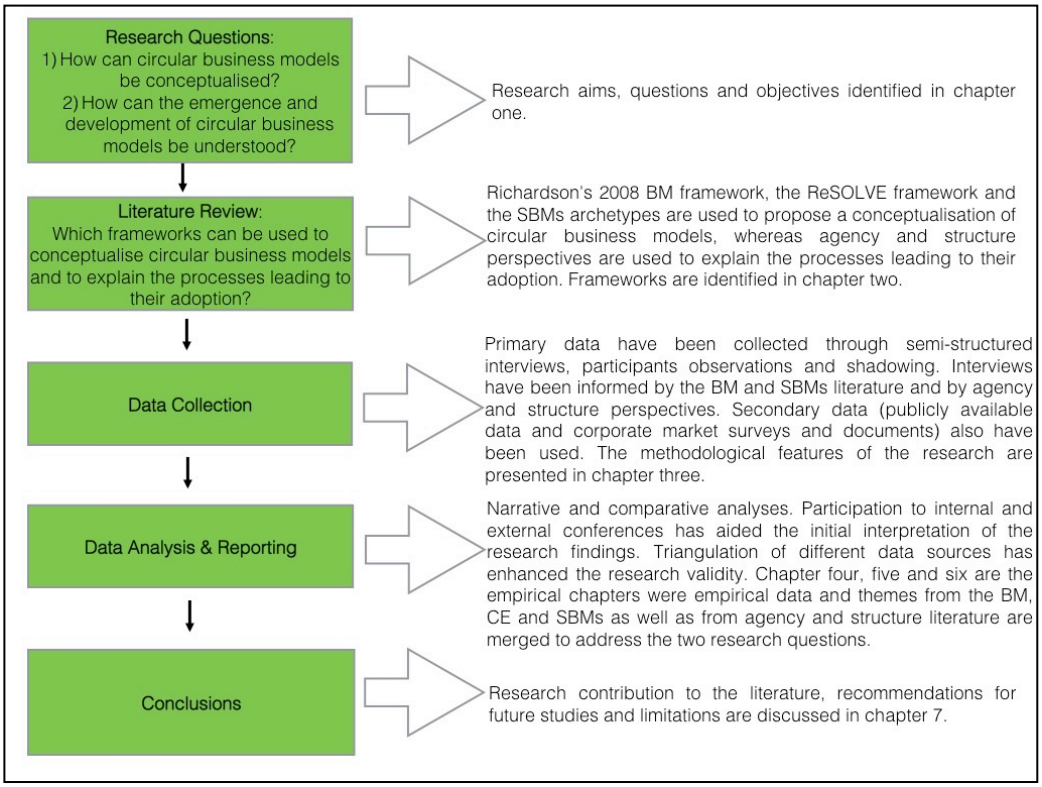

Figure 3.2: Phases of the research
Source: The researcher

3.6 Quality in qualitative and hermeneutical studies

Evaluation of qualitative studies is a complicated and contested topic (Easterby-Smith, Golden-Biddle, & Locke, 2008 b; Seale, 1999) especially with regard to the issue of validity or trustworthiness of the findings (Whittemore, Chase, & Mandle, 2001). One of the reasons why this is the case is the adoption of a multitude of different theoretical and methodological stances by those carrying qualitative research (Easterby-Smith et al., 2008 b; Johnson et al., 2006) which, according to Bochner (2000), legitimates the application of different evaluative criteria. Consequently, there is no agreement on which criteria to use to judge the quality of the research outcomes (Pratt, 2008). Another issue is the use of positivist methodological criteria to judge the quality of studies that rest on different philosophical grounds, an approach that has been termed *foundationalism* (Guba & Lincoln, 2005) and that has attracted some criticism (e.g. Amis & Silk, 2008). Such *foundationalism,* which involves the use of criteria of internal and external validity, generalisability, objectivity and reliability to assess the quality of the research outcomes, is the prevalent approach in

qualitative organisational research (ibid) despite the issue of lack of consistency that it generates. This dearth of consensus on how to evaluate qualitative studies is a source of problems for those involved in qualitative research since it may hinder the publication process (Pratt, 2008).

Although categorisation of criteria for judging the quality of qualitative studies is problematic because of the problems evidenced, some authors have attempted to provide some guidance on the topic. For instance, Seale (1999) has proposed a sort of 'middle ground approach' between the extremes of following no rules at all and that of adhering closely to a set of criteria for evaluation. He has advised researchers to engage with "intense methodological awareness" (Seale, 1999, p. 33) which means to pay due attention to the consequences that the choice of a methodological approach has on data production, analysis and reporting. Johnson et al. (2006) suggested a contingent set of criteria to evaluate qualitative management research depending on the epistemological and ontological assumptions of the research design. On the other hand, Tracy (2010, p. 840) has proposed eight criteria that can be applied to qualitative works independently from the choice of the research paradigms, namely, *worthy topic, rich rigor, sincerity, credibility, resonance, significant contribution, ethical* and *meaningful coherence*.

Despite various attempts made in the literature to clarify how to assess validity in qualitative enquiry, it is argued that none of the above has received widespread recognition apart from the prominent space occupied by Lincoln & Guba's (1985 b) criterion of *trustworthiness* (Whittemore et al., 2001). This criterion has been complemented by another one, *authenticity,* proposed in a subsequent work (e.g. Guba & Lincoln, 1989) on the basis of a recognition that criteria of *trustworthiness* were simply mirroring foundational criteria and thus not suited to studies resting on different epistemological and ontological assumptions (Schwandt, 2007). Trustworthiness and authenticity criteria are presented in Table 3C which also evidences how they can be applied to demonstrate the validity of the research outcomes.

Trustworthiness	Authenticity
Credibility: is the representation of the reality correctly understood? **Parallel to**: internal validity **Procedure**: member check	**Fairness**: are the viewpoints of different members of the reality investigated reported?
Transferability: can the representation of the reality generalised to other settings? **Parallel to**: external validity	**Ontological authenticity**: has the research improved the way through which participants understand their reality?
Dependability: can the process of the inquiry be traced? **Parallel to**: reliability **Procedure**: auditing	**Educative authenticity**: has the research helped members to value other members' perspective of their reality?
Confirmability: is the representation of the reality free from biases? **Parallel to**: objectivity **Procedure**: auditing	**Catalytic authenticity**: has the research stimulated participants to engage in change?
	Tactical authenticity: has the research empowered members to act?

Table 3C: Trustworthiness and authenticity criteria
Source: The researcher and based on Schwandt (2007, pp. 15-16; 299-301)

The previous sections of this paragraph have discussed both the issues involved in the assessment of the quality of qualitative enquiries, and the criteria used to assess quality. This section complements the former by discussing how to appraise hermeneutical research quality. This is done by drawing from Moules (2002) who elaborates on Lincoln & Guba's (1985 b) criteria of credibility, transferability and dependability and also refers to the study of Madison (1988).

Credibility in the context of hermeneutical studies must be placed in relation to Gadamer's view of truth that differs from both the correspondence theory of truth of the *objectivist* epistemology and the relativism of the *subjectivist* epistemology (Madison, 1988). Moules (2002) summarises Gadamer's view of truth as follows: "truth can always be understood differently and one understanding is not absolutely better than another" (p. 11). This means that many interpretations are possible though there are some that are better than others; it is the interpreter that becomes aware of the best interpretation during the interpretation process and the coherence of the account produced demonstrates that correct understanding has taken place (Moules, 2002; Alvesson & Sköldberg, 2009). The correct interpretation also

comes from applying a *logic of argumentation* and not a *logic of validation* (Madison, 1988). Truth is not determined by empirical testing but by discussing "arguments and counter-arguments (…) starting from current knowledge (…) in which theoretical, methodological and factual aspects interact" (ibid, p. 101). Therefore, "empirical facts are presented as one of many arguments in favour of a certain interpretation in social science, not as one side in a theory-reality correspondence" (Alvesson & Sköldberg, 2009, p. 138). Moules (2002) also has suggested that to enhance the credibility of hermeneutical studies the interpreter may ask other interpreters to read the account produced so that the interpreter's horizon can be expanded and thus improving the interpretation process. As evidenced earlier, the researcher has discussed her research questions, methods and findings within internal and external conferences where feedback has been received and informed the interpretation process.

Turning to dependability in hermeneutical studies, it is important to show how interpretations are formed, and this can be done via reproducing some of the interpreted materials to strengthen coherence and consistency of the proposed interpretation (Moules, 2002). With regard to transferability, Moules (2002) has not suggested how to apply this criterion in the context of hermeneutical research but she contended that transferability could be assimilated to the criteria of *suggestiveness* and *potential* proposed by Madison (1988, pp. 29-30). The latter, according to Alvesson & Sköldberg (2009), refer to "fertility in research" (p. 99), which means that the research should inspire further interpretations and extensions. Finally, Moules (2002) has not addressed explicitly Lincoln & Guba's confirmability and this is not surprising since this criterion is not particularly suited to interpretive research designs in general and hermeneutical ones in particular, where subjectivity and pre-understandings are intrinsic to the interpretive process. To this set of criteria it is appropriate to add also Madison's (1988) *comprehensiveness*, *penetration, thoroughness* and *contextuality*. Table 3D summarises the criteria that can be used to evaluate quality in hermeneutical studies discussed in this last section of this paragraph.

Criteria	Application
Credibility: is the interpretation of the reality correctly understood?	Truth can be understood differently **Procedure:** logic of argumentation; coherence of the interpretation; discussion with a community of interpreters.
Transferability: can the interpretation of the reality be generalised to other settings?	It must be replaced by **suggestiveness** and **potential**: the research inspires further interpretation.
Dependability: how is the interpretation formed?	**Procedure**: reproducing the interpreted material.
Confirmability: is the interpretation of the reality free from biases?	Subjectivity and pre-understandings cannot be removed from the interpretation process.
Comprehensiveness **Penetration** **Thoroughness**	The phenomenon must be thoroughly examined and the interpretation must expand understanding of the phenomenon.
Contextuality: is the 'text' placed in its broader context?	Cultural and historical contexts must be acknowledged.

Table 3D: Criteria for evaluating quality in hermeneutical studies
Source: The researcher and based on Madison (1988, pp. 29-30); Moules (2002, pp. 14-16)

3.7 Research ethics

There are several ethical issues to consider when conducting research that can be summarised as avoiding doing harm to the research participants, respecting privacy, confidentiality and anonymity, informing participants about the research process, obtaining participants' consent to take part in the research and avoiding deception (Thorpe & Holt, 2008). Prior to the beginning of the fieldwork, the researcher has filled in an ethical approval form in accordance with the ethics policy established by the University of Exeter Business School which has been reviewed and approved by the school ethical officer.

This research was not intended to cause any harm to the participants. It did not involve vulnerable people and did not require any prolonged participants commitment too. In addition, no questions affecting personal or private matters were asked to the participants. When introducing the researcher to the

organisations considered in this study, each of them has been informed of the purpose of this research and of the willingness to access secondary and primary data through a short research summary. Each participant has had opportunities to pose questions to myself once they were contacted and before interviews to clarify their involvement in the research process and the content of the interview.

Participants have been requested also to read and sign a consent form before taking part in an interview, which informed them of the following points:

- participants were told that their participation was voluntary and that they could withdraw from it without giving any reason;
- they were informed that each interview was recorded with the possibility for them to ask that the recording device could be switched on and off at any time;
- they were informed that the content of the interviews would have been used in the researcher's PhD thesis, journal articles and presentations in accordance with confidentiality and anonymity parameters;
- they were informed that they could refuse to answer to any questions without giving any reasons and that they could be contacted again for follow-up interviews.

At the beginning of each interview, participants were thanked for their involvement, were reminded that the interview was recorded and were invited again to pose any questions to clarify their involvement or the content of the interview. Some days prior to the date of the interview, an e-mail was sent to the interviewee to inform him/her of the content of the interview. On one occasion I have been asked to provide a list of the questions prior to the interview and this has been done accordingly. At the end of interviews, participants were asked wether they wanted to add some other comments to enable the emergence of further insights and thus not only those prompted by the researcher's questions. They were also thanked again for their availability in taking part in the interview.

Confidentiality and anonymity have been maintained in data collection, analysis and reporting. For instance, when transcribing interviews, instead of using names to identify the organisation and the person interviewed, the

researcher used acronyms and in the reporting of the findings it is only mentioned the role of the person interviewed neither his/her name nor the real name of the organisation. No deception was involved on the part of the researcher because there was no covert research. When I attended organisational meetings, I have always introduced myself, the purpose of my research and the reasons of my attendance informing the participants that I would have observed their meetings and taking notes while respecting confidentiality and anonymity parameters.

Finally, on the security of data storage, all the research data are stored on a University of Exeter Business School laptop which is encrypted and password protected. The original files of the recorded interviews have been copied on this laptop and deleted from the recording device. Data are also backed up on an external driver, which together with the laptop and hard copies of the interview transcripts are kept in a secure place.

3.8 Chapter three summary

Chapter three has started with an overview of the social science research paradigms, particularly positivism, interpretivism and pragmatism. Of interpretivism, this chapter has traced its phenomenological and hermeneutical roots. Contemporary philosophical hermeneutics has been then presented as this thesis research paradigm because of its more reflective stance towards understanding of social phenomena. Attention has then turned to the indication and justification of both the chosen research strategy (case study as a form of contextualised explanation), and the methods used to gather data (participant observations, semi-structured interviews and shadowing). The SBMs literature is not well developed yet and it is mostly conceptual. Nevertheless, the few empirical investigations in the SBMs literature adopt case studies as research strategy and thus this enquiry, which employs multiple qualitative case studies with organisations representing the manufacturing and service sectors, complements the studies that in the SBMs literature have adopted the same research strategy. Paragraphs 3.5 and 3.6 have then given consideration to the data analysis techniques and to the issue of quality in qualitative and

hermeneutical enquiries. With regard to the former, this chapter has emphasised that data analysis is carried manually without the assistance of a CAQDAS since the research aim is to preserve the integrity of the data rather than producing data fragmentation and reduction. Narrative and comparative analyses are presented as data analysis techniques and are chosen because they enable the understanding of the phenomenon studied in its complexity. Quality and particular validity is quite a contested topic in the area of qualitative research. It has emerged that this is the case because the adoption of a multitude of different theoretical and methodological stances by those carrying qualitative research (Easterby-Smith et al., 2008 b; Johnson et al., 2006) legitimates the application of different evaluative criteria (Bochner, 2000). Consequently, there is no agreement on which criteria to use to judge the quality of the research outcomes (Pratt, 2008). Criticism also stems from *foundationalism* (Guba & Lincoln, 2005), which refers to the use of positivist methodological criteria to judge the quality of studies that rest on different philosophical grounds. Some criteria that can be applied to judge the quality of hermeneutical studies have been then identified drawing from Madison's (1988) and Moules' (2002) studies. Finally, this chapter has explained how the research ethical issues have been dealt with.

Chapter 4
'FurnitureCo' and 'PlanksCo'

4.1 Introduction

Chapter four marks the beginning of the empirical part of this thesis with an overview of the business activities of the two SMEs that are investigated. Each case referred to as FurnitureCo and PlanksCo respectively, is individually analysed to understand how its operating model relates to the CE and to the SBMs literature and to qualify the underlying value proposition. Therefore, the initial analysis of the empirical data matches the business practices of each case against the ReSOLVE framework (McKinsey et al., 2015) and the SBMs archetypes (Bocken et al., 2014 a) introduced in the literature review chapter.

4.2 FurnitureCo

FurnitureCo is a British SME which manufactures high end, 100% organic and natural fibres and made by hand mattresses. It was the marine yacht market that originally led this company to manufacturing mattresses. Both company managing directors used to sail a lot and they became aware of the poor performance of synthetic materials mattresses in use on boats, generally subject to problems relating to damp and condensation. The shortcomings of traditional yacht mattresses created a business opportunity whereby a competitive edge might be achieved with a product providing greater comfort and support and greater longevity. Later the two managing directors recognised that the characteristics of the product realised for the marine market could work in other market segments too, and so they began penetrating other markets in 2001. The following quote explains how FurnitureCo's business journey started and developed:

> the key requirement for the boat product is to get ventilation in the mattress and synthetic materials just don't do that. Natural materials do. They are inherently very breathable and they give much better ventilation. That's where the journey started in terms of discovery of natural fibres. From there on (…) with all the markets we approached, it has been driven by the fact that there is an opportunity for our particular product. Having developed a

natural product for the marine industry, it then became very apparent that it will sit well for the baby and infant markets and having done lots of baby mattresses it became apparent that [they] could work well for adults mattresses and there was a great demand for that kind of mattresses (MD a, 2014, int. 1).

Today FurnitureCo, with its mattresses, renowned for their superior comfort and durability as well as for their health and environmental benefits, is a leading UK natural mattresses maker with a presence in the marine, nursery and adults (home and budget boutique/high end hotel) markets. The product range includes bed bases, headboards, mattress toppers and organic bedding too.

4.3 FurnitureCo and the circular economy: value proposition and operating model

To explore how FurnitureCo's operating model is in line with CE thinking, it is pertinent, as explained in part two of the literature review chapter, to first relate them to the ReSOLVE framework (McKinsey et al., 2015) reproduced below from chapter two. Features of the underlying value proposition will be highlighted as well.

Regenerate	**Re**	▪ Use renewable materials and energy; ▪ Invest in natural capital (protect, preserve and restore the natural environment).
Share	**S**	▪ Maximise extraction of value from resources so that they can circulate within the economy for longer through sharing, re-using and enhanced product durability.
Optimise	**O**	▪ Increase product and processes performances.
Loop	**L**	▪ Close the production loop via technical and biological cycles.
Virtualise	**V**	▪ Dematerialise products.
Exchange	**E**	▪ Adopt disruptive technologies and materials.

Table 2A (reproduced from chapter two): The ReSOLVE framework
Source: Adapted from McKinsey et al. (2015, p. 26)

The environmental impact of a mattress is determined largely by the materials used and their processing (WRAP, 2013 a). A key distinctive feature of

FurnitureCo's products and processes is that they have a particularly low environmental impact as a consequence of its use of natural materials and innovative technology.

The main natural fibre used by FurnitureCo is organic lambswool certified by the Soil Association. Its mattresses fall in two categories, the *Pocket Sprung Range* (a combination of pocket springs and natural fibres) and the *Natural Range* (made exclusively of natural fibres). These are made of 100% natural, organic, renewable and biodegradable fibres (Company brochure and environmental policy). The latter include:

- organic lambswool certified by the Soil Association;
- organic coir fibre (derived from coconuts husk) from the only certified organic plantation in the world;
- organic cotton certified by the Soil Association;
- organic latex from the only certified organic rubber plantation in the world with the company being the only UK mattress maker using it;
- mohair, cashmere, horsetail hair, bamboo and even recycled denim (Company brochure).

These natural fibres are chosen because they offer superior comfort, support, durability, ventilation and insulation as well as because they are healthier and more environmentally sustainable than synthetic materials (Company brochure). For instance, coir guarantees superior ventilation and spring; latex is breathable and 100% hypo allergenic and anti-microbial; horsehair gives spring and flexibility; wool and cashmere both have very good insulation and ventilation properties; ventilation, breathability and insulation are all of a key importance in helping the body keeping the right temperature, thus ensuring a good night sleep (Company brochure). On top of these key characteristics creating more comfortable and healthier sleeping environments, all of these fibres are renewable and biodegradable, thus enhancing the environmental sustainability of the product. The intrinsic features of the natural fibres and their quality, coupled with the manufacturing by hand, increase the durability of the product (Company brochure). The following quotes express what manufacturing by hand means:

> [materials are] cut and assembled by hand and the other thing that is made by hand is also the covers and tiers are stitched together. (…). We get lot of material that is pre-cut for us and coming in standard size. And one of the

> reasons for that is to avoid any kind of waste, but the assembly, the covering, it's all done by hand and we also offer quite a lot of bespoke product as well, so and in those cases, where everything is an odd size or made to measure, then everything is cut manually (…) especially in the case of boat products: as you can imagine everything is in an odd shape size (MD a, 2014, Int. 2).

And:

> every stitch, every fibre, every tufting button is painstakingly created, teased and checked so that when a mattress is complete we know it will give years of long lasting comfort (Company brochure).

These mattresses increased durability adds to their environmental sustainability credentials since enhanced product durability is instrumental in the achievement of more sustainable consumption (Cooper, 2005). More durable products use resources more efficiently and encourage sufficiency, insofar as they postpone the need to buy a new product (ibid). The longer lifespan also reduces the environmental impact of the product at the end of its useful life because "an average mattress takes up 650 litres of landfill space as compression is difficult" (WRAP, 2013 a, p. 6). Bedding and furniture too have high environmental sustainability standards since 100% organic cotton certified by the Soil Association (Company brochure) and Forest Stewardship Council (FSC) materials (Company environmental policy) are used respectively. By considering the features of the raw materials (renewable, natural, organic and biodegradable) and the increased durability of the end product, it would appear that FurnitureCo's business practices are in line with the '*Regenerate'* and '*Share'* measures of the ReSOLVE framework. However, a focus on products alone does not yield a comprehensive understanding of the overall consistency of the company business practices with CE principles. Thus, an analysis of the company processes complements that relating to products and is next considered.

A key distinctive feature of the manufacturing processes is that the usage of renewable inputs is not limited to raw materials but includes the source of energy too. Photovoltaic solar panels are installed upon the factory buildings making the company independent from the grid.

> The solar PV generates more electricity currently of what we are using on the site except that now we are taking this showroom space and we have some extra equipment and plants; so I suspect that probably we are going to use up all the solar energy ourselves (MD a, 2014, Int. 1).

The use of a renewable source of energy and, whenever possible, of local raw materials (organic lambswool sourced from farms located within 50 miles from the manufacturing site) limit considerably the carbon footprint of a FurnitureCo's adult mattress which, according to a 2012 company study amounts to 34.8 $KgCO_2e$. This compares well to the rest of the industry with FIRA, the British most prominent association in the furniture industry, estimating that a standard double mattress has an average carbon footprint of 79 $KgCO_2e$ (FIRA, 2011).

The organic lambswool, one of the key raw materials used at FurnitureCo, is not only sourced locally but is processed locally too. It is treated with an entirely natural and chemical free mixture of essential oils of eucalyptus, lemon and lavender; such a mixture ensures mattress protection against dust mites, bed bugs and moths (Company brochure), thus making the end product healthier and suitable to those suffering from allergies. Wool, in addition to having durability and health-related benefits (resilience, insulation and ventilation), is "inherently fire retardant" (Company brochure) and because of this FurnitureCo is "the first company in the UK to pass all British Standards, European and USA fire regulations without the use of any chemicals, unnatural treatments and fire retardant additives" (Company brochure). No chemicals are used in the mattresses cover either, being made with unbleached cotton covers treated with natural geraniol that works effectively against bed bugs (Company brochure). Overall, as the raw materials are biodegradable, natural and organic and the processing of these materials involves only natural and chemical free treatments, in line with a "biological metabolism" (Braungart et al., 2007, p. 1343), when the product reaches the end of its useful life, its components might be safely returned to nature through composting, thus enriching and restoring the natural environment. The aspect of the biological metabolism paves the way to the discussion on the disposal stage of these natural materials mattresses.

In terms of how the company manages its products at the end of their useful life, FurnitureCo has always aimed at implementing a collection service especially for its hotel customers both to gain a competitive advantage and to further demonstrate its environmental responsibility:

> it's hard to do in the retail market (…) because we have to consolidate lots of mattresses here and fill up the containers before anyone would be interested in taking it, otherwise if you have one or two mattresses it is not the right

> volume to justify all the transports. So it's fine on big projects like hotel, it's tricky on a small scale. (…). Lot of the hotels we have done so far are new build projects so it hasn't been a problem (MD a, 2014, Int. 1).

The company willingness to strengthen its environmental responsibility has been conveyed into a feasibility study, which with the assistance of WRAP is currently exploring the implementation of a take back scheme. This feasibility study considers both how to organise the collection service and how to close the production loop of the returned mattresses. This might involve taking back and recycling (perhaps composting or used for other products, e.g. within the pets market), or taking back and refurbishing (MD a, 2015, Int. 4). In addition, the study is exploring the feasibility of both an alternative revenue model based on leasing the product, and of the collection service for large hotel customers with the possibility to extend this option to retail customers too. As both composting and recycling of materials into other products are under examination the company products at their disposal stage could comply not only with "biological metabolism" as already discussed, but also with "technical metabolism" (Braungart et al., 2007, p. 1343). In taking back mattresses and either composting or recycling materials for other purposes, not only might FurnitureCo improve materials productivity but also contribute towards a reduction of the second biggest environmental impact of mattresses associated with disposal. Although application of the waste hierarchy suggests that re-use is a better option than recycling (EC, 2010), in the case of mattresses re-use is less viable due to hygiene issues (WRAP, 2013 a).

The company attention to waste is not confined to the end-of-life within the product life cycle. There also are systems in place to make sure that off-cuts waste is minimised and that packaging waste is recycled. The waste produced as a result of the manufacturing process is off-cuts waste, e.g. natural material waste such as wool, coir, latex etc. deriving from the cut and the assembly of the raw materials into a mattress. These off-cuts do not have a large environmental impact because they are not hazardous waste, and biodegrade fairly quickly, e.g. wool returned to the soil is enriching and it decomposes in a shorter time than synthetic fibres (The Campaign for Wool a). Nevertheless, there might be commercial opportunities to produce something else from it and it would align with the management values and the corporate culture of waste

avoidance. The company had always made an effort to come up with ideas on how waste might be reused, though initially it seemed very difficult to find a solution to this issue as this quote emphasises:

> it is very difficult to find ways of using our waste (…). It's still something we want to do but it seems like very expensive to invest in the machine. We haven't totally identified the right machine for the project yet and the other issue is that we do not produce that much waste so our concern is that if we invest heavily in a large machine and we don't have waste to put through the machine it will take too long to take our money back on the investment and also the other problem is that if we produce a product that everyone loves we might not be able to keep up with the demand. So, there is a risk on the scalability of all the thing. So, it's under review. We would like to get it working but we haven't yet (MD a, 2014, Int.1).

Nevertheless, the company has managed to address the issue by concentrating on minimising waste in the first place through more efficient production processes:

> more and more of our products are standardised and more and more of raw materials is standardised, [so] the volume of off-cuts materials is reducing. So it is not really viable to consider doing too much with that because we will run out of the supply for it (MD a, 2015, Int. 4).

Apart from sourcing raw materials directly into standard size sheets, the company relies on employees' environmental training to minimise waste:

> we want all the members of staff to be totally aware of the impact they are having and the key thing fundamentally is just minimising waste because waste just costs us in terms of raw materials to start with and it costs to get rid of any kind of waste we produce (MD a, 2014, Int. 2).

Manufacturing by hand is very helpful in this context as it allows direct employees' involvement with the corporate ethos of aiming to zero waste.

Sustainable waste management applies to packaging waste too. The company has always used packaging for its mattresses that was either 100% recycled and recyclable (cardboards, plastic) or 100% biodegradable such as in the case of the inner packaging made from potato starch (Company brochure). However, the company has always considered how to avoid or reduce packaging waste:

> we want to have a better way of packaging our mattresses in such a way we can reuse the bag (…) a material bag with a zip (…) so that [a mattress] can be delivered in that, unzipped, taken out and the bag comes back again (MD a, 2014, Int. 1).

Here too, environmental responsibility is coupled with commercial sense:

> lot of these packaging can be easily recycled, and in the case of potato starch it's compostable anyway, but actually, if we can avoid it, we would rather avoid it, because we can produce something that is compostable but there is still lot of energy that is involved in making that packaging, lots of costs to us to make that packaging (…). Environmentally the impact is not that terrible but if we can avoid it, it would be better (MD a, 2014, Int. 1).

Recently, the company has managed to find alternative ways to package its mattresses. It is currently experimenting with re-usable bags for its mattresses packaging (MD a, 2015, Int. 4).

Overall, the analysis of the company processes reveals the congruence of the latter with the '*Regenerate', 'Share', 'Optimise'* measures of the ReSOLVE framework and potentially with *'Loop'* if the closing of the production loop, currently being explored in the feasibility study, is undertaken. The characteristics of the company products and processes also accord with some of the measures for SBMs archetypes proposed by Bocken et al. (2014 a, p. 48). Notably, there is an alignment with *'maximise material and energy efficiency'* (e.g. low carbon manufacturing and waste minimisation), *'create value from waste'* (e.g. re-usable mattress packaging) '*substitute with renewables and natural processes'* (e.g. renewable energy sources; renewable raw materials; absence of chemicals from the manufacturing process) and *'encourage sufficiency'* (e.g. mattress durability) archetypes. Nevertheless, there are other features of the company product and processes and some additional initiatives that can be linked to other SMBs archetypes. These features and initiatives are reviewed in the next sections of this paragraph. Although not mentioned in the ReSOLVE framework, they do not stand in contrast with it but rather are beneficial to the development of the examined BM, to the promotion of more environmentally sustainable practices in the business community and they strengthen the sustainability credentials of the company BM.

Mattresses manufactured at FurnitureCo, because of the features of the raw materials and of the manufacturing process discussed earlier, might be an appropriate choice for consumers interested in a healthier sleeping environment. In addition, in contrast with the increased globalisation of

businesses, FurnitureCo uses local raw materials whenever possible. For instance, the company only uses local organic wool certified by the Soil Association, the UK leading organisation for the promotion of fairer and healthier as well as sustainable land use, food and farming practices (Soil Association), which certifies more than the 70% of all the organic products sold in the UK (Soil Association, 2014). By buying wool from organically farmed sheep, the company is also supporting ethical and sustainable farming practices while obtaining a better quality raw material that contributes to enhance the quality, health and sustainability standards of its mattresses. In addition, FurnitureCo sustains the *Campaign for Wool*, a global initiative started in 2010 by its patron, His Royal Highness the Prince of Wales, to promote the use of wool for its numerous benefits (The Campaign for Wool b). Since its launch, this initiative has contributed to raise the demand for wool globally which has been accompanied by positive outcomes in terms of farmers' welfare too (The Campaign for Wool b). Raw materials not only are sourced locally but are also processed locally and local people are employed. In doing so, FurnitureCo fosters the local economy and the re-valorisation of skills such as those involved in the processing of the wool that were once well established in the community in which the company operates:

> [this] was a traditional wool trade area (…) there used to be far, far bigger infrastructures around wool. Most doesn't exist any longer. (…) Although we grow a lot of wool here, the processing that revolves around that product, quite a lot has disappeared, which is a shame (MD b, 2014, Int. 1).

The strong connection with the local environment appears with no doubt from this quote:

> from a local manufacturing perspective (…) we try to have local resources, local people, who live within the local community and operate within the local community and hopefully they take a skill that goes back into that community which we hope will then encourage other people to learn and accomplish that particular skill (…); the wage we pay to them it is part of the local economy and obviously lot of that money will be spent locally which we hope would encourage other local business to survive within that community (MD b, 2014, Int. 1).

The willingness to support the local economy is maintained in the growth plans and local manufacturing is pursued also because it would enable costs savings:

> we have a sewing capacity here and an external party sewing capacity for increased volumes which is again local [and] as we grow we need more space (…) we could explore or have already explored the opportunity for working with third parties (…) and that would be done locally, as much local

> as possible and apart from anything else, to cut down transport in moving stuff around because our product is bulky, so raw materials are bulky, finished products are bulky (MD a, 2014, Int. 2).

Because of the pursuit of social as well as financial goals via supporting the welfare of the local community in which the company operates, FurnitureCo might be considered a place-based enterprise, defined by Shrivastava & Kennelly (2013) as an enterprise "with a local or place-based locus of ownership and control, embeddedness or rootedness in the physical, social, and human capital of a place, possessing a sense of place and a social mission" (p. 90).

In addition, FurnitureCo is involved in initiatives that might be considered not only supportive in the development of the company BM but also as facilitating the scaling-up of more environmentally sustainable practices in the business community. For instance, FurnitureCo has led an initiative called the 'green hotel room' whereby by partnering with non-competing, like-minded businesses and displaying how an environmentally sustainable hotel room could be created, it has promoted sustainable bedding and furniture in the hotel industry (Company brochure). This 'green hotel room' was exhibited in a national *Sleep Event* in 2010 and it contained FSC certified bedroom furniture, LED lighting, carbon neutral carpets and wall coverings made out of recycled bottles (Company brochure). This initiative is an example of how manufacturing in accordance with comprehensive sustainability principles creates opportunities in the market place as this quote expresses:

> it was effectively a marketing thing trying to get our product into the mind of hoteliers (…) and in order to do that we felt that it would be a stronger story if we combine forces with other not competing companies that can also bang on their sustainability. It was about raising that flag and put it on the hoteliers' agenda. (…) And it worked and raised awareness of all the issue. Lot of good business and good contacts and interest from big hoteliers who are either starting to considering or thinking about it [came out of that]. It opened up the dialogue with hoteliers. It opened up opportunities (MD a, 2014, Int. 1).

Overall, the features of the company products and processes and the initiatives in which the company is involved discussed in the last sections of this paragraph, would appear consistent with '*adopt a stewardship role'* (e.g. natural material mattresses contribute to improve consumers' health and wellbeing)*, 'repurpose for society/environment'* (e.g. local focus) and *'develop scale up*

solutions' (e.g. the green hotel room initiative is an example of collaborative approaches to promote environmentally sustainable bedding in the hotel industry) SBMs archetypes (Bocken et al., 2014 a, p. 48). Nevertheless, the local focus of the company operating model represents a more nuanced version of the *'repurpose for society/environment'* SBMs archetype since in this case there is no prevalence of social and environmental goals over the financial ones as the archetype would seem to propose. FurnitureCo is neither a social enterprise nor a hybrid organisation but a for profit company which is also doing well socially and environmentally. Table 4A summarises how FurnitureCo's practices are consistent with the CE principles along the ReSOLVE framework.

Regenerate	▪ Renewable energy (solar energy) and renewable and biodegradable raw materials (organic and natural fibres); ▪ Low carbon manufacturing; ▪ Absence of chemicals from raw materials processing; ▪ FSC approved sources in the manufacturing of furniture.
Share	▪ Increased durability of the product; ▪ Re-usable bag for mattress packaging.
Optimise	▪ Standardisation of raw materials minimises off-cuts waste.
Loop	▪ A feasibility study in partnership with WRAP is currently undergoing to explore opportunities for closing the loop in accordance with 'technical' and 'biological' metabolism.

Table 4A: FurnitureCo's practices in relation to the ReSOLVE framework
Source: The researcher

4.4 PlanksCo

PlanksCo is a British SME manufacturing scaffolding boards with 100% recycled U-PVC (Unplasticised Polyvinyl Chloride) plastic. It was a chance remark from an experienced scaffolder, commenting that a scaffolding board alternative to the traditional wooden board was much needed in the scaffolding industry, that alerted the managing directors of the existence of a business opportunity (MD a 2014, Int. 1). The company two managing directors, highly determined and with a strong commitment to environmental and social stewardship, started exploring the feasibility and viability of their business

project in 2011, and since then their innovative product, whose manufacturing started in 2014 (attempted by others before without success), has gained a lot of attention in the building trade. The environmental credentials of the product, according with CE principles, are not the only positive feature of PlanksCo's value proposition, which is complemented by high health and safety, a corporate ethos of 'doing good business' alongside financial benefits. Its comprehensive value proposition, has led to PlanksCo's product attracting the interest of a very traditional scaffolding industry where wooden boards have been used for hundred of years.

4.5 PlanksCo and the circular economy: value proposition and operating model

As with the FurnitureCo's case, to explore how PlanksCo's operating model relates to the CE principles, this is matched against the ReSOLVE framework (McKinsey et al., 2015). Features of the underlying value proposition will be highlighted as well. In addition to revealing the fit with the CE principles, the analysis demonstrates why PlanksCo's alternative product is valuable to the scaffolding industry.

More than 9 million tonnes of plastics waste end up into landfills across Europe every year (Plastics Europe, 2015) despite the numerous environmental benefits of plastics recycling deriving from preventing virgin plastics production (WRAP, 2010). With plastics waste disposal into landfills having a severe environmental impact (WRAP, 2010), the manufacturing of PlanksCo's product contributes to alleviating this problem:

> with our boards (…) we are going to stop hundred, thousand tons [of plastics] from going to the landfill (…). [Our] product is a big product, profile is 3.9 metres long (…); looking at other recycled products a lot of them are little widgets but ours is a significant big product (MD a, 2014, Int. 1).

And the following estimates how much recycled plastic might be used annually:

> we just had a new line installed and this one at its maximum (…) is going to use over 5,000 tonnes of recyclate per year (…); we will probably have at least 3 lines running within 12 months so that would be about 15,000 tonnes here at least. But also we have some specialist markets knocking on our door, the nuclear market, the oil and gas industries wanting an anti-static

> board and each one of these will be requiring similar amount of material, so it's still going to our R&D process at the moment but we will be using a quite significant amount of material in the next year (MD b, 2015, Int. 3).

The company boards are made of recycled U-PVC and are extruded as rigid PVC to the same size as wooden boards. Before identifying the right plastic recyclate to be used for the manufacturing of their product, the two managing directors went through a learning process involving a lot of research and trials (MD a, 2014, Int. 1). Initially they attempted to use various types of recycled PVC such as pipes and drains before realising that PVC from windows and conservatories, known as U-PVC, was the most suitable. This was because the health and safety performance requirements of scaffolding boards demand a strong product, able to sit in different weather conditions (MD a, 2014, Int. 1). U-PVC contains additives making it resistant to impact as well as to different weather conditions and temperatures (MD a, 2014, Int. 1). The recycled U-PVC is obtained from two different sources, post-industrial and post-consumer U-PVC with the former coming from manufacturers of windows as production off-cuts and the latter from replacement of old windows (MD a, 2014, Int. 1). The difference between these two sources and the challenges involved into the handling of these materials are explained in this quote:

> the post-industrial, that's really unused product (…) that's a really nice source because it is really good clean material, it still got the rubber in it because when they co-extrude it, when they extrude a piece of window they extrude rubber within it too. That's a contaminant for us but (…) we can extract that and that can be sold on and we don't have to put it into the landfill. There are people that will take that rubber and that is really good (…). Post-consumers is the old stuff that comes out of house when they are replacing windows and that has got metal, dirt and silicon (…) that is very contaminated and very few people can handle that because it has got so many layers of contamination (…) but we buy it chucked up, (…) we crunch it up, we put it through our cleaning machine and then we will be put it through a pelletiser which is a kind of heating extrusion and what it does it melts it down, it puts through a filter and produces little pellets (…) and we use that, that is clean (MD a, 2014, Int. 1).

PVC is a very durable, valuable and suitable for recycling material, which preserves its strength through recycling cycles according to Recovinyl, the European PVC recycling scheme (Recovinyl a, b). Consequently, PlanksCo not only manufactures its boards with 100% recycled U-PVC but also is willing to buy them back at the end of their useful life, to re-grind and convert them into other boards (Company web site) and this can be done for a consecutive

number of times up to 7-8 times (Researcher's notes). The boards can be leased also, which similarly enables perpetual recycling. Therefore, a full closed-loop production process aligned with "technical metabolism" (Braungart et al., 2007, p. 1343) characterises the company operating model. In addition to being environmentally beneficial, PlanksCo views buying back boards as strategically sound:

> [in buying back boards] we know the material that has got in the board in the first instance is good material, without worrying about the problems with that materials because we have already checked that out previously so we know that is good for the product that we want, plus it's cheaper material than actually having to take the windows, hand strip the windows; it bonds the customers to us because we buy back the boards and we buy back as a credit against new boards (MD b, 2015, Int. 3).

Other challenges for the company, having identified the right type of PVC recyclate, were to source a very good quality, clean recyclate to satisfy the health and safety performance requirements of scaffolding boards, and to secure enough supply of that material. Persistence and a lot of learning were involved in this business development stage because of the challenges encountered in the plastics recycling industry. One of these is the poor quality of much of the recyclate:

> we have found that there are no standards in the recycling plastic industry, we can't order from a wholesaler a particular kind of material because generally this is made up of small companies that will take out the window, piece of gutter and whatever the plastic is and the integrity of that material is unknown (MD b, 2015, Int. 3).

> So we realised that we have to put in a laboratory to test the material coming in but we were still struggling to get the reliable source of material, 10, 20 tonnes per week; it just was not happening (…) and then we realised that the only way to do this was to do it ourselves and we had an amazing opportunity to get hold of a cleaning processing plastic machine (…) and we can now buy contaminated material and clean it ourselves, so we are assured of our quality and that has been a breakthrough. It secured the business (MD a, 2014, Int. 1).

Another challenge is instability of the plastics recyclate supply chain:

> the network is not good at the moment, it's very patchy business, patchy recycling and is patchy geographically but also there are many plastic recycling businesses that are always going burst, going broke, closing down (…). The all plastic recycling industry is quite unstable and that has caused tensions with the supply because the supply network out there is not good enough to supply us which is why we are looking to develop our own supply

> network and there is the potential to do that (…). There is no steadiness in the plastic recycling world at all, no reliability, no trust (MD a, 2014, Int. 2).

Because of the lack of stability and reliability in the plastics recycling industry the company realised that to support its business it was not enough to have a machine cleaning the recyclate but that it was necessary to build and take control of their own plastic supply chain. And this is another area the company has started exploring recently and where it is innovating with its operating model. PlanksCo is piloting hand stripping of U-PVC from the rest of windows frames sourced directly from windows fitters:

> [through hand stripping] we can absolutely guarantee that the material we are having is the correct material for this safety critical product (…); we are taking control of the supplied material ourselves and setting our own standards rather than relying on other people (MD b, 2015, Int. 3).

Once the U-PVC is hand stripped is then granulated, further cleaned in the company own cleaning machine before getting transformed into boards. The following quote explains why hand stripping is preferable to have a clean, good quality recyclate:

> it has been done elsewhere and we know that it gives very clean material which is why we are wanting to go with it (…). At the moment the typical way that processes recycle a window is that they have a big machine called shredder but they just put all the window frame, all the metals, the aluminium, the silicon, the rubber, everything goes into the shredder; they then use a chemical means to try and take out all the non-plastic and then they pass to us and we have our equipment to try again clean it. Sometimes we can get as much as the 60% of a consignment of materials rejected by our processing because it is so dirty and contaminated whereas by hand stripping you know that you are taking good, clean plastic (…). We have come through this journey and realised we actually have to capture the complete supply chain for the recycled material to make sure that you got the quality of the material, you can't rely on other people because there is no standard, nobody has a standard to work to, so they will just give you what they want (MD b, 2014, Int. 2).

Apart from securing a good, very clean source of U-PVC, the hand stripping process allows to recover other materials generally found within windows frame which is both, environmentally and economically valuable as those materials are diverted from landfill and can be sold, thus capturing value out of them:

> [by hand stripping] you can salvage the aluminium, the rubber which has got a value, the silicone, various metals as well, other polymers, you can take all the different pieces out and each one because they are individual clean materials now either have a value or don't need to go to the landfill (MD b,

> 2014, Int. 2). We are actually on 100% recycling of the old window (MD b, 2015, Int. 3).

Another innovative feature of the closed-loop recycling of the U-PVC windows through hand stripping is that the company is seeking to develop a model whereby the material recovered and transformed into boards, is then used in the same geographic area where it was originally employed in the form of windows. This hand stripping process is labour intensive and so generates employment. The company is considering establishing hubs for the hand stripping of U-PVC across England, with each employing about fifteen people (MD b, 2015, Int. 3). Hand stripping further supports the goal of minimising waste to landfill alongside employees' environmental training which allows separation of the waste on the shop floor so that various materials (e.g. cardboards) can be recycled. An additional fully closed-loop process is also in operation for the new end cap for the plastic board. This is made of recycled PVC plastics obtained from the PVC water filters used in the cooling towers of nuclear power stations, which typically have been disposed into landfills (MD b, 2015, Int. 3).

Not only is the product manufactured in a closed-loop system but also the recycled plastic board shows significant benefits in terms of durability, carbon footprint and wastage. Product durability, as discussed, is instrumental in the achievement of more sustainable consumption (Cooper, 2005) with more durable products postponing the need to buy a new product (ibid). This is not the case with wooden boards characterised by a very short life span, which get disposed into landfills, where they normally end up at the end of their useful life, as soon as they are mounted on scaffolding sites, resulting in the production of waste:

> they have cheap grade and they are going to loose at least 10% as soon as they get mounted on the site and the wooden boards, some may last not even few days, the best ones may last a couple of years, it depends on how they are looked after as well and the conditions in which they are used. Our plastic boards will last at least twice as long as wooden board (MD a, 2014, Int. 1).

With regard to carbon footprint, PlanksCo's board is estimated at 7.6 $KgCO_2e$ which is almost one sixth of the carbon footprint of a wooden board calculated at 41.6 $KgCO_2e$. This might seem surprising given that PVC requires crude oil

as raw material, but results because the boards can be recycled many times and thus there are avoided emissions that would have occurred from the use of virgin materials and disposal in the landfill (Company carbon footprint study).

The analysis of the data presented above would seem to suggest that the features of the company product and processes accord with the '*Regenerate', 'Share',* and *'Loop'* measures of the ReSOLVE framework. The characteristics of the company products and processes would seem to accord also with some of the measures for SBMs archetypes proposed by Bocken et al. (2014 a, p. 48). Notably, there is an alignment with *'maximise material and energy efficiency'* (e.g. boards have a reduced carbon footprint compared to wooden boards; zero waste approach), '*create value from waste'* (e.g. the production process is 100% closed loop), *'deliver functionality rather than ownership'* (e.g. boards can be leased), *'adopt a stewardship role'* (e.g. manufacturing with recycled plastics does not create demand for virgin materials) and *'encourage sufficiency'* (e.g. boards last longer) archetypes. Nevertheless, there are features of the company product and processes and of the corporate ethics that can be linked to other SMBs archetypes discussed in the literature. Likewise FurnitureCo, these features although not mentioned in the ReSOLVE framework do not stand in contrast with it, but would appear beneficial to the emergence and development of the examined BM, to the promotion of more sustainable practices in the business community and they strengthen the sustainability credentials of the company BM. These features are reviewed next.

PlanksCo's value proposition is complemented by significant health and safety benefits, which are highly relevant in the scaffolding industry. The superior health and safety performances of the company boards are ascribed to the following features:

- they are strong and do not slip, twist or warp;
- they have a light and consistent weight (13 Kg) not changing in wet weather conditions thus facilitating handling and easing transportation;
- they have a non-slip surface even under wet weather conditions;
- they have a locked down connecting system that stop trips;

- they are fire retardant because of the intrinsic features of rigid PVC which is non-flammable and self-extinguishing;
- they are traceable because they incorporate a security number and, on request, they can include a customers' logo for extra protection against theft (Company web site).

The enhanced healthy and safety performances of the company boards create economic value for its customers due to reduced risk reducing insurance costs, and reduced sick days and compensation claims (Company web site). Other benefits can be summarised as follows:

- boards can be integrated with wooden boards so that they can be replaced from time to time when the wooden ones reach the end of their useful life;
- boards can be leased or the company buy them back by the metre as a credit against a new purchase;
- boards last longer and there is reduced wastage issue;
- boards have a light weight which means that a greater number of boards can be transported on lorries compared with wooden boards that are heavier;
- by choosing boards with environmental credentials, the environmental sustainability of scaffolding and construction companies supply chains is enhanced which can give a competitive advantage when tendering on construction projects (Company web site).

Table 4B below summarises the benefits offered by PlanksCo's boards.

PlanksCo's boards	They do not slip, twist and warp.
	They have a light and consistent weight in all weather conditions.
	They stop trips.
	They are fire retardant.
	They are traceable.
	Their usage reduces insurance costs, sick days and compensation claims.
	They can be integrated with wooden boards.
	They can be leased or bought back as credit against a new purchase.
	They are long lasting.
	They enhance the sustainability credentials of construction companies supply chains.

Table 4B: Benefits of PlanksCo's boards
Source: The researcher

The company operating model is distinctive also from a socio-economic perspective for the characteristics of the company labour force and supply chain. PlanksCo is creating employment opportunities within England and uses local plastic and this stewardship of the local natural and socio-economic context is a relevant component of the management values and corporate ethics as it emerges from the quote below:

> we wanted to manufacture in the UK, we wanted to help find jobs in the UK, this is a UK product, we wanted to use the UK waste plastic; the whole idea is again a sustainable, local economy, so let's use our plastic waste as locally as we can to make the boards used in our country and let's use our people to make the boards and keep it a very strong UK company to start with and then repeat that business model in other countries but take all the business model. So if we go to Europe, to go, say for example (…) to Spain, it would be nice to use Spanish plastic and not importing it from another country in the product if we can and having made them in that country for that market. So again that is a sustainable model that we would like to create if we can (MD a, 2014, Int. 1).

The All-Party Parliamentary Sustainable Resource Group estimates that about 70% of plastics collected in the UK are sent abroad (China is receiving almost the 90% of the exported plastics) for reprocessing because of the gap existing between collection and re-processing facilities (APSRG, 2013). They assess that "the amount of plastics collected is around four times greater than the volume of UK plastics reprocessing capacity" (APSRG, 2013, p. 29). Consequently, they argue that in the context of resource scarcity and resource price volatility, it would be appropriate to keep these waste streams within the UK to extract value from them domestically, thus contributing to a more resource resilient UK economy. In concordance with that recommendation, in using and handling UK waste plastics, PlanksCo not only is demonstrating environmental stewardship but also capability to extract value from these materials which are kept for longer within the economic system and not exported elsewhere, thus contributing to the UK economy via developing new skills and creating employment opportunities. As in the case of diverting plastic waste from landfill, stopping these plastics waste from being exported is important to the directors and part of the company ethics:

> we are really puzzled by this huge transportation of plastic all around the world; a lot of British windows at the moment are being crunched up (…) being bailed and sent [abroad]. We want to stop that, we want our plastic to stay here in this country, to be used in our boards because we are then catching that material which is a waste material to most people and we see it

> as a resource and it is a sustainable resource that we can use again and again (MD a, 2014, Int. 2).

Consequently, it seems appropriate to define PlanksCo as a place-based enterprise, namely an enterprise "with a local or place-based locus of ownership and control, embeddedness or rootedness in the physical, social, and human capital of a place, possessing a sense of place and a social mission" (Shrivastava & Kennelly, 2013, p. 90).

Another innovative feature of the company operating model is its collaborative approach downstream and upstream its plastics supply chain. Such approach sets good business standards enabling value creation and capture for the company itself and for its business partners. For instance, to obtain better quality post-consumer granulated plastics, PlanksCo, through its staff knowledge and expertise, assists and monitors its suppliers so that they can produce a clean recyclate that satisfies the boards performance requirements. The following interview extract explains how the company assists its suppliers and how value is created and captured:

> our processing manager (…) is working with some of our suppliers to help them produce a higher quality granulate (…). So he can go in and look at what people are doing in their recycling and he gives advice on: if you can change various parts of the system you are going to produce a higher grade recyclate and that is the material that we would use and pay a decent price for and would like regular supply for that. So we are trying to work now with our suppliers to secure the grade we want and help them to produce better quality material (…). People that are coming to us want to work with us because we are trying to generate a trustworthy business, a trustworthy relationship and people want to work with us and we think this is attracting business to us (…). We will have some spare capacity in the cleaning unit so we will be able to sell some clean material to other manufacturers, so we will have customers as well that will buy our excess material and again we want to work with them and develop a trustworthy relationship with them to say we will supply you good quality material and we will stick to that quality and we will not send out rubbish. So it works both sense of the business (MD a, 2014, Int. 2).

Hence, this collaborative approach is beneficial to all those involved in the transactional relationship with PlanksCo and not solely to the company. Indeed, PlanksCo obtains the material quality needed and suppliers' control, suppliers are able to extract more valuable materials from their plastics reprocessing and plastics manufacturers, who comes to PlanksCo to buy its spare, clean plastics, can rely on a trustworthy company providing consistently higher quality, clean

plastics granulate. PlanksCo's distinctive corporate ethics of 'doing good' involves its employees too:

> we want to offer to the staff we have here, every opportunity to do more training or to develop their personal wellbeing, their self-esteem, giving them all the opportunities that we can (MD a, 2014, Int. 3).

> We are looking into structuring a staff share scheme so they actually can own part of the company so they take ownership of it. We very much work on the basis that we are a team, that we need each other to make it work, it's not them and us, we seat in our little ivory tower, it's very much a matter of they need us we need them between us we can make it work (…). My ethic is very much work with them as you would like them to treat you (…). I think that is the way it should be (MD b, 2014, Int. 2).

Another characteristic of the company BM, that enabled the emergence of the business activity in the first place, is its innovative financing structure which is based on crowd funding. As a consequence of the support received from its shareholders, PlanksCo has managed to bring a product with high environmental and safety credentials to the scaffolding industry and to establish an operating model according to CE principles. This has brought them visibility nationally and internationally as a best practice to learn from. Notably, PlanksCo received a grant from Zero Waste Scotland (ZWS) to develop the new end cap for its boards. ZWS is also keen to support the development of PlanksCo facilities in Scotland to help local business to understand how to implement closed-loop production processes:

> Scotland is very keen that we should put a facility up [there] because they want to demonstrate to their manufacturers the business model of taking in one waste product, breaking it down, salvaging the components parts and using that to make another product which is closed loop because we buy back. So they want to use us as an example for other manufactures (MD b, 2015, Int. 3).

Internationally, Australian and Canadian companies have showed an interest in setting a partnership with PlanksCo to start producing the boards in their countries under licence (MD b, 2015, Int. 3).

Overall, the features of the company value proposition and operating model discussed in the last sections of this paragraph seem to be consistent with '*adopt a stewardship role'* (e.g. boards have very high health and safety standards), *'repurpose for society/environment'* (e.g. the company is looking into a staff ownership scheme; local focus) and *'develop scale up solutions'*

(e.g. the company has a collaborative approach with its partners along the supply chain seeking to develop a practice of 'good business' within the plastics recycling industry; crowd funding) SBMs archetypes (Bocken et al., 2014 a, p. 48). Nevertheless, likewise FurnitureCo, the company initiatives which adhere to the *'repurpose for society/environment'* SBMs archetype, represent a more nuanced version of the latter since the company BM does not exhibit a prevalence of social and environmental goals over the financial ones as the archetype would seem to propose. PlanksCo is neither a social enterprise nor a hybrid organisation but a for profit company which is performing well in social and environmental dimensions. Table 4C summarises how PlanksCo's practices are consistent with the CE principles along the ReSOLVE framework.

Regenerate	▪ Avoided extraction of raw materials (crude oil and rock salt used in the production of virgin PVC); ▪ Low carbon manufacturing; ▪ Contribution to diverting plastic waste from being landfilled/exported.
Share	▪ Increased product durability and extraction of value from resources.
Loop	▪ Boards manufactured with 100% recycled U-PVC; whether leased or returned through buy-back scheme the boards are converted into other boards at the end of their useful life; ▪ The boards end caps are manufactured with recycled PVC that is diverted from landfill and recycled again at the end of its useful life; ▪ Hand stripping of U-PVC allows recovery of other materials (aluminium, silicone, rubber etc.) that can be reused within other manufacturing processes; ▪ Waste produced in the shop floor (cardboards) is collected and recycled.

Table 4C: PlanksCo's practices in relation to the ReSOLVE framework
Source: The researcher

4.6 Chapter four summary

Chapter four has analysed the features of the value proposition and operating model of the two manufacturing SMEs that are investigated, FurnitureCo and PlanksCo. This has been done via matching empirical data against the ReSOLVE framework (McKinsey et al., 2015) and the SBMs archetypes (Bocken et al., 2014 a). In both cases several measures of the ReSOLVE framework are implemented (*Regenerate, Share, Optimise, Loop*) and features of the value proposition and operating model are aligned with the SBMs archetypes (*Maximise material and energy efficiency, Create value from waste,*

Substitute with renewables and natural processes, Encourage Sufficiency, Adopt a stewardship role, Repurpose for society/environment, Develop scale up solutions, Deliver functionality rather than ownership). FurnitureCo's value proposition can be summarised as follows: *high end, durable and manufactured with 100% natural and organic raw materials mattresses*. PlanksCo's value proposition can be conceptualised as follows: *durable with superior health, safety and financial benefits recycled plastics scaffolding boards*. This initial analysis of these two SMEs is complemented by narrative and comparative analyses. The latter are presented in chapter six (Results and Discussion) which conceptualises the investigated circular BMs and explains the processes leading to their emergence and development.

Chapter 5
'RailCo' and 'UniCo'

5.1 Introduction

Chapter five is the second empirical chapter of this thesis and presents an overview of the business activities of the two service organisations that are investigated. This chapter follows the same structure as the previous empirical chapter. Each case referred to as 'RailCo' and 'UniCo' respectively, is individually analysed to identify how their operating models accord with the CE and the SBMs literature. Features of the underlying value propositions will be highlighted too. The initial analysis of the empirical data matches the business practices of each case against the ReSOLVE framework (McKinsey et al., 2015) and the SBMs archetypes (Bocken et al., 2014 a) introduced in the literature review chapter.

5.2 RailCo

RailCo is one of the UK's busiest train operating companies (TOCs) with more than 2,000 passengers' services provided each weekday and over 150 stations managed across its network (Company web site). Despite both the complexity of the UK's railway system (Haywood, 2007) with TOCs defined "bizarre constructs" (Woolmar, 2001, p. 231) as they do not own key assets, and the fact that modes of transport do not compete primarily on their environmental sustainability performances (Pullin, 2005), RailCo has embarked on a transformation of its BM driven by an innovative corporate environmental strategy. This case analysis is a 'snapshot' at a particular point in time and considers RailCo's business practices that are aligned with CE thinking. The latter result mostly from RailCo's more holistic and integrated approach to environmental sustainability, which has started emerging in the last years of the franchise considered in this study with benefits spanning the environmental dimension and involving social aspects as well. Brief overviews of the UK's railway industry and of the franchising process are presented in the next

paragraph to facilitate the understanding of the context within which TOCs operate.

5.3 The UK's railway and franchising systems

The 1993 Railways Act started the privatisation of British Rail and generated a complex railway system "with no single controlling mind" (Haywood, 2007, p. 205) characterised by the following structure:

- Network Rail, formerly Railtrack (Network Rail owns and manages almost all of the UK's rail network);
- Rolling Stock Leasing Companies, ROSCOs (they lease locomotives and rolling stock to TOCs);
- Engineering and maintenance companies;
- TOCs (train operating companies competitively bidding to provide passengers transport under franchise agreements. Twenty-five franchises were awarded initially whereas now the number has dropped to sixteen);
- Freight companies (the freight business was sold not franchised) (Butcher, 2014; Haywood, 2007; Jupe, 2010).

The Department for Transport (DfT) is the franchising authority and a franchise can be defined as follows:

> a franchise is the right to run specified services within a specified area for a specified period of time, in return for the right to charge fares and, where appropriate, to receive financial support from the franchising authority. Government subsidy is payable in respect of socially necessary services that might not otherwise be provided (Butcher, 2014, p. 4).

The DfT is responsible for specifying franchising conditions (level of service) upon which companies bid for the award to run the franchise (Butcher, 2015). It also awards the franchise contracts on the basis of price and reliability and monitors the franchisees' (TOCs) performances set in the franchise agreements that are individually negotiated (Butcher, 2014). Franchisees earn revenues from fares and subsidy whereas costs are incurred because of the track access charges and renting of the stations (both paid to Network Rail), the leasing of the rolling stocks from ROSCOs and staff employment; further revenues derive

from subletting parts of the stations to retailers (ibid). There are also associations and other institutions in the UK's railway system such as regulatory bodies (e.g. ORR), safety bodies (e.g. RSSB), passengers' bodies (e.g. Transport Focus) and industry bodies (e.g. ATOC) (ORR, 2015). Though this representation of the UK's rail industry is not intended to be exhaustive, it serves to highlight its complexity and the position of TOCs which, as a result, own and control very little with staff as their main asset (Haywood, 2007). Another major implication of the complexity of the franchising system results in the fact that it absorbs rail industry energies with the consequence that the latter are detracted from efforts to make the industry more sustainable (Fausset, 2014).

5.4 RailCo and the circular economy: value proposition and operating model

Rail is largely viewed as more environmentally sustainable than road-based transport (Eagling & Ryley, 2015) and considered as the most energy efficient and least polluting means of transport particularly in urban travel and over long distance (CER, 2015). Both passenger and freight CO_2 emissions per passenger kilometres/net freight tonne kilometres have been declining in the UK since 2005/2006 (ORR, 2014) with the 2013 UK's transport sector greenhouse gases, accounting for about one quarter of the overall emissions, mostly determined by road transport (DECC, 2015). Nevertheless, beyond CO_2 emissions, which could be mitigated through a further electrification of the network and renewable sources of power (Fausset, 2014; ORR, 2014), the rail industry acknowledges that has many environmental impacts including those produced by waste and affecting landscapes and biodiversity, and considers sustainable development indicators as integral to the industry strategic planning (RSSB, 2009). In line with the industry orientation and with the changing passengers' expectations, who are increasingly considering the environmental impact alongside value for money and availability when choosing their travel options (CER, 2012), RailCo has embraced a more holistic approach to corporate sustainability. As with the previous cases examined, RailCo's

initiatives are matched against the ReSOLVE framework (McKinsey et al., 2015) and the SBMs archetypes (Bocken et al., 2014 a).

In the last years of the franchise considered in this study and in coincidence with the appointment of RailCo's new head of environment, a more holistic approach to environmental sustainability, based on three 'e' pillars (economic, environment and engagement) was adopted. RailCo has always been compliant with the committed obligations specified in the franchise, environmental regulations and industry requirements and involved in continuous improvement of its environmental performances through the environmental management standard ISO 14001. Nevertheless, the head of environment, in charge of a review of the corporate sustainability strategy, set the more ambitious goal of '*minimising environmental impact now and beyond the franchise'* (RailCo's environment strategy, 2014-2015). 'Beyond the franchise' has a dual focus, a temporal and physical one. A temporal focus because this goal meant to embed principles of ecological and social sustainability into staff's and business partners' thinking and behaviour as well as developing a handover guidance for carrying on with environmental improvements beyond the time boundaries set by the franchise (HE, 2014, Int. 1). The physical aspect refers to the ambition of promoting more environmentally sustainable behaviour within the wider community within which the company operates (ibid). In the next parts of this paragraph, the analysis concentrates on the three main RailCo's initiatives emanating from the reviewed corporate environmental strategy, namely zero waste to landfill, B-line and the promotion of more environmentally sustainable behaviour within the wider community.

RailCo's waste does not come only from its direct operations but for the vast majority is represented by what the head of environment termed as 'inherited waste', because resulting from both the retailing activities carried out by RailCo's tenants and by travellers' consumption (e.g. coffee cups, newspapers, food waste). Though that waste is not produced directly by RailCo, the company is required to demonstrate that the waste hierarchy has been applied and that efforts are in place to recycle as much as possible (HE, 2014, MBA dissertation). It was the inherited waste issue that led to the emergence of the zero waste to landfill project, started in one of the biggest stations managed

by RailCo at the beginning of 2013: "[this is] partly driven by the waste hierarchy but it's also trying to get the behaviour level and try to get people to think about what they are doing" (HE, 2014, Int. 1). This project was set up to increase recycling and to separate food waste. As a result of this project just 0.6% of the waste generated on that site goes to waste from energy whereas the remaining parts are both recycled (dry components) and composted (food waste). At the time of this research, the zero waste to landfill project was on the point of being extended to additional stations, particularly the bigger ones where it is more sensible to do it, having realised that given the similarity of stations waste streams the model could be replicated elsewhere (Fieldwork notes, 2014). And at the beginning of 2015 the project started in another big station managed by RailCo (HE, 2015, Int. 3). The implementation of this more ambitious waste strategy has led to environmental benefits (increased recycling rate) and to some economic benefits deriving from reduced costs (HE, 2014, MBA dissertation). Nevertheless, the latter have been compensated by an increase in volumes (ibid). This is why the head of environment started investigating more on the issue of inherited waste to understand whether it was possible to engage with its business partners to further eliminate or reduce waste at source and thus reducing waste disposal costs (ibid). This engagement activity would bring additional economic benefits and challenges deriving from influencing behaviour as the following quote highlights:

> the more we reduce waste, the less cost there is so we can actually reduce our costs by working further up the hierarchy. But that means influencing suppliers, influencing customers and changing their behaviours not just ours and it has to do with the nature of the business that we have got (…); it is not like we are in a production line where we can actually say we don't need that much packaging, we depend on other people making those kind of decisions (HE, 2014, Int. 2).

To reduce waste at source, the head of environment had agreed to work more closely with the head of procurement to identify tenders guidelines for the next franchise influencing, among other things, suppliers' behaviour with regard to the waste they pass on RailCo:

> we are going to (…) come up with the guideline for what they should put in for the next franchise (…) what people do with pallets if they deliver a pallet for a product in. At the moment, we end up with them in our waste stream but we can actually write in the contract they are responsible for taking that back. So it's starting to close the loop on this kind of things, which is going to come back to the circular economy and start thinking about actually where are opportunities (…). That's about the value chain of the waste that is coming

> through the business and it might be actually that the value isn't into us, maybe the value is in the suppliers for them to take it back but we get the benefit of reducing our waste stream so that we don't have to pay the dispose of it. But it is also about things like when we agree on a tenancy, it's about to write in the tenancy agreement that they are responsible for reducing their waste and not dumping that on us effectively, those kind of behaviours because if they ship in a pallet for a good we end up with the cardboard, the pallet and so on (HE, 2014, Int. 1).

Nevertheless, it would appear that some behavioural change exhibited by RailCo's tenants is leading to encouraging results in terms of waste passed on RailCo as this quote expresses:

> there is no way of knowing whether this was actually as a result of the conversation we had or it was somebody new who has joined the organisation recently and is having an influence, but (…) we are seeing step changes into how [tenants] are determining what they should put out for display so they are actually thinking more carefully about the scheduling of the food preparation. So we are actually seeing a massive difference in the raw material food waste (…). More recently (…) I have noticed that they have now started to use sugar shakers instead of sugar sachets in some of their branches (…). That is a massive step forward (HE, 2015, Int. 3).

Another initiative in line with the zero waste to landfill project is the collection of fallen leaves and weeds to make compost for within stations planting, which is led by staff in some stations (Fieldwork notes, 2014). Other measures beneficial to a more efficient waste management include the partnerships with a local council and a local charity to dispose of the abandoned bikes that end up in RailCo's waste stream. Whilst RailCo gains from this initiative as it does not have to pay for the disposal of those bikes, additional social and environmental benefits are produced, because bikes are not discarded and are donated to a charity which then enables disadvantaged youths to gain skills in bikes refurbishment. Bikes that are repaired are sold by the charity to support the running up of the project (Fieldwork notes, 2014). In addition, partnerships are in place to enable collection for re-use of end-of-life ink cartridges. This initiatives not only has environmental benefits but like the previous one produces additional social benefits as for each cartridge collected a donation is given to a Railco's nominated charity (Fieldwork notes, 2014).

RailCo's new environmental strategy has aimed also at creating a positive, regenerative impact on nature through the B-Line project. Via engaging lot of partners such as community rail partnerships among others,

RailCo has worked to identify areas alongside its managed network where responsible planting could be implemented to attract birds, bees, butterflies and bats (this is why it is called the B-line project). This initiative would contribute towards restoring natural capital within which the decline of species supporting pollination services is considered as one of the most serious environmental concerns. Pollination, which consists of the transfer of pollen between flowers carried by insects such as bees and butterflies among others, is a very important ecosystem service as it facilitates the reproduction of plants which in turn provide vital ecosystem services such as food crop production, pest regulation, carbon sequestration and protection against flood (Breeze et al., 2015; POST, 2010). Unfortunately, a significant decline in pollinators has been registered in the UK as well as across Europe and USA more generally (ibid). As a result of the engagement work, community rail partnerships have started some planting activities in accordance with the purpose of the B-line project in one particular area of RailCo's network in the last period of the franchise considered in this study. Environmental benefits are not the only positive outcomes of this project. The B-line project contributes to make stations more attractive, which might influence travellers to use trains when planning their leisure or business journeys and thus potentially benefiting RailCo's bottom line. The latter might also benefit from reduced maintenance costs because once the land is sowed for planting it becomes like a meadow that has only to be mowed once a year (HE 2014, Int. 1). Travellers might gain additional advantages from this project since not only it improves stations attractiveness but also it might increase their wellbeing as research demonstrates the positive physiological and psychological benefits deriving from passive exposure to the natural environment (Gilchrist, 2012).

In addition to the zero waste to landfill and B-line projects, RailCo has made some infrastructural and digital technology investments to encourage the uptake in the use of means of transport that have a reduced environmental impact. These investments could further enhance its value proposition, are in line with the UK's government door-to-door strategy and with the requirements of a more circular mobility system. Modal shift, which would involve the transition from single occupancy vehicles to shared occupancy, public means of transport and walking, is considered as one of the crucial steps in the

achievement of a more sustainable mobility system (Cohen & Kietzmann, 2014). Modal shift is also at the heart of a more circular mobility system which would tackle the structural waste existing within the mobility sector (e.g. single car occupancy; car parked on valuable lands 92% of time) and produce economic, environmental and social benefits such as reduced mobility costs, reduced air pollution and congestion and improved wellbeing (Mckinsey et al., 2015). Changing technological and socio-economic trends coupled with the emergence of new BMs have already produced an impact on modes of transport and have the potential to drive even further the European mobility system towards a circular one (ibid). For instance, car sharing and bike sharing have been increasing dramatically in the recent years also because of digital and information technologies that have permitted rapid scaling-up (Cohen & Kietzmann, 2014). In concurrence, young people are becoming less willing to drive and a reduction in car use, termed as 'peak car', has been observed in many developed countries including the UK (Goodwin & Van Dender, 2013; Hedicar, 2013). Regulatory trends are also driving the shift to more environmentally sustainable forms of travelling. In the UK, the DfT published the door-to-door strategy in 2013 to promote an integrated transport system. That strategy identified in the availability of information, simplified ticketing, interchange facilities and ease of connection between different modes of transport and parts of a journey, the key areas to address to encourage people using more environmentally sustainable means of transport (DfT, 2013).

Public transport and within this rail have a substantial role to play to encourage modal shift and RailCo has taken several initiatives, not following exclusively from the review of the corporate sustainability strategy, that are in line with the above DfT's recommendations. RailCo has recently introduced a free personalised smart phone app. This provides real time information (e.g. trains time, stations facilities) on passengers' regular journeys; it also shows an interactive map indicating stops and interchanges; it allows the purchase of train tickets, which can be then collected at stations, and paying for stations car parking (RailCo's web site). A smart ticketing system has also been introduced to simplify ticketing. Via this system, which is available in the majority of RailCo stations, tickets can be bought in advance on-line and loaded on the smart card to be used at the touch-in gates. Bus tickets can be included on the smart card

which means that customers can use the same card on both trains and buses in some areas (RailCo's web site). Apart from improving customers' experience, the smart ticketing has also environmental benefits as it reduces paper tickets, and the plastic which is made of can be recycled at the end of its useful life (HE, 2014, Int. 2).

RailCo has also made some infrastructural investments to facilitate connection between different parts of a journey and between different modes of transport, which promote more environmentally sustainable and healthier passengers' journeys. For instance, there are more than 6,000 cycle parking spaces across the network managed by RailCo (RailCo's Sustainability report, 2014) and in some stations RailCo has opened Brompton Bike Hire facilities (RailCo's web site). These bikes are folding bikes which means that can be brought on train at any time even during peak time (ibid). Railco has also opened recently its biggest and very innovative cycle hub in one of its managed stations as a result of the funding awarded by the DfT, Network Rail and the local city council (RailCo's web site). This cycle hub provides passengers with 500 parking spaces which can be accessed through the smart ticketing system mentioned above; additional facilities in this cycle hub include cycles repair shop, changing facilities and opportunities for rental of office space on a short term basis (ibid). In addition, RailCo has promoted environmentally sustainable travel through the installation of public electric vehicles charging points (EVCPs): "we are by far putting in the largest number of EVCPs" (HE, 2014, Int. 2). After having installed them in two stations, RailCo obtained funding from the Office for Low Emission Vehicles which secured the installation of an overall number of 50 points across its managed stations (Fieldwork notes, 2014). All of these investments promoting modal shift are consistent with the corporate aim of 'minimising environmental impact now and beyond the franchise', particularly with its physical focus since they might encourage a more environmentally sustainable behaviour among commuters and thus within the wider community. Aligned with that aim is also the initiative of a sustainable fish box collection scheme that RailCo has introduced in one of its managed stations:

> basically it was the case of, the fish gets delivered to the stations with volunteers to hand out to people that have signed up to scheme. So they will get off the trains, get their fish and go out and get their dinner with that. I firmly believe that stations can be communities or hubs (…) and these catch

> boxes [can be] forms of marketing because I think that would draw customers in and encourage them to use the trains anyway. It just reminds them that the station is there (Fieldwork transcription, 2014).

In addition to the initiatives deriving from RailCo's more ambitious corporate environmental strategy, RailCo has been investing in some operational improvements to become more resource efficient that accord with CE principles since the beginning of the franchise considered in this study. Notably, RailCo has taken measures to reduce consumption of traction energy, which is the energy used to power trains and largely responsible for the overall railway emissions (RSSB, 2011). The most relevant energy efficiency improvement that RailCo has managed to implement is regenerative braking for all of its electric trains (Company web site). In dynamic braking, largely used in the railway transport, when a train brakes its kinetic energy is converted into electricity which can be either dispersed or reused. The latter case represents regenerative braking which has the potential to reduce railway transport energy consumption by a measure between 10% and 45% (González-Gil, Palacin, & Batty, 2013). This converted energy can be then used to power the same train or can be returned to the power supply and thus used by other rolling stocks (ibid). Higher energy efficiency is also pursued through the installation of some LED lights at stations (in bigger ones) (Fieldwork notes, 2014).

Smart meters at stations (RailCo's Sustainability Report, 2013) and on RailCo's train fleet (Company web site) run by electricity have been installed to monitor electricity consumption. Efficiency improvements are also pursued through the installation of water meters and through the trial of Driver Advisory Systems on diesel trains to allow fuel savings (RailCo's Sustainability Report, 2013). Overall, the initiatives described in this paragraph would seem to fit with the *Regenerate, Share, Optimise* and *Loop* measures of the ReSOLVE framework. And also with the '*Maximise material and energy efficiency'* (e.g. *dematerialise product; increased product functionality*: the case of smart ticketing; efficiency improvement investments), *'Create value from waste'* (e.g. *recycling:* zero waste to landfill project), *'Deliver functionality rather than ownership'* (e.g. rental of office space in the cycle hub) and '*Adopt a stewardship role' (e.g. biodiversity protection; promote consumer health and wellbeing:* B-line and provision of facilities encouraging modal shift*)* SBMs

archetypes (Bocken et al., 2014 a, p. 48). Table 5A shows how RailCo's practices are consistent with the ReSOLVE framework.

Regenerate	▪ B-line project.
Share	▪ Ink cartridges collected for re-use.
Optimise	▪ Smart ticketing; ▪ Regenerative braking; ▪ ISO 14001 commits to continuous improvement of environmental performances; ▪ LED lights in big stations; ▪ Smart meters to monitor electricity usage at stations; ▪ Water meters to monitor water usage at stations; ▪ Smart meters on trains run by electricity; ▪ Trial of Driver Advisory System on the diesel fleet; ▪ Office space for hire in the new bikes hub.
Loop	▪ Zero waste to landfill project; ▪ Abandoned bikes are donated to charities and refurbished; ▪ Composting of tree leaves and weeds on stations to be used on site for stations plants with exploration to extend this opportunity further.

Table 5A: RailCo's practices in relation to the ReSOLVE framework
Source: the researcher

The key instrument enabling the implementation of RailCo's more proactive corporate environmental strategy is the engagement activity carried by the head of environment. Such activity is innovative in the sense that it seeks to promote environmentally sustainable behaviour within and across the business boundaries but it is very demanding as requested lot of training and talking on a one to one basis. The following clarifies which tasks 'the engagement' pillar involve:

> It's about showing people the way and get the people to actually learn from each other and help them to understand how each other works (…) thinking about the processes they actually have in place instead of waiting for someone to say that is the list of things to do because I think if you do set frameworks then it's so rigid that it may not work on a different site because of the nature of the variability on our sites (…). What I am doing actually is generating people who understand the environment better and are able to contribute to improve the way in which we deal with the environment in business (…). So by spending my time, drumming behaviours into people that are much more respectful of the environment they will go on to do other things both at work and at home and they also go to inspire other people to actually do things differently (HE, 2014, Int. 1).

The next quote emphasises the relevance of the engagement activities for the achievement of the environmental strategy aims:

> the key activity is the engagement piece, absolutely the engagement piece because I wouldn't have achieved any of what I have achieved if it wasn't for people coming on board and supporting me with that, working with me on it, developing themselves, undertaking qualifications (…). I would say that is core to absolute everything I do because it's about engagement of tenants as well, engagement of customers, of suppliers and whilst there is still a huge amount of work to be done, it's leading to a cultural change, the Holy Grail of sustainability of how actually driving a cultural change in a business" (HE, 2014, Int. 2).

But this activity is not without challenges: "it's an on going slow process, you know, it's a cultural change kind of approach as opposed to putting in a framework that is documented (…) and that takes time" (HE, 2014, Int. 1). RailCo's staff at all levels has been involved in this process and particularly the internal team of dedicated human resources who volunteer for the achievement of the company environmental targets and whose role has changed with the transformational journey initiated by the head of environment. This quote describes the change in the roles these volunteers perform, involving engagement activities too now:

> we have a team of 43 volunteers called Area Champions for the Environment (ACEs). They commit as much time as they possibly can really (…) and what we are trying to do with them is working with them on an individual basis, understand what interests them, try to entice them to be really interested, encourage them to act as much as they can (…). When I arrived here, they would have a list of stations they were supposed to be responsible for: switching the lights off, reading the meters, these kind of things. It wasn't very inspiring for them, it was just a list of tick jobs. So I changed that framework [and now] is more about them inspiring change in others and that kind of things, really championing environmental benefits (Fieldwork transcript, 2014).

The following describes the tasks performed by an ACE:

> the role that we do is quite varied, a lot of it is engagement, if you pick something up a lot of it is not getting done if you don't engage with people, so it's getting people on side, getting everyone knowledgeable about what we do (…). With (…) the zero waste to landfill project that we have done at (…), the big part I was involved in was tenants engagement (…). So, it's about talking to them, explaining the process, why we are bringing the process in, how to do it and also to let them know that if they have any problem they know exactly who to contact, there is nothing worse than saying do this, do that and if everyone has a problem and then no one knows who contact, so it's about engaging with them so that they are comfortable with what we expect as a company so that they can work towards that with as much as

> assistance as they need to get to (…). It's about putting staff engagement in place that if something is picked up a lot of time they will deal with it themselves. That's what we are trying to make second nature in people, to see an environmental issue and say I need to sort this out rather than going on I need to speak with someone that's not my job really (Senior ACE, 2014, Int. 1).

These activities carried by the ACEs are beneficial not only to the achievement of the corporate environmental aims but also to the ACEs themselves since they can use the skills learnt as ACEs to gain professional qualifications in environmental management. This is possible because the head of environment has introduced a career progression and opportunity scheme called the personal development pyramid (reproduced in Figure 5.1). It is because of the existence of this scheme that two senior ACEs have gained their IEMA associate level qualifications and have been promoted to environment managers within the company. This scheme is another innovative dimension of the examined BM particularly from a social perspective. "Work enrichment", according to Wells (2013), is about "bringing skills and interest to the job such that it is more emotionally rewarding" (p. 76) and it contributes to characterise a BM as a SBM.

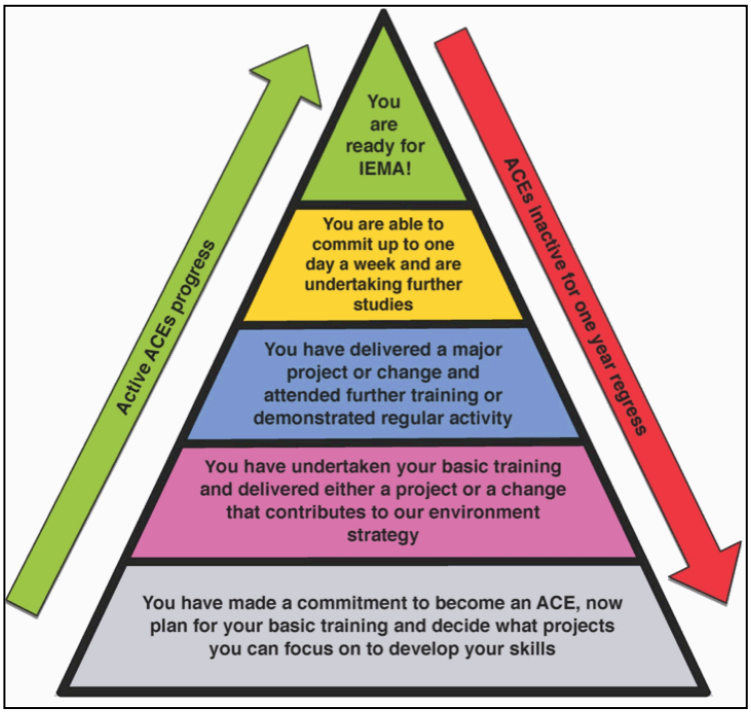

Figure 5.1: ACEs' personal development pyramid
Source: RailCo's Environment Strategy 2014-2015

5.5 UniCo

UniCo is a British university which aims at being recognised for its environmental sustainability achievements via the management of its operations, education, research and knowledge transfer with the business and the wider community (ESS, 2010-2015). Among these broad environmental sustainability aims, this research focuses mostly on UniCo's operations to explore how they accord with CE principles having UniCo set the mission of becoming a more resource efficient institution (ESS, 2010-2015). The proposed conceptualisation of the examined BM and of the influences explaining its emergence and development reflect the period covered by the most recent environmental sustainability strategy (2010-2015).

5.6 UniCo and the circular economy: value proposition and operating model

Universities can have an important role in the development of a more sustainable society by educating responsible leaders, disseminating research and through the management of their own operations (Ferrer-Balas, et al., 2008; Disterheft et al., 2015). Whereas since 1972, various international declarations and codes of conduct (e.g. Talloires Declaration, 1990; Halifax Declaration, 1991; HESI, 2012) have started promoting sustainability in the higher education institutions (HEIs) (Hancock & Nuttman, 2014), the academic literature, though increasing, is just starting to grasp why and how sustainability principles are implemented in the sector (Collins & Gannon, 2014; Hoover & Harder, 2015). As noted earlier, this case explores how UniCo's operations fit with CE principles and this is done mostly with regard to its biodiversity, waste and travel policies. In parallel with the other cases investigated, UniCo's initiatives are matched against the ReSOLVE framework and the SBMs archetypes. As a higher education institution committed to sustainable development, UniCo has implemented practices that seek to reduce its environmental impact as well as doing good both socially and environmentally. These practices are reviewed next.

Loss of biodiversity across the globe is one of the most pressing contemporary environmental concerns according to several studies (e.g. Rockström et al., 2009 a; WWF, 2014) and one of the many negative environmental externalities that the CE seeks to address (McKinsey et al., 2015). Via protecting, enhancing and preserving biodiversity across its managed sites (ESS, 2010-2015) UniCo has a positive and regenerative impact upon the natural environment. This is obtained via several measures that include, for instance, those taken in the management of the university grounds such as the following:

> we use as little fertilisers and chemicals as possible (…); [in some areas] we use organic soiling improvements instead; we don't use selective herbicides as standard of the many of the grass areas at all just because it increases biodiversity in there (…). We create wildflowers meadows and try to create nectar highways across the university grounds, we compost all of our green waste and that goes off to an organic farm (…) none of those go to landfill (…); when we are putting in planting schemes we look for a very broad flower range for aesthetic reasons but also for nectar harvesting bees (…). We also have a lot of birds boxes around the university (…) [and] we don't need any peat in growing our plants, it is all peat free compost (GOM, 2014, Int. 1).

The established wildflower meadows are a suitable habitat for wildlife including pollinators whose significant decline, registered in the UK as well as across Europe and USA more generally (Breeze et al., 2015; POST, 2010), is a serious biodiversity concern as noted in the previous sections of this chapter. Measures for biodiversity protection and enhancement include also green roofs. These have been placed at the top of two recently built UniCo's edifices and contribute to thermal efficiency and control of water drainage as well (DDED, 2014, Int. 1). UniCo's biodiversity protection and enhancement initiatives might produce benefits going beyond those strictly related to the natural environment and thermal efficiency. They could enhance, for instance, the wellbeing of staff, students and visitors taking advantage from exposure to its gardens. This is not surprising since research demonstrates the positive physiological and psychological benefits deriving from passive contact with the natural environment (Gilchrist, 2012). UniCo's green spaces, which include a community garden, are also suitable for active engagement with the natural environment, since opportunities for volunteering in biodiversity initiatives exist. Whilst projects for enhancing environmental sustainability in HEIs do not put much emphasis on the development of experiential initiatives to connect with

nature (Krasny & Delia, 2015), UniCo's approach, in offering staff and students opportunities to engage directly with nature, could lead to the creation of multiple positive outcomes. This might be the case because experiential engagement with the natural environment produces not only physical and psychological benefits (e.g. reduced stress and improved cognitive capabilities), but also it could stimulate environmentally friendly behaviour (ibid). This in turn might affect the achievement of better outcomes for campus sustainability initiatives (ibid). There are some opportunities for active staff's and students' volunteering in biodiversity projects. One example is the construction of bug hotels. Though it is the ground staff that has built and introduced bug hotels across the university managed estates, in some cases this has involved staff participating in green impact projects and students (GOM, 2014, Int. 1). A bug hotel is a construction made mostly of recycled materials including broken crockery, pottery pots and wooden pellets that creates a suitable and safe habitat for a variety of invertebrates and thus attracting and protecting wildlife (ibid). The community garden is just another example providing opportunities for staff, students and local residents to actively engage with the natural environment (e.g. planting activities). Started by the students' guild, community members and UniCo, the community garden is used also for raising awareness on sustainable food behaviour (e.g. the choice of local and seasonal food). For instance, the harvest from the community garden was used for an on campus 'soup event' at the end of 2014, which entailed the sharing of the soup with those participating and raised awareness on healthier and more sustainable eating (HSGU, 2014, Int. 1).

UniCo's commitment to 'doing good' is reflected also in its travel plan, whose measures appear to be aligned with the requirements of a more environmentally sustainable and circular mobility system. Notably, UniCo has invested in some infrastructural facilities and incentives to encourage students' and staff's modal shift. These measures might further enhance its value proposition and thus attracting students, whose expectations including those relating to universities sustainability performances, have risen in the recent years (Deloitte, 2011; Hancock & Nuttman, 2014; HEFCE, 2014). Several are the measures and facilities implemented to reduce the number of students and staff travelling by car from and to its sites. UniCo raises awareness on the

walking routes connecting the city with its campuses, and bikes parking spaces along with shower facilities are provided across its managed estate (STP, 2010-2015). Staff can also participate in the UK's government cycle scheme to buy a tax free bike via salary exchange and borrow for free the pool bikes available for business travel to and from meetings (ibid). There are also incentives for students and staff to hire bikes at discounted prices and free 15 minutes bike safety check-up at regular events organised on campuses with discounted servicing if further work is needed (ibid). Provision of discounted bus passes is another incentive established to encourage students and staff to use more environmentally sustainable modes of transport, along with a free minibus connecting its campuses with the close railway station (FTPC, 2014, Int. 1). UniCo has also invested in subsidies to extend the bus service running between the city and UniCo's campuses after 6pm (FTPC, 2014, Int. 1). Staff travelling by train regularly can benefit from an interest free loan towards the annual rail ticket subject to certain conditions (STP, 2010-2015). In addition, via the establishment of an innovative and very successful car sharing scheme, UniCo takes measures to tackle the issue of structural waste in the transport system, which according to McKinsey et al. (2015) is locked in a linear and wasteful model. It is argued that the European car is parked 92% of its time and when in use only 1.5 of its 5 seats are occupied (ibid). UniCo's car sharing scheme enables its staff to have dedicated free car share parking permits on its sites and emergency travel back-up (FTPC, 2014, Int. 1). In the latter case the car sharer can claim back the expenses incurred for arranging an alternative journey in the event that the car driver is forced to leave earlier its workplace because of an emergency (FTPC, 2014, Int. 1). The sustainable travel policy also encourages car drivers to switch to low emission cars. For instance, UniCo's parking permit charges vary in relation to the vehicle carbon emissions and a leasing scheme is available for low emission vehicles (STP, 2010-2015). The effectiveness of these measures in encouraging more environmentally sustainable modes of transport is demonstrated by the uptake in the use of the latter:

> reporting on the last year impacts of [the sustainable travel plan] measures (…) we had a really great success in all areas (…); we had a 60% increase in the number of cycles parked on campus (…); the uptake of cycle scheme (…) that's 50% up as well; patronage on the bus services has increased by 30% over the past couple of years and we sold 20 more thousands discounted bus tickets to staff last year (…); car sharing has been a really

> big, big benefit (…) we removed the charge to obtain a car sharing permit in April. Previously, you had to pay for it, you don't anymore and as a result of that we increased the number of teams from 36 to 95 within the space of about three months and increased the number of car sharing spaces from 36 to 86 (FTPC, 2014, Int. 1).

Overall, UniCo's sustainable travel plan might be beneficial to UniCo in the sense that it may reduce its scope 3 carbon emissions (emissions not under direct control) (CMP, 2010-2020) and improve reputation; it could also reduce business travel costs (e.g. in the case that pool bikes are used to move from one campus to the other) and pressures for car parking spaces while potentially contributing to create environmental and social value (e.g. students' and staff's wellbeing; better air quality, reduced traffic and parking congestion for the wider local community whithin which UniCo operates) (FTPC, 2014, Int. 1).

UniCo is also committed to both reducing its impact and setting practices that are regenerative of the natural environment via sustainable waste management. There are several initiatives that are aligned with these overall aims. To begin with, 43% of UniCo's waste is recycled (Waste report, 2013-2014) compared to 26% of 2010 (baseline year). Continuous improvement in waste recycling targets is beneficial if considering that more stringent waste regulation could come in place soon in the light of the recently (December 2015) released EC CE package. The latter has introduced, for instance, increased recycling targets for packaging materials among other things (EC, 2015 c). The following are some examples of recycling and reusing taking place at UniCo:

- old books are re-used via donating them to charities;
- furniture is re-used internally via an informal network;
- cartridges and toners are collected back for recycling;
- bikes abandoned on the university estate are donated to a charity which service them and sell them to raise money in support of the work carried (SM, 2014, Int. 1; FTPC, 2014, Int. 1).

All the waste that cannot be recycled or re-used is sent to an energy recovery facility where waste is burnt to generate energy instead of being sent to landfill and this is a change that has been enabled by the new waste management contract started in September 2014 (SM, 2014, Int. 1). Collection of students' unwanted items from the halls of residence when they leave their

accommodation at summer time is one of the most successful waste management initiatives. This initiative enables reuse as students donate items like books, clothes, CDs and surplus, non-perishable food. These items are then passed on charities and local food banks. In the last two years, about 42 tonnes of items have been collected and donated to the partner charities for reuse (Waste & Recycling, UniCo's website). Initiatives for reducing food waste and disposing of unavoidable food waste in the most environmentally friendly way are also in place. Preventing food waste is more economically and environmentally beneficial than any form of disposal (DECC & DEFRA, 2011). Indeed, 4.2t of CO_2 equivalent emissions are avoided for each tonne of food waste prevented, about 500Kg are avoided for each tonne of food waste treated via anaerobic digestion (ibid), whereas sending waste to landfill creates additional 536 kg of emissions per tonne of food waste (WRAP, 2015). About a million tonnes of food is thrown away in the UK's hospitality and food sector each year, which is the equivalent of one in every six of the eight billion meals that are served each year; 75% of the wasted food is avoidable and the prevention of this food waste could reduce CO_2 emissions by 2.7 million tonnes (WRAP, 2015). This food wastage affects the financial performances of the hospitality and food sector in addition to its negative social and environmental impacts. Only in the UK's education sector, the total cost of food waste was of almost £250 million in 2011 with labour and food purchase accounting for more than 50% and 40% of the cost of the avoidable food waste respectively (WRAP, 2013 b).

In line with its commitment towards reducing food waste, UniCo's catering outlets signed up to the WRAP Hospitality and Food Service Agreement (HFSA). Promoted and started by WRAP in 2012, this is a voluntary agreement seeking to reduce food waste by 5% and to increase the percentage of food waste composted or sent to anaerobic digestion at least to 70% by the end of 2015 in commercial and public sector catering outlets (WRAP g). It is estimated that food waste in catering facilities is determined by many factors such as food preparation, surplus of meals, menu choice and leftovers (WRAP, 2015). To tackle the food waste produced in its catering outlets a food waste task and finish group formed by staff and students was established at the beginning of 2014 (FWP, UniCo's website). As a result, since September 2014, all catering

outlets measure food waste stemming from preparation to leftovers; this measurement is instrumental to a better scheduling of food order, thus to avoid further wastage in the future (ibid). The food waste task and finish group also launched initiatives linked to WRAP's 'Love Food Hate Waste' campaign to reduce food waste resulting from wasteful behaviour (ibid). Launched in 2007, this WRAP's campaign provides retailers and municipalities with information and practical advice to influence food waste behaviour so that food waste in households is cut (WRAP h). Of the initiatives taken, some have concentrated on how to prevent food waste resulting from leftovers in the students' catered halls of residence. For instance, students are now allowed to go back for a second portion because it was realised that having just one opportunity to take meals was encouraging to take too much with the consequence that some food was left inevitably uneaten (HSGU, 2014, Int. 1). Other initiatives have involved UniCo's chefs demonstrating how to make recipes with leftovers (FWP, UniCo's website). The students' green unit also runs a similar project where students are invited to take part in cooking classes to learn how to prepare food recipes with the use of leftovers (HSGU, 2014, Int. 1).

As anticipated earlier, UniCo has also initiatives in place to dispose of unavoidable food waste in the most environmentally friendly way and in accordance with CE principles. Since October 2014 collection of food waste for off-site anaerobic digestion is arranged for all the self-catered accommodation managed by one of UniCo's partners (Green Impact report, 2014-2015). In addition, UniCo has signed up to a new waste management contract in September 2014. Whereas prior to this food waste was treated through macerators, food waste produced by catering outlets is now collected separately and sent to anaerobic digestion (since early 2015) (FWP, UniCo's website). This initiative is also in line with the UK's government view which welcomes both voluntary measures to reduce food waste and the disposal of unavoidable food waste via anaerobic digestion (Downing et al., 2015). Efforts to reduce food waste could mitigate also regulatory risks in the light of the recently released CE package demanding EU countries to take measures to reduce food waste along supply chains, to monitor and to report data on food wastage (EC, 2015 c). Reduction of food waste and disposal of unavoidable food waste through anaerobic digestion are also likely to affect positively

UniCo's value capture via reduced costs. Reduced wastage is likely to affect procurement costs. In addition, where food waste is collected for anaerobic digestion, macerators are no longer in use and this has led to reduced water and energy consumption (FWP, UniCo's website).

Initiatives led directly by students through the students' green unit are also in place to reduce wasteful behaviour. For instance, reusable jute bags and reusable, stainless steel water bottles designed by students are sold in the guild shop to reduce usage of plastic bags and to minimise the purchase of bottled water (SGUCs, 2014, Int. 1). When these water bottles are sold students receive a map showing where these bottles can be refilled at the free refillable stations on campus (ibid). Students are also encouraged to purchase hot drinks in re-usable mugs. A reusable mug can be bought at the students' guild outlet and when used across some of the campus coffee outlets, it entitles students to obtain a discount on the price of hot drinks which ranges from 5 to 10 percent. (Students' green unit website).

UniCo's staff also leads on projects to increase recycling and reusing across campus. In 2013, one of UniCo's colleges became bin less as part of a green impact project. Individual waste bins were removed from staff's offices and replaced with a desktop recycling box, which encourages staff to sort and recycle the waste they generate by dropping these items to the recycling points located within the college (SC a, 2014, Int. 1). And the following quote is just another example of a staff's initiative that reuses waste:

> this morning I was helping to clear out the wood sheds the [theatre] used to use to build its set and we are going to take that waste which is going to be reused for something in our artists exhibition using waste materials but it also saves the university money because they have to pay money to get someone to pick up and recycle the wood. So instead of the wood being recycled it is reused which fits quite nicely with the circular economy (SC b, 2014, Int. 1).

In addition to UniCo's sustainable travel plan, the sustainable waste management and the biodiversity enhancement plan discussed so far, there are initiatives in place to promote more resource efficient operations. UniCo has an environmental management system certified in accordance with the standard ISO 14001, thus there is a commitment towards continuous improvement in environmental performances (Fieldwork notes, 2014). UniCo also invests in

sustainable construction and refurbishment. Notably, it adopts the international standard and rating system BREEAM which assesses the environmental performances of buildings in relation to factors including energy and water use, with the aim of obtaining 'BREEAM excellent' for all its new constructions and 'BREEAM very good' for refurbishment of existing buildings (DDED, 2014, Int. 1; SCRP, UniCo's website). One of UniCo's new buildings has achieved BREEAM excellent because it incorporates solar thermal water, rainwater harvesting, furniture made with recycled fabrics and also because it supports biodiversity with the provision of bat and bird boxes (UniCo's website). The presence of some rainwater harvesting, solar thermal water, photovoltaic solar panels, biomass boilers, air source heat pumps, ground source heat pumps and combined heat and power systems (DDED, 2014, Int. 1; BEMSE 2014, Int. 1) across the managed estate, can contribute to gas, electricity and water consumption savings as well as to the generation of some renewable energy. An important part of UniCo's energy savings are achieved through the adoption of a building energy management system (BEMS):

> a building management system is a computer based system that controls all of the heating, ventilation, air conditioning, all of the different control parameters of a building which is basically controlled by a computer. We have those located throughout every building of the campus (…) and by using a building management system it typically gives us around 20-25% energy savings over not having a building management system (BEMSE, 2014, Int. 1).

Energy audits are carried in buildings to understand how energy is utilised and whether it is possible to implement energy efficiency measures such as putting LED lighting in and electricity, gas and water meters are installed throughout the estate enabling identification of opportunities for further savings (BEMSE, 2014, Int. 1; CDC, 2014, Int. 1).

Finally, UniCo's sustainable procurement and sustainable food and drink strategies contain some measures aligned with CE principles. Staff is encouraged to question the need of buying a new item and re-using, buying second-hand items, sharing or renting is considered prior to the purchasing of any new item (HP, 2015, Int. 1). Initiatives to engage suppliers with CE practices are also in place and are beneficial to UniCo in the sense that they reduce the amount of waste that ends up in its waste stream and that has to be

handled for disposal. UniCo has influenced its electronic equipment suppliers to reduce the packaging used to deliver large supplies of PCs: “when they delivered 20 or 40 computers we had one large box, sometimes a returnable box rather than lots of paper, cardboard and polystyrene wrapping” (HP, 2015, Int. 1). In terms of the sustainable food and drink strategy, measures include biodegradable packaging for sandwiches sourced from a local supplier; 90% of takeaway bags, cups and napkins are biodegradable; water tanks are available on campus to reduce the need to buy bottled water (SFD, UniCo’s website).

Though the focus of this research is UniCo’s operations, it appears as appropriate to highlight some of UniCo’s curricular initiatives that are related to the CE and contribute to delineate a distinctive value proposition. Education for sustainable development is an integral part of UniCo’s 2014-2020 education strategy and topics relating to the CE are covered in the business school modules in physics degrees and modules and geography modules (EfS, UniCo’s website). Students can engage also in a green training and development scheme which enable them to act as junior consultants for on campus sustainability-related projects (e.g. waste and energy audits) and thus leading to the acquisition of practical skills in assessing environmental sustainability performances (ibid).

Overall, the initiatives described in this paragraph would seem to fit with *Regenerate, Share, Optimise* and *Loop* measures of the ReSOLVE framework and with ‘*Maximise material and energy efficiency’* (e.g. the adoption of the BREEAM standard and all the other initiatives encouraging a more efficient use of energy and materials), *‘Create value from waste’* (e.g. re-using and recycling measures; car sharing; pool bikes), *‘Substitute with renewables and natural processes’* (e.g. some systems in place to produce renewable energy), ‘*Adopt a stewardship role’* (e.g. biodiversity protection and promotion of students’ and staff’s wellbeing) *and ‘Encourage Sufficiency’* (e.g. campaign to influence students’ food behaviour) SBMs archetypes (Bocken et al., 2014 a, p. 48). Table 5B shows how UniCo’s practices are consistent with the ReSOLVE framework.

Regenerate	▪ Biodiversity protection and enhancement measures; ▪ Some systems for producing renewable and low carbon energy; ▪ Anaerobic digestion of food waste contributes to restoring natural capital (e.g. bio-fertiliser) and to produce renewable energy.
Share	▪ Car sharing; ▪ Pool bikes; ▪ Internal furniture re-use scheme; ▪ Unwanted staff's books donated to charities for re-use; ▪ Re-using, buying second-hand items, sharing or renting is considered prior to the purchase of a new item; ▪ Students' reuse project donates unwanted items and surplus food to a charity and to a food bank.
Optimise	▪ Abandoned bikes donated to charities; ▪ Signed to the WRAP HFSA to reduce food waste in catering outlets; ▪ Campus services certified according to ISO 14001 standard; ▪ Some rainwater harvesting in some buildings; ▪ BEMS to save energy in buildings; ▪ BREEAM standard for sustainable construction and refurbishment; ▪ Investments in light upgrading for more energy efficiency; ▪ Water, gas, and electricity meters installed across the estate; ▪ Water tanks across the campus may reduce the purchase of bottled water; ▪ Jute bags and refillable water bottles are sold in the guild shop; ▪ Incentives in place to reduce the use of disposable coffee cups.
Loop	▪ Bug hotels made with recycled materials; ▪ Green waste is composted; ▪ 90% of cups, bags and napkins from food service outlets are biodegradable; ▪ Food waste from catering outlets and from the self-catered accommodation managed by a UniCo's partner is sent to anaerobic digestion; ▪ Ink cartridges and toners collected back for recycling; ▪ 43% of waste produced is recycled with the remaining sent to energy from waste.

Table 5B: UniCo's practices in relation to the ReSOLVE framework
Source: The researcher

5.7 Chapter five summary

Chapter five has analysed the features of the value proposition and operating model of the two large service organisations that are investigated, RailCo and UniCo. This has been done via matching empirical data against the ReSOLVE framework (McKinsey et al., 2015) and the SBMs archetypes (Bocken et al., 2014 a). In both cases several measures of the ReSOLVE framework are implemented (*Regenerate, Share, Optimise, Loop*) and features of the value proposition and operating model are aligned with the SBMs archetypes (*Maximise material and energy efficiency, Create value from waste, Substitute with renewables and natural processes, Encourage Sufficiency, Adopt a stewardship role, Deliver functionality rather than ownership*). RailCo's value proposition can be summarised as follows: *passengers services with the*

provision of facilities encouraging modal shift and enhancing stations attractiveness. UniCo's value proposition can be conceptualised as follows: *first class undergraduate and postgraduate higher education delivered in an environment that supports students' health and wellbeing, with the provision of skills in sustainable development.* This initial overview of these two service organisations is complemented by narrative and comparative analyses. The latter are presented in chapter six (Results and Discussion) which conceptualises the investigated circular BMs and explains the processes leading to their emergence and development.

Chapter six
Results and Discussion

6.1 Introduction

Chapters four and five have provided an initial overview of the two SMEs (FurnitureCo and PlanksCo) and of the two large service organisations (RailCo and UniCo) BMs, following from a descriptive analysis which has highlighted how the features of these BMs value propositions and operating models accord with the ReSOLVE framework (McKinsey et al., 2015) and the SBMs archetypes (Bocken et al., 2014 a). The overview presented in chapter four and five is complemented by a comparative analysis which draws on the conceptual frameworks introduced in the literature review chapter (part two and three) to conceptualise and discuss the emergence and development of the investigated BMs.

6.2 Conceptualising FurnitureCo's and PlanksCo's business models

Drawing on the empirical evidence presented in chapter four and theoretical themes from the BM, the CE and the SBMs literature, this paragraph proposes a conceptualisation of FurnitureCo's and PlanksCo's BMs, which relates to the first research question recalled here:

1st RQ: *How can circular business models be conceptualised?*

The characteristics of FurnitureCo's and PlanksCo's BMs are explained conceptually and graphically and this is done around Richardson's (2008) BM framework contemplating the value proposition, value creation and delivery, and value capture dimensions as applied also by Bocken et al. (2014 a). Nevertheless, it is important to note that a broader perspective on value creation is taken in this study. Whereas the traditional literature on BMs considers value and value creation in economic terms only (Upward & Jones, 2015) with value created for customers and investors/shareholders, the SBM

literature emphasises a more comprehensive notion of value creation including consideration of a broader category of stakeholders with nature being one of these (Bocken et al., 2013; Boons & Lüdeke-Freund, 2013; Schaltegger et al., 2015; Stubbs & Cocklin, 2008). In the following sections, it is firstly explored how each company captures value from its circular innovations. Then the process of value creation is qualified, before giving consideration to both the creation of value for a broader set of stakeholders and value delivery (how value is provided). A conceptualisation of these BMs is finally given in Table 6A and it is articulated around the key theme of 'value' with qualifying features deriving from empirical data.

6.2.1 FurnitureCo's value capture

The increasing demand for higher quality and organic mattresses, coupled with consumers' expectations of responsible corporate behaviour (WRAP, 2013 a), make the manufacturing of mattresses with lower impact materials a relevant strategy for capturing value. The following quote highlights how the environmental sustainability credentials of the company products and processes enable premium branding and thus value capture:

> we are the sustainable bed maker (…) and that is what makes us different from someone else. Without that I am sure we would struggle and it would be hard to achieve the sort of margins that we do, [it] would be much more competitive marketplace to sell ourselves and a far more competition, direct competition. It would be a totally different story (MD a, 2014, Int. 1).

The relevance of the sustainability credentials of the product for the attainment of a competitive advantage (differentiation) is further highlighted in the following:

> We are quite unique in all the markets in which we operate, we are fairly unique and people come to us because of that, of what we promote (…) you buy a bed because it is going to be comfortable and then the advantage you get if you come to [us] is then you get the peace of mind that (…) it has been made in a great environment, supporting local businesses and using materials that are not going to damage the environment in anyway and also it is not stuffed full of chemicals (MD b, 2014, Int. 1).

And the next quote emphasises the previous ones:

> The sustainability definitively impact upon our business as a plus thing (…). We can fold that into marketing, into all the different market sectors, it gives us a competitive edge and that is something that we have to continue to work, continue to build on. So, definitively it gives an advantage for sure. (MD a, 2014, Int. 3).

The following quote reveals more specifically how those credentials appeal to the different customer segments:

> for the nursery market they key value proposition (…) is multiple, but I would say (…) more critically, is the fact that [mattresses are] entirely chemical free. The natural fibres have no fire retardant or additives or any other kind of synthetic materials in them which seat very comfortably in the nursery market because obviously new parents are always very concerned about the health and wellbeing of their babies (…) by extension, then, lot of these customers are interested in organic angles as well. So natural and organic is an extra plus point. In the adult market, which includes hotels and mainstream home use, again it's the natural and organic angle, and I suppose, it is the environmental credentials that attract those consumers. Certainly in the hotel market the environmental credential is critical because it gives them the opportunity to talk more about their sustainability and how they have sourced more responsibly and so it gives them the marketing message they can use to sell their own product which is sleep effectively" (MD a, 2014, Int. 3).

Costs savings, deriving from the features of the company operating model, contribute to value capture too. Off-cuts wastage minimisation through the standardisation of natural fibres sheets, sourcing and processing locally natural fibres, re-usable mattresses packaging and photovoltaic solar panels reduce manufacturing costs and disposal costs. Opportunities for value capture could also derive from additional revenues streams (e.g. pets market products) if the undergoing feasibility study for closing the production loop is implemented. This would accord with the source of economic value creation in a CE qualified as "the power of cascaded use" (McKinsey & EMF, 2012, p. 7).

6.2.2 FurnitureCo's value creation

In addition to capturing economic value for itself, FurnitureCo contributes to create environmental and social value too, thus ultimately promoting environmental and social stewardship. This is why FurnitureCo's value creation might be regarded as *diffused and interconnected.* The local sourcing of the mattresses key raw material, organic lambswool, is a pertinent case for

explaining the diffused and interconnected value creation mechanism. Sourcing locally is pursued to achieve a superior quality product, which enhances the company competitive advantage, and thus opportunities for value capture. This choice, in turn, has positive effects for the local economy, because a local product is preferred and local people are employed in the processing of the raw materials and in the manufacturing of the end product (social value is created). Environmental value is also created since organic farming is supported. Figure 6.1, recalling the stakeholders map presented in chapter two, indicates how FurnitureCo creates value for a broader category of stakeholders following from the discussion of the features of the company value proposition and operating model presented in chapter four.

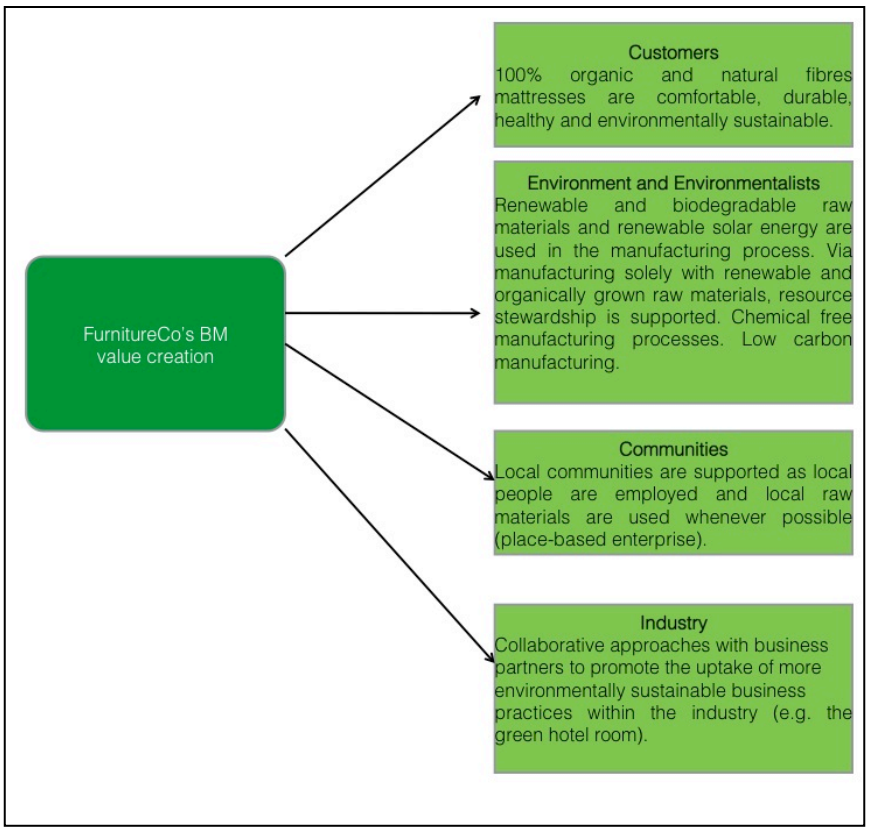

Figure 6.1: FurnitureCo's value creation for a broader set of stakeholders
Source: The researcher and based on Donaldson & Preston (1995); Driscoll & Starik (2004); Starik, (1995) and in accordance with SBMs literature (e.g. Bocken et al., 2013; Stubbs & Cocklin, 2008)

Nevertheless, the multiple value creation is not exempt from challenges. For example, the complexity in terms of time and learning involved in the management of the organic lambswool supply chain is expressed by this quote:

> we created a local market and that raw material has an outlet within that market and it also get converted into a product which is again made all locally…it's very rewarding because you are dealing, at the end of the day, with a local resource and a beautiful local product (…) but it has got obviously its challenges because you are entering into something you haven't dealt with before and so there is a certain amount of knowledge that you got to have about the product and the market which we didn't have before. (…) It's very rewarding but it is a challenge because we were not doing it before so it's easy to just pick up the phone and saying right I want 500 kg of wool and yes you can have it in 3 to 5 weeks. Now we have to talk to the farmer, find out when he is going to shear the sheep, work out how much has got, how we are going to pick it up (…). The complexity of our supply chain on that one material, has gone up enormously and it is management time, yes it is considerably more than what we previously have because now not only have to buy the wool but we have to organise the finishing of the wool into a product that we can use here (MD b, 2014, Int. 1).

6.2.3 FurnitureCo's value delivery

When value is created it is also important to understand how that is achieved. From the analysis presented in chapter four the key activities involved in the process of value creation have already emerged. Resources and capabilities linked to that process will be explored in paragraph 6.3.1 whereas now it is considered the value network or partnerships perspective. To do this it is pertinent to recall that Zott et al. (2011) define the BM as "a firm centric, yet boundary-spanning activity system" (p. 1037) which equals to say that the BM is "nested between the firm and the network" (p. 1036) and thus that the BM takes a perspective that spans the business boundaries. In line with these views, it can be argued that FurnitureCo's BM is characterised by a *boundary-spanning* relational structure, since there appears to be some evidence that in order to create value the company has engaged with existing as well as new partners. The 'green hotel room' initiative is very pertinent to elucidate this point. By partnering with non-competing, like-minded businesses to display how an environmentally sustainable hotel room could be created, the company has been able to promote sustainable bedding and furniture in the hotel industry more effectively than what it would have achieved on its own. Another example comes from the business partnership the company has set up with a manufacturer of furniture. FurnitureCo likes to be associated with their brand since it also has very strong environmental and ethical practices. By producing

upholstery for their furniture, the company believes that this helps with its own positioning in the market place (MD a, 2014, Int. 3). Another characteristic of the examined BM in relation to how value is created and delivered can be identified by looking at the local focus of FurnitureCo's operating model. As the company aims to support the local economy through place-based sourcing, processing and employees' recruitment and to protect the local natural environment through processes that seek to avoid damage, FurnitureCo's BM might be considered as *spatially embedded* within the local social and natural environment and willing to promote their stewardship.

Figure 6.2 summarises the characteristics of FurnitureCo's BM in terms of value proposition, value creation, delivery and capture.

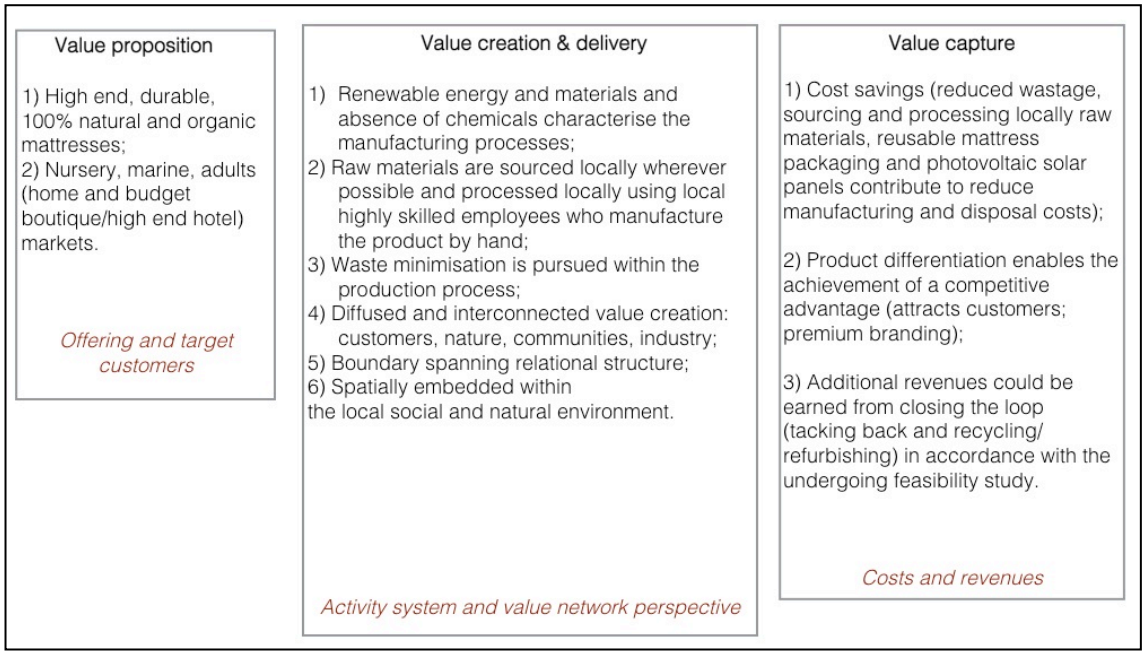

Figure 6.2: FurnitureCo's BM characteristics
Source: The researcher and based on Bocken et al. (2014 a) and Richardson (2008)

6.2.4 PlanksCo's value capture

Turning to PlanksCo, its fully closed-loop operating model can have a positive influence on value capture in several ways. Using 100% recycled PVC reduces the company material costs and makes the recycled plastics boards competitive with a wooden board. In a very traditional market where the wooden board has been dominant for a very long time, realistically an alternative board could

achieve market penetration only if sold at a competitive price, a condition satisfied only via manufacturing with recycled plastic instead of virgin. Repurchasing boards at the end of their useful life and recycling them into new boards contribute to economic value capture too for reasons discussed previously. In addition, the boards environmental credentials are beneficial to the marketing of the product: "I see the recycling and green issue as being a very good marketing part of the company and that gives us the edge" (MD b, 2014, Int. 2). These credentials seem to be particularly appealing to the big scaffolding companies interested in greening their own supply chains:

> the interesting thing for [PlanksCo] is [that it] is being led by the bigger companies. [For them] the green side is (…) now becoming very important. And then the other thing is that when they are tendering for projects (…) they have to put bid, proposals in, and things like the health and safety and the green issue are hugely important now and they can win a tender by using [our] boards over and above the wooden board. This is where we are going to breaking into the market, because our boards give them so much more right point to win the tenders (…). This is why the companies that are talking to us now are so keen to do business with us because they want a green image and by using us they are going to get that (MD a, 2014, Int. 2).

The corporate ethos of 'doing good business' is another source of value capture as this increases PlanksCo's goodwill, thus attracting customers interest in establishing a transactional relationship with them. In addition, PlanksCo's capability to close its production loop via setting its own plastic recyclate supply chain, has attracted funds from ZWS which support further the business development. Opportunities for additional revenues streams and thus for value capture there appear to be too. As noted earlier, hand-stripping of U-PVC windows salvages materials such as rubber, aluminium, polymers and metals that can be sold and the surplus clean plastics recyclate that PlanksCo obtains from its plastic cleaning unit can be sold too. The ways in which PlanksCo captures value would seem to accord with the sources of economic value creation in a CE that McKinsey & EMF (2012) qualify as "the power of the inner circle" (e.g. closed-loop production process), "the power of circling longer" (e.g. buying back boards and recycling them into other boards for a consecutive number of times) and "the power of cascaded use" (e.g. hand stripping of U-PVC salvages other materials that can be sold and reused within other manufacturing processes) (p. 7).

6.2.5 PlanksCo's value creation

In addition to capturing economic value for itself, the company contributes to create environmental and social value too, thus ultimately promoting environmental and social stewardship. This is why PlanksCo's value creation, likewise FurnitureCo, might be regarded as *diffused and interconnected.* The hand stripping of U-PVC is relevant for illustrating the value creation mechanism. Hand stripping is pursued to obtain a high quality, clean recyclate. This is fundamental to achieve the high standards of safety and quality demanded by the company boards, ultimately influencing the company capability to produce and market successfully its product and hence creating and capturing value for itself. The hand stripping of U-PVC in turn produces wider positive economic outcomes as well as social and environmental benefits. That process is labour intensive and there are relevant employment opportunities that the company is creating via developing nationwide hubs for handling that process (social value is created). In doing so, the company is not only developing its own skills but is extracting more value from resources domestically (the company uses only UK U-PVC) that could have been either sent abroad for reprocessing or disposed of in landfills. Together with the recovered U-PVC from windows frames, other materials are also salvaged from this process, which once sold can be reused within other manufacturing processes and thus reducing the need of raw materials and so creating environmental value. Figure 6.3, recalling the stakeholders map presented in chapter two, indicates how PlanksCo creates value for a broader category of stakeholders following from the discussion of the features of the company value proposition and operating model presented in chapter four.

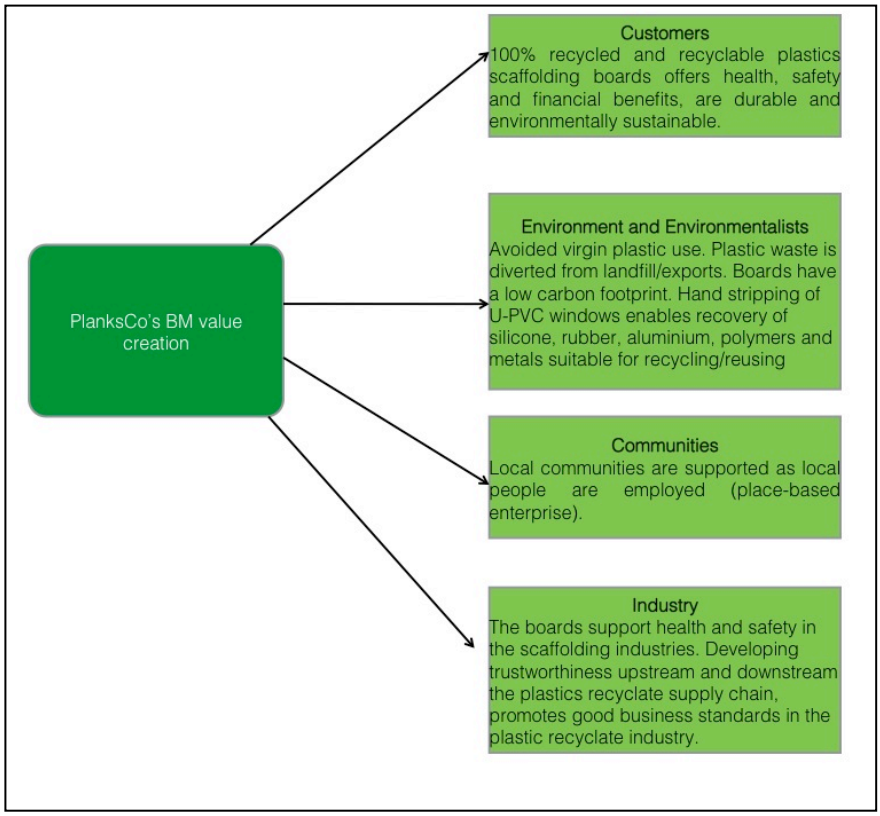

Figure 6.3: PlanksCo's value creation for a broader set of stakeholders
Source: The researcher and based on Donaldson & Preston (1995); Driscoll & Starik (2004); Starik, (1995) and in accordance with SBMs literature (e.g. Bocken et al., 2013; Stubbs & Cocklin, 2008)

However, this case too shows that the multiple value creation is not exempt from challenges such as the learning involved in finding the right type of recyclate and the difficulties in getting sufficient supplies. The company also has had to overcome resistance to the product in a very traditional business environment within the scaffolding industry where the wooden boards have been used for a long time.

6.2.6 PlanksCo's value delivery

In similarity with FurnitureCo, when considering partnerships in relation to value creation and delivery, the examined BM seems to be characterised by a *boundary-spanning* relational structure to a higher degree than FurnitureCo's BM since engagement and collaboration with its partners enables value creation. Assisting and monitoring its plastics recyclate suppliers for the

attainment of a high quality, clean recyclate demonstrates this. A cooperative approach is important for securing the supply of the right quality of material needed and concurrently helps suppliers to recover more valuable materials from their reprocessing activity. This feature is complemented by the that of a local focus of the company key activities. As the company aims to support the local economy through place-based sourcing, processing and employees' recruitment and to preserve the local natural environment, PlanksCo's BM could be described as *spatially embedded* within the local social and natural environments and willing to promote their stewardship.

Figure 6.4 summarises the characteristics of PlanksCo's BM in terms of value proposition, value creation, delivery and capture.

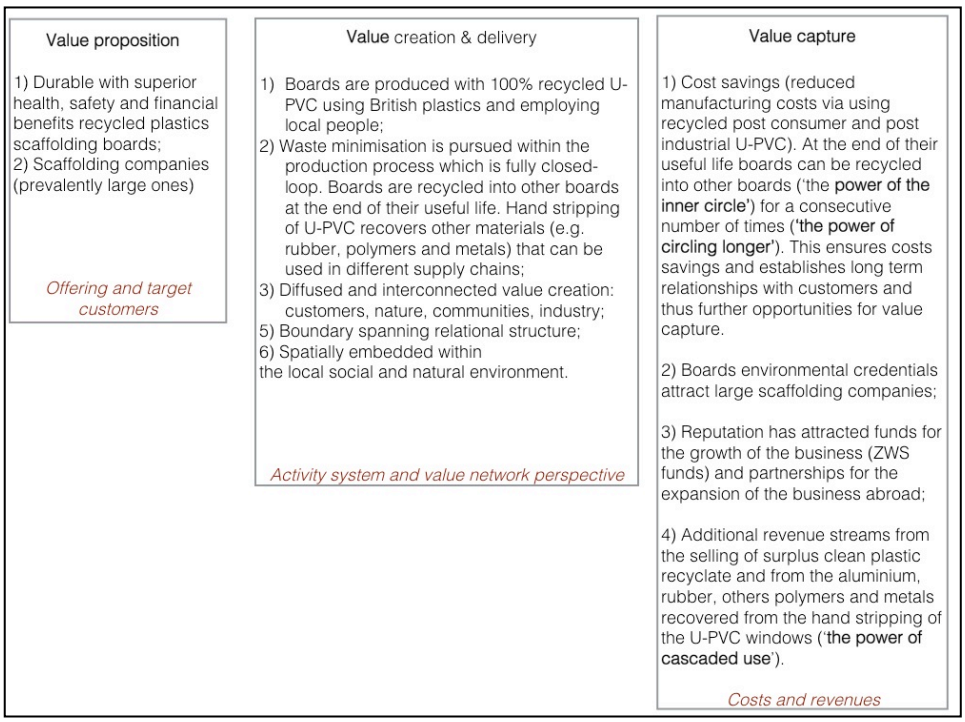

Figure 6.4: PlanksCo's BM characteristics
Source: The researcher and based on Bocken et al. (2014 a) and Richardson (2008)

Summarising the analysis of FurnitureCo's and PlanksCo's BMs presented in this paragraph and drawing on chapter four for the key elements qualifying the value propositions of the investigated BMs, Table 6A compares the identified features of the two examined BMs and proposes their conceptualisation. The latter is based on a framework originating from the BMs literature (Richardson, 2008) and applied also within SBMs studies (e.g. Bocken et al., 2014 a).

Nevertheless, the following conceptualisation does not merely apply Richardson's model in the context of circular BMs, but it also identifies qualifying features of the value proposition, value creation and delivery and value capture.

BM framework	FurnitureCo's BM features	PlanksCo's BM features
Value proposition	High-end, durable, 100% natural and organic mattresses.	Durable, with superior health, safety and financial benefits recycled plastics scaffolding boards.
Value creation & delivery	▪ Diffused and interconnected value creation; ▪ Value is created for a broader category of stakeholders. ▪ Boundary spanning relational structure; ▪ Spatially embedded in the local context.	▪ Diffused and interconnected value creation; ▪ Value is created for a broader category of stakeholders. ▪ Boundary spanning relational structure; ▪ Spatially embedded in the local context.
Value capture	Idiosyncratic value capture mechanisms.	Idiosyncratic value capture mechanisms.
Circular business models might be conceptualised as characterised by diffused and interconnected value creation and idiosyncratic value capture mechanisms; their value creation and delivery systems are characterised also by a boundary spanning relational structure and by being spatially embedded within the local social and natural environments; their value proposition offers enhanced customers' value.		

Table 6A: A comparison and a conceptualisation of FurnitureCo's and PlanksCo's BMs
Source: The researcher

6.3 FurnitureCo's and PlanksCo's business models: emergence and development

After having conceptualised the examined BMs, this section analyses what could explain their emergence and development in the light of the empirical evidence and of the conceptual framework presented in chapter two comprising the NRBV of the firm (Hart, 1995) and the neo-institutional theory (Di Maggio & Powell, 1983) and thus an organisational and institutional perspective. This is expressed by the second research question, which is recalled here:

2nd RQ: *How can the emergence and development of circular business models be understood?*

Before starting with the organisational perspective, it useful to recall how the NRBV of the firm is used in this study. In chapter two it has emerged that the NRBV of the firm would seem not to acknowledge the potential of BMI for creating a sustained and sustainable competitive advantage having focussed only on pollution prevention, product stewardship and sustainable development capabilities/strategies. Nevertheless, the NRBV of the firm is more pertinent than the RBV of the firm to consider how resource-based theories have relevance for corporate environmentalism since according to Hart (1995) in a natural resource constrained world managing the interface with the natural environment is crucial for building and sustaining competitive advantage, a consideration missing in the RBV of the firm. Hart's view is even more relevant today in the light of the exacerbated ecological crisis and so it is the integration of the natural environment in business strategies. Chapter two has emphasised that circular BMs might sit within the NRBV of the firm, thus expanding and enriching the range of opportunities that Hart (1995) envisaged for creating and sustaining competitive advantage. The analysis conducted in the previous paragraph has just showed how the examined circular innovations can contribute to value capture and thus to competitive advantage. This paragraph complements the previous one via identifying the resources that appear as relevant for the emergence and development of the examined circular BMs likewise Hart's study which for instance, identified stakeholder integration as crucial for the development of capabilities in product stewardship. A resource perspective on the BM is appropriate since key companies resources are involved in the value creation and delivery mechanisms. The value proposition itself reflects the bundle of resources and capabilities exploited to create value (Amit & Zott, 2001). Though Barney (1991) condensed in one word, namely 'resources', "all assets, capabilities, information, knowledge etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness" (p. 101), in the analysis that follows, consideration is given separately to resources, capabilities and organisational characteristics, which can further contribute to advance Hart's study.

6.3.1 FurnitureCo and PlanksCo: organisational level

Resources and capabilities seem to have had a rather crucial role in the emergence and development of FurnitureCo's BM as argued by one of the company managing directors:

> with regard to the resources that we have applied (…) it has been driven by the two directors, me and (…); we created this product from nothing (…). We have been learning about natural fibres technologies as we are going along and we continue to learn, and even now there are lots of new materials that are becoming available or we find, we hear about, we source, that fit with our brand ethos that work for us. So, it's an on-going process and we are just learning on the job" (MD a, 2014, Int. 1).

Management commitment, as it appears from the quote above, has allowed the company to capitalise on a business opportunity in the marine market in the first place. Manufacturing mattresses started because of the willingness to produce a higher performing product not affected by issues of mould and condensation for the marine market. FurnitureCo's managers also envisaged that the product they created for the marine market would have suited the nursery and the adult markets too. This alertness has anticipated the growth of consumers' interest in natural and organic products and has led the company to enter the nursery and the adults markets. Evidence of forward thinking can also be found in the company willingness to explore the feasibility of collecting back mattresses ahead of formal rules prescribing so. Those managerial skills (commitment, alertness and forward thinking) seemed to have played a crucial role in setting the business and in creating value propositions for new market segments. Nevertheless, there appear to be some other resources and capabilities behind the emergence and development of the examined BM and one of these is corporate culture, one of the components of a company internal environment (Daft, 2010). The following quote clarifies why this is the case:

> the corporate culture is very close knit, we are all striving for the same thing and that I suppose is a very strong kind of corporate culture within the company and that pervades in the sustainability of the product as well. Every one on the shop floor is aware of what we are making and why we are different from our competitors and that hopefully is exciting for them as well as they know that we are doing something slightly different and that is what gives us our edge, that's what hopefully will lead to the growth of our business and that's what will make all of us a lot better off (MD a, 2014, Int. 2).

Organisational characteristics might be regarded as equally relevant to the development of the examined BM. Notably, the flat organisational structure (two managing directors handling decisions) and the size of the operations have both enabled exploration and innovation to match market trends because of greater supply chain flexibility, a more responsive decision making process and a less ingrained operating model than those that might characterise large companies, as explained by FurnitureCo's managing directors:

> the size of our operations allows us the sort of luxury of being able to adapt quite quickly and come up with new things and implement quite quickly. Whereas a lot of our competitors who are bigger and older, well established mattress makers, would find more difficult to change something that quickly (MD a, 2014, Int. 2).

> We can have an initiative, we can go in that way, we can do this, that (…) we can implement these ideas such as buying our own wool and using the technology that we can add ingredients into our wool, into our products (…). The bigger competitors then they look and say that's interesting, that's cool, but not necessarily can do that because their supply chains are much more established and actually the quantities they might require to be able to launch a particular initiative or a project would be difficult. But we can do that. We are small enough to react quickly and to set something up (MD b, 2014, Int. 1).

Other key resources and capabilities follow from the findings discussed in this chapter and in chapter four, thus to avoid repetition they are summarised in Table 6B.

Resources	Capabilities	Organisational characteristics
▪ Management commitment; ▪ Management alertness; ▪ Skilled employees; ▪ Environmental training; ▪ Set up and control of the supply chain of the key raw material (organic lambswool); ▪ Corporate culture.	▪ Innovation capabilities (one of the leading UK companies in natural fibres technology; the 1st UK company complying with British, European and USA fire standards without using any chemical fire retardant); ▪ Capability to deal with the challenges deriving from the implementation of the BM; ▪ Relational capabilities; ▪ Simultaneous learning and performing capability; ▪ Capability to influence the industry (the green hotel room initiative); ▪ Capability to set product standards; ▪ Simultaneous exploration and exploitation capability; ▪ Anticipatory thinking.	Flat organisational structure and size of operations

Table 6B: Synthesis of FurnitureCo's resource, capabilities and organisational characteristics
Source: The researcher

In concordance with FurnitureCo, PlanksCo's resources and capabilities seem to be crucial in the process leading to the emergence and development of the examined BM. Management commitment, tenacity and capabilities to engage with continuous learning, have allowed the company to bring its innovative value proposition in the scaffolding industry and have been determinant in overcoming all the challenges experienced and the prevalence of a negative market sentiment regarding the success of the product:

> I would like to think that other people will find it quite inspirational seeing what we have achieved because so many people in various industries told us that we would never achieve what we have achieved, so from the plastic industry, from the machinery manufacturing industry, they were quite determined that we wouldn't have achieved it and indeed from the scaffolding industry because lot of people have tried in the past and not succeeded (…). It is worth going that extra mile to try and achieve what we have achieved because there is every chance it will work and in our case we got there (MD b, 2014, Int. 2).

Such commitment is associated with management alertness to changing customers' expectations. This has led the managers to envisage and to believe that the product they created would have attracted the interest of large construction and scaffolding companies. One of the managing directors comments that when they started their business, the UK's government was on the point of introducing the mandatory carbon reporting for quoted companies which would have driven large construction companies, among others, to make efforts to reduce their carbon footprints. This in turn has increased PlanksCo's boards attractiveness since, with a significant low carbon footprint and other environmental benefits, they contribute to the greening of those large organisations supply chains, whose possibility to win tenders is thus enhanced as previously noted. Those managerial attitudes have played a crucial role in setting the business. Nevertheless, there are some other resources and capabilities that can be considered as positively influencing the development of the examined BM and one of these is the company corporate culture of zero waste which also allows employees' engagement with the company sustainability agenda. The company corporate culture welcomes sustainability-oriented behaviour: "it is all very well saying the board itself has got green credentials but we feel that we should pour that through everything else" (MD b, 2014, Int. 2). And this is why employees are trained in the light of environmental sustainability principles: "we are encouraging all our staff to separate out all the

waste done on the shop floor so the cardboard is recycled" (MD b, 2014, Int. 2). The corporate culture is also characterised by the willingness to promote 'good business' with all the parties involved in transactional relationships. The company brand is also supporting the development of the company BM as it assists in portraying the corporate ethos of doing good business, thus enhancing the company goodwill and its attractiveness to customers:

> our branding (…) has been critical [to us]. We were trying to develop a very strong brand, we want to look very clean, very smart, very modern in this very traditional scaffolding world, we want to say everybody needs to move forward here, so we are creating this very modern, sleek, friendly but intelligent product (MD a, 2014, Int. 1).

> The other side of the branding is to produce the feel of the company in the branding, the ethics of the company. So we always want people to associate [our company] with good business, a trustworthy business because that would build trust in the product and we wanted to look modern and new and all of these things were all important to us to bring it to the market (MD a, 2014, Int. 2).

In a very similar line with FurnitureCo, PlanksCo's flat organisational structure and the small size of its operations allowing flexibility, exploration and the speeding up of the decision-making, are relevant in the development of the examined BM and to the achievement of a first mover advantage as expressed by one of PlanksCo's managing directors:

> as you get bigger everything slows down (…); we can make a decision on the spot and we can move in that direction straightaway. We have been chased by companies in Australia and Canada to produce our product in their countries (…) and again that brings its own challenges: what sort of basis do we work on with them? Is that a licence? Is it a franchise? a joint venture? But all of these challenges that come to us, we can make these decisions on the spot very quickly, whereas if we were a big organisation the all process would have just slowed down very much and because it could slow down we could find that other people stepped in and compete with us (MD b, 2015, Int. 3).

This research finding regarding the relevance of these two companies organisational structure in the development of their BMs seems to support previous research in the area of BMI which has highlighted that a simplified organisational structure could lead to enhanced capabilities in handling exploration and exploitation at the same time (Bock et al., 2012). Other key resources and capabilities follow from the findings discussed in this chapter and in chapter four, thus to avoid repetition they are summarised in Table 6C.

Resources	Capabilities	Organisational characteristics
▪ Management commitment and tenacity; ▪ Management alertness; ▪ Company brand; ▪ Corporate culture of zero waste and of 'doing good business'; ▪ Access to and control of its own plastics supply chain.	▪ Innovation capabilities (the 1st company that has succeeded with an alternative to a wooden scaffolding board; attempted by others in the past but failed); ▪ Relational and collaborative capabilities; ▪ Anticipatory thinking; ▪ Simultaneous learning and performing capability; ▪ Simultaneous exploration and exploitation capability; ▪ Capability to overcome the challenges associated with the BM implementation.	Flat organisational structure and small size of operations

Table 6C: Synthesis of PlanksCo's resources, capabilities and organisational characteristics
Source: The researcher

6.3.2 FurnitureCo and PlanksCo: institutional level

In addition to the organisational level, this study has explored also, from the neo-institutional theory perspective, the influence of the institutional level on the emergence and development of the examined BMs, which is appropriate for analyses involving BMs since the BM, as evidenced in chapter two, can be viewed as "a form of agency that arises from and flourishes (or fails) within a distinct structure" (Wells, 2013, p. 61). Before moving to this aspect of this analysis, it is useful to recall how the neo-institutional theory is used. Chapter two has presented, conceptually and graphically, an emerging UK's CE organisational field. The organisational field represents a key conceptual theme in the neo-institutional theory and analyses (Wooten & Hoffman, 2008) as the latter focus on explaining organisational isomorphism within a field (Jackson, 2010). Nevertheless, the above field has started forming recently and this study has only investigated four organisations at a particular point in time. Consequently, it is not possible to accomplish fully the tasks that a field level analysis requires, namely observing and explaining organisational isomorphism within the field. But in the application of neo-institutional theory this thesis has preserved its core in the sense that it attempts to investigate how social

choices, in this case circular BM innovations, are "shaped, mediated and channeled by the institutional environment" (Wooten & Hoffman, 2008, p. 130).

The events that led these two companies in the mattresses and boards manufacturing in the first place reveal the sources of influences on the emergence of the examined BMs. Regarding FurnitureCo, this study has repeatedly stressed that a business opportunity in the marine market convinced the two managing directors to start manufacturing mattresses in 1999. Overall, there appear to be very limited institutional influences on the emergence of the examined BM, particularly from a regulatory perspective as the following quote highlights:

> we are not a manufacturing business that generates a huge environmental impact that is big enough for regulators to worry about especially (…). There aren't many regulatory drivers that influence the fact that we are sustainable; they have an influence on how we make the product sure (…) we have to comply with various regulations but they haven't helped or hindered to steer us in natural fibres (…). If you are a big corporation you are in many ways far more exposed to many more regulations I suspect (…) but it is probably because we are leading the way that regulations would appear behind us as a result of what we have done (…). We will probably come on a more scrutiny in the future, because we are the first doing (…); people are bold over by our credentials at the moment. We are already so far ahead of anyone else… but I am sure that regulations will get tighter and will have a more impact as we get bigger because we will be more exposed to it (MD a, 2014, Int. 2).

In addition, landfill tax has a very limited impact upon the company waste management strategy as the volume of waste produced is minimal (MD a, 2015, Int. 4). Nevertheless, emerging cognitive institutional influences seem to be positively correlated to the development of the business. Notably, the rise of both consumers' interest in buying higher quality and organic mattresses (WRAP, 2013 a) and the hotel industry attention to the sustainability of their operations (Jones, Hillier & Comfort, 2014), have created opportunities for the company products in the market place and the following quotes just stress the relevance of these downstream supply chain aspects:

> we are different, the market has realised that we are different and people come to us as customers because of the things we are doing that make us different, be it from the type of product we are making or the type of company we are in terms of our approach to sustainability (…). The big external influence is what the man in the street wants (…). If the man in the street suddenly thinks that organic, green, eco and sustainable is dreadful then that

> will be an enormous influence upon our business. Obviously, I don't think that is going to happen because I think (…) the way people are educated is to try preserve and sustain rather than rape and pillage. So, you know, the biggest external influence is the market, what consumers want in the street and the more I think they see the value in a product that embodies all the aspects that [our company] put into it, then the better we will do and the bigger the market will get for us (MD b, 2014, Int. 1).

And with regard to the hotel markets:

> [The sustainability angle] is becoming more relevant to us as organisation as we grow, as we get bigger and as we deal with other big organisations that are interested in our green and sustainable credentials. Not only interested but also they will be using that as decisive factor in some form or another in their purchasing decision (…); when you deal with the big hotel chains or some other big organisations, yes it does become more relevant (MD a, 2014, Int. 1).

Likewise FurnitureCo, it was the existence of a business opportunity in the scaffolding industry that convinced PlanksCo's managing directors to start exploring the possibility of manufacturing recycled plastics boards in 2011. Though institutional influences have a very limited relevance, emerging cognitive and normative influences are positively correlated to the business development. Downstream supply chain dynamics, namely large construction and scaffolding companies (the main PlanksCo's customers) having an interest in demonstrating the environmental sustainability of their supply chains, though not having influenced the company decision to start manufacturing recycled plastics boards, have created opportunities for the company product in the market place as evidenced by the following quote:

> [with] big companies, this is where we are going to breaking into the market (…). I think the construction industry is having to go green anyway from the top-down and I think the top companies are putting great energies into going green so that they can win the bids, projects. But I think we are part of that very much though (…) the timing is perfect for us and we are an important part of the change and I think this is why the companies that are talking to us now are so keen to do business with us because they want a green image and by using us they are going to get that (…). The greener can be seen to be, the best is for them. I think it's almost a self-regulatory thing that they are all going green because they all need to compete against each other (MD a, 2014, Int. 2).

From a normative perspective, ZWS support has been instrumental in the development of the new recycled end cap for the board and its willingness to fund the establishment of PlanksCo's manufacturing facilities in the Scottish

territory is having a positive effect on PlanksCo's business growth plans. Nevertheless, it would appear that market and institutions have acted as barriers to the emergence and implementation of PlanksCo's BM to a certain degree. The poor quality of much of the plastics recyclate experienced by PlanksCo has created several challenges that have been overcome via setting and controlling its own plastics recyclate supply chain which is considered as one of the conditions to succeeding with closed loop operating models by the practitioner literature on the CE (e.g. Green Alliance, 2013). With its innovative approach, PlanksCo has managed to overcome an institutional failure and the consequent market failure that can be identified in the form of asymmetry of information, as the quality of the plastics recyclate bought has to be taken on trust. Finding the right quality of recyclate for their end product and enough supply of it were not the only challenges through which the company had to navigate to develop its business. Some difficulties were experienced when searching for funds to finance the business which is not surprising since studies (e.g. Roos, 2014) have highlighted that getting access to financial resources is one of the challenges that can be encountered in the setting up of BM based on CE principles. On the other hand, crowd funding has been successful in guaranteeing the support needed:

> people that wanted to invest were ordinary people using their ordinary savings (…) and they think I am going to go for this because I believe in the product and they loved the green. Everyone invested because they loved the green angle of it, the sustainability, they could see the potential, made them to feel good, feel good factor, they appreciated the health and safety side of it (MD a, 2014, Int. 1).

From the evidence presented in this paragraph several considerations can be put forward on the emergence and implementation of the examined BMs. The cases examined seem to suggest that the emergence of these BMs, once the business opportunity that has led to enter the industry in the first place is considered, is largely driven by the internally developed resources and capabilities. When it comes to the relevance of the institutional influences on the emergence and implementation of the examined BMs, in both cases from the analysis of the findings it would appear that regulatory institutions have not had any direct influence neither on the emergence nor on the implementation of FurnitureCo's and PlanksCo's BMs. However, both companies proactive stance might contribute to providing a competitive advantage in the form of mitigating

regulatory risks as tighter environmental regulations may come in place in the near future. The European Commission, for instance, has recently (December 2015) released the new CE package which, seeks to increase recycling across European countries for a more resource efficient economy (EC, 2015 c). FurnitureCo's willingness to collect back mattresses, whose feasibility analysis is still undergoing, would seem to suggest that the company is moving ahead of regulations prescribing collection, thus mitigating the risk of dealing with tighter waste management regulation. It might also be argued that as environmental regulations are more relevant to bigger organisations, which represent one of the company market segments, indirectly they exert a positive effect on the future viability of the company BM as meeting the demand of these organisations is on the company business growth agenda. The same consideration applies to PlanksCo since environmental regulations are relevant to large scaffolding and construction organisations, the main PlanksCo's market segment, thus exerting indirectly a positive effect on the future viability of the company BM. Nevertheless, it seems that cognitive and normative influences are more relevant than regulatory ones and particularly for the development of these two businesses as evidenced earlier.

The analysis conducted in this last section of this chapter has used a resource and then an institutional perspective to explain how the emergence and development of the examined BMs have taken place. By merging these two perspectives it appears that organisational characteristics (flat organisational structure and the size of operations) might be considered as moderators (e.g. amplifiers) of the field influences (described earlier) upon the development of FunitureCo's and PlanksCo's BMs, as they affect positively these companies capability to respond to these influences.

Finally, there is another perspective that deserves to be explored when considering the relationship between structure and agency. This study has taken the perspective that the institutional environment (structure) would have influenced the examined innovations (agency) to a certain extent. Nevertheless, there is some evidence of 'institutional entrepreneurship' in both FurnitureCo and PlanksCo which means that the studied organisations have taken initiatives aimed at influencing the wider industry context within which they operate.

Initiatives like the ‘green hotel room’, setting product standards (compliance with fire regulation without using any chemicals) and the willingness to anticipate future tighter environmental regulations (e.g. exploring collecting back mattresses at end of life), would seem to suggest that in spite of being a small organisation, FurnitureCo is setting new standards and promoting environmental sustainability in the industry in which it operates. Though it is out of the scope of this study to assess the impact of these initiatives in driving broader change, the company approach appears to fit with the ‘institutional entrepreneurship’ perspective (e.g. Di Maggio, 1988) in institutional theory emphasising the role of agents in promoting institutional change. Similarly, PlanksCo’s contribution to the greening of the scaffolding industry and its commitment to establish good business practices in the whole plastics supply chain would appear to fit with the ‘institutional entrepreneurship’ perspective. Figures 6.5 and 6.6 summarise the discussion on the sources of influence on the emergence and development of FurnitureCo’s and PlanksCo’s BMs respectively. In these boxes the size of the circle relates to the relevance of the source of influence (the bigger the circle the more relevant the influence) in the emergence and development of the investigated BMs, and their overlapping structure signifies that the sources of influences are concurrent in the stages of the BMs evolution.

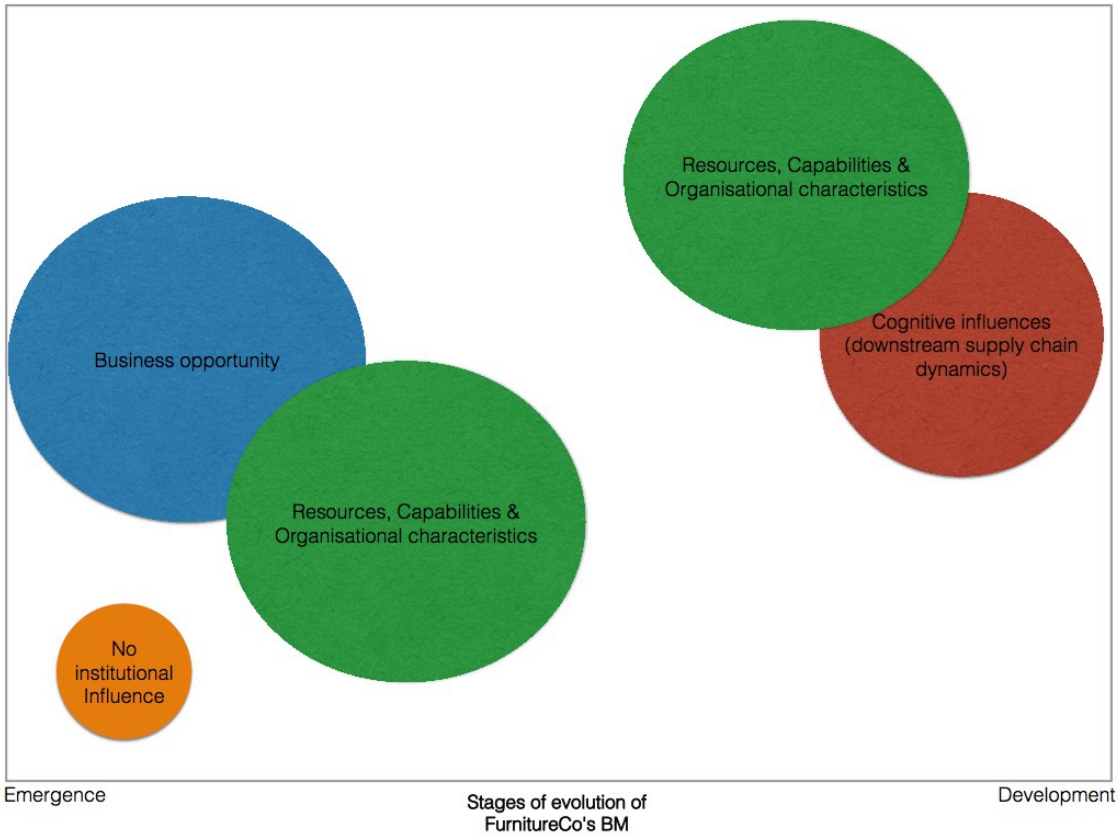

Figure 6.5: Relevance of the sources of influences on the evolution of FurnitureCo's BM
Source: The researcher

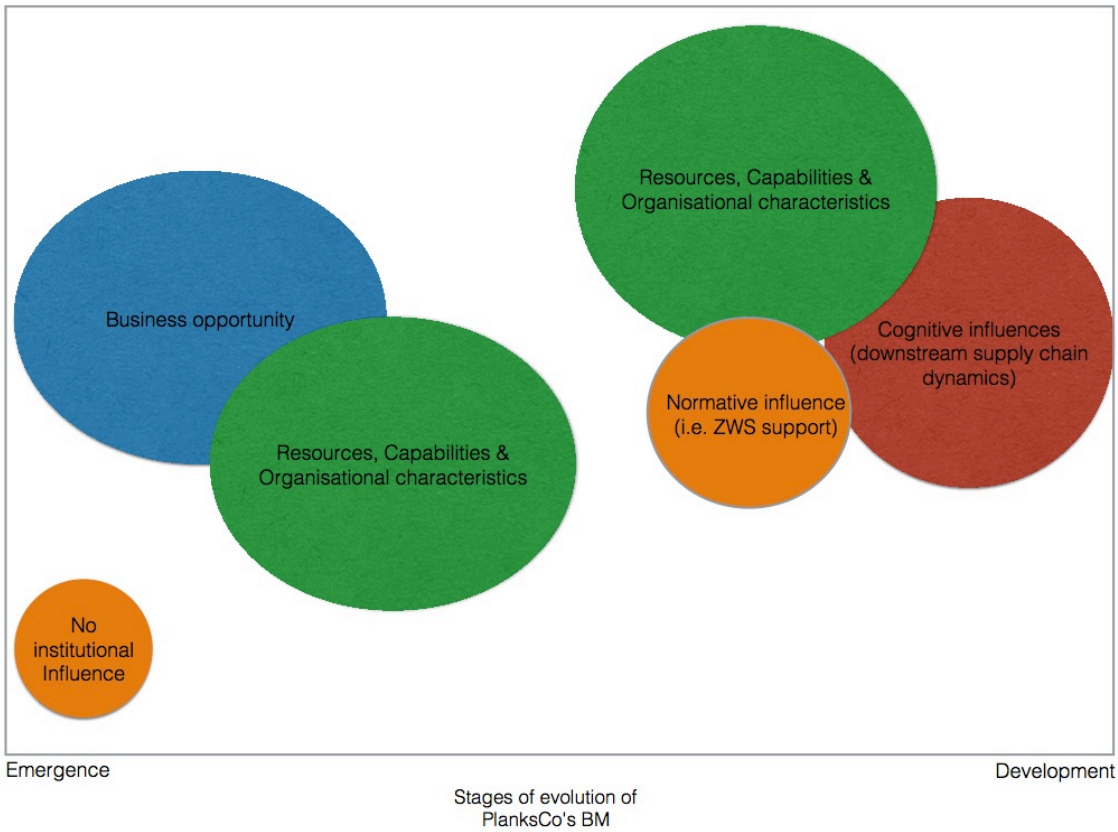

Figure 6.6: Relevance of the sources of influences on the evolution of PlanksCo's BM
Source: The researcher

6.4 Conceptualising RailCo's and UniCo's business models

Drawing on the empirical evidence presented in chapter five and theoretical themes from the BM, the CE and the SBMs literature, this paragraph proposes a conceptualisation of RailCo's and UniCo's BMs, which relates to the first research question recalled here:

1st RQ: *How can circular business models be conceptualised?*

The characteristics of RailCo's and UniCo's BMs are explained conceptually and graphically and this is done around Richardson's (2008) BM framework contemplating the value proposition, value creation and delivery, and value capture dimensions as applied also by Bocken et al. (2014 a). Therefore, it follows the same structure used for FurnitureCo's and PlanksCo's BMs. In the subsequent parts of this paragraph, it is firstly explored how each organisation captures value from the implemented measures according with CE principles. Then the process of value creation is qualified, before giving consideration to both the creation of value for a broader set of stakeholders and value delivery (how value is provided). A conceptualisation of these BMs is finally given in Table 6D and it is articulated around the key theme of 'value' with qualifying features deriving from empirical data.

6.4.1 RailCo's value capture

RailCo's initiatives implemented as a result of the reviewed corporate environmental strategy (zero waste to landfill and B-line projects), stations development projects (EVCPs and bike hubs) and investments in digital technologies (smart ticketing) encouraging the shift to more environmentally sustainable and healthier journeys, contribute to enhance its value proposition. In addition to potentially increasing stations attractiveness, all of the above could allow RailCo to capitalise on the rising travellers' awareness of the environmental impact of their journeys, the changing mobility trends and the transition to a circular mobility scenario highlighted earlier. Hence, opportunities for value capture (additional revenues) there might exist. Additional revenues

might also derive from increased assets utilisation (e.g. the new bikes hub has office space that can be rented on a short term basis).

Costs savings might contribute to value capture too. The zero waste to landfill project is relevant not only for the improvement of RailCo's environmental performances: "[in terms of recycling] we are up to 86% on stations and we were 35% a couple of years ago (…) it's a massive change and we are still expecting more soon" (HE, 2014, Int. 2), but it might be so also for reducing disposal costs. When the last interview with the HE was conducted (January 2015), the project was on the point of being extended to other stations and engagement with tenants had started producing some benefits in terms of reduced wastage passed on RailCo. Following from a consideration of these two developments and of the HE arguing that "the more we reduce waste, the less cost there is" (HE, 2014, Int. 2), disposal costs reduction might have been achieved and thus contributing to RailCo's value capture. More stringent waste regulation could come in place soon in the light of the recently released CE package including measures such as increased recycling targets for packaging materials among other things (EC, 2015 c). RailCo's HE believes that the company proactive approach in managing its waste streams is beneficial in terms of mitigating regulatory risks: "that's put us in a good place for the future because the legislation is going to drive us to separate. So we are already ahead of the game, that's one good thing" (Fieldwork transcription, 2014). Regenerative braking has further contributed to costs savings (Fieldwork notes, 2014) since Network Rail detracts the regenerated energy from the consumed energy and thus from the bill to be paid (Network Rail, 2012). Electricity metering in stations and on trains might lead to additional costs reduction as TOCs using on train metering are charged on the basis of the metered electricity consumption (Fieldwork notes, 2014). Similarly, the trial of driver advisory systems on diesel trains potentially reducing fuel consumption and extension of the B-line project might contribute to additional costs savings that in the case of the B-line project would be achieved because of reduced maintenance costs (once the land is sowed for planting it becomes like a meadow that has only to be mowed once a year).

In addition, it might be argued that RailCo's renewed sustainability strategy has generated "an opportunity platform" (Fombrun, Gardberg, & Barnett, 2000, p. 85) such as the creation of intangible assets like collaborative working opportunities, employees' fulfilment, satisfaction and commitment and reputational capital, which might lead to additional opportunities for value capture. For instance, the zero waste to landfill project having led to the creation of a cross-functional working group where the waste contractor, stations managers and RailCo's ACEs participate and discuss the issues involved in the delivery of the project, has resulted in a collaborative, more networked relationships among people not used to engage with each other before and generated a positive impact on performances, security and the tidiness of stations (HE, 2014, Int. 1). The personal development pyramid introduced to motivate ACEs and to enable their career progression has also contributed to benefit the internal corporate environment, as this quote would seem to suggest:

> the line managers started to see the benefits of that kind of development, working with that people, keeping them inspired, encourage them because there are lot of transferrable skills in what they learn with the environmental management (Fieldwork transcription, 2014).

In terms of reputational gains, the following quote expresses how a good reputation might influence value capture:

> just having the customers really believing in you, can mean the difference between whether they will push you to win a contract when it comes the franchise time… if they go off the stations and they can see their waste is been dealt with responsibly and the bins are all tidy, the stations clear of litter and the flowers growing up to help bees, it causes a good impression. You know, if you go to (…), you have a parted allotment literally growing vegetables in parts in a small compound on the station, which is led by the community. That looks great. So, those kinds of perceptions go a long way (…). We get recognition through awards (…) we were the first [TOC] having an article written about us, we were the first TOC writing an article for the (…) magazine (…) we are now recognised as a business that is trying to be sustainable on a national platform which TOCs weren't doing (HE, 2014, Int. 2).

6.4.2 RailCo's value creation

While capturing economic value for itself, the company contributes to create environmental and social value. This is why RailCo's value creation might be

regarded as *diffused and interconnected.* The zero waste to landfill project is a pertinent example for explaining how this process of value creation works. The extension of this initiative across RailCo's network could lead to additional reductions in the waste management costs as noted earlier. Whilst this can be beneficial to RailCo's bottom line, materials can be recycled and thus environmental value is created. Social value is created through the establishment of a dedicated cross-functional working group leading to more collaborative working relationships and knowledge sharing. Another example of diffused and interconnected value creation refers to the refurbishment of the abandoned cycles that end up in RailCo's waste stream. By partnering with a charity and a local council, economic value is captured (the cost of disposing of these bikes is not incurred) and at the same time environmental and social values are created (bikes are not discarded and refurbishment is operated by disadvantaged youths who acquire skills in bikes maintenance). Figure 6.7, recalling the stakeholders map presented in chapter two, indicates how RailCo creates value for a broader category of stakeholders following from the discussion of the features of the company value proposition and operating model presented in chapter five.

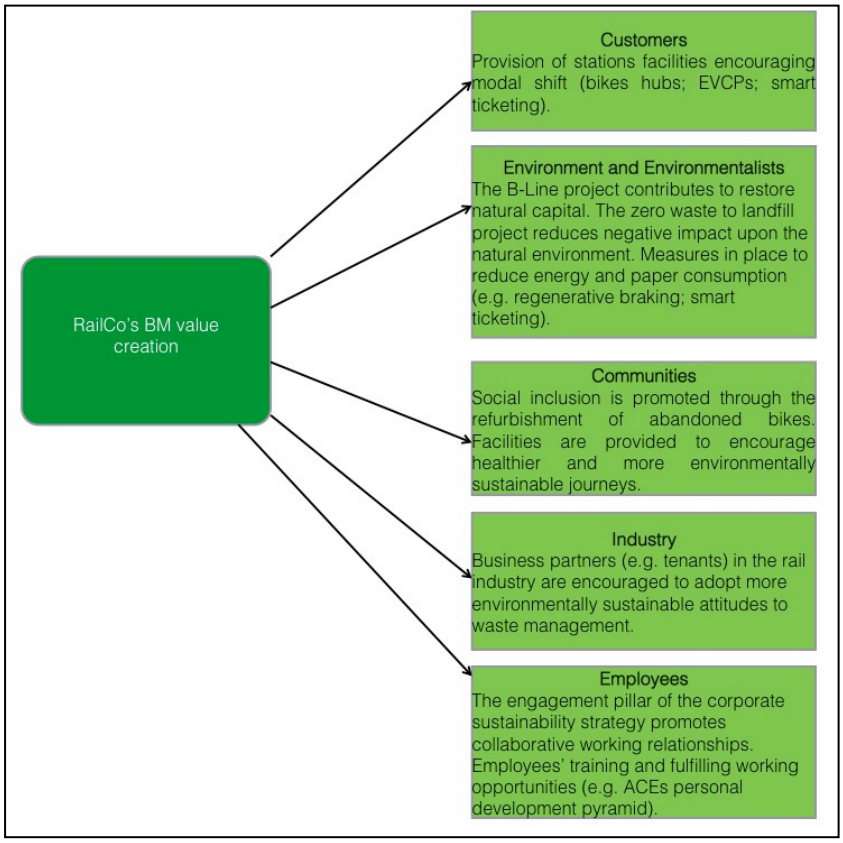

Figure 6.7: RailCo's value creation for a broader set of stakeholders
Source: The researcher and based on Donaldson & Preston (1995); Driscoll & Starik (2004); Starik, (1995) and in accordance with SBMs literature (e.g. Bocken et al., 2013; Stubbs & Cocklin, 2008)

Nevertheless, this multiple value creation is not exempt from challenges as the process leading to it stems from a cultural change approach, thus requiring lot of engagement, time, efforts and skills (Fieldwork notes, 2014). The following quotes are examples of some of the internal mechanisms that the above cultural change approach has started to influence:

> most people will just write a strategy that is an action plan and it will have a serious of things that will be SMART measures whereas if you look at our strategy (…) I don't believe you should have a SMART measure for everything. It helps to have some, absolutely you got to have some but how do you put a SMART measure on a team of people developing themselves, you could say ok, 20 people take IEMA qualifications, but what does it really mean? If they are actually not using them in the way they need to be used. So your actual measure is how much they are applying their learning, how you quantify that? (…). It's about knowing when to use that kind of thing and when being a bit more aspirational and work with something that potentially you can't measure and not to fear that because if you have the fear that you can't demonstrate the results it would become a barrier and it will stop you from doing things (…). We have done lot of highly measurable innovations (…) but using SMART for everything becomes a limiting factor because if you only did those kind of projects you will be missing out all the advantages of

> working with people, fixing the human factor if you like, because quite often the biggest challenge is the human factor. You can put all the system you like, the SMART measurement and everything but put in one human who is just not going to comply and all thing falls over (HE, 2014, Int. 2).

And:

> there is a perception over there that we are part of the community, we are a core part of the community and we have a responsibility to deliver. The challenge is that we are also a business, so arguably we shouldn't be delivering anything that does not deliver shareholders' value but (…) ask me to measure what value the catch box exercise had (…) I couldn't put a monetary value on it but the sustainable value is definitively there. The passengers that took part in that, loved that, it went down a storm, it was well publicised, the report was gone back to the government mentioning [RailCo] and my name as the person who came up with the idea. Now that is going to be worth (…) because actually (…) in government circles [we are] mentioned as a forward thinking TOC (HE, 2014, Int. 2).

Other challenges are represented by the complexity of the rail business and by the average time span of rail franchises. The issue of 'inherited waste' described earlier is just an outcome of that complexity. Despite the fact that RailCo does not own stations and sublets parts of these to tenants, it has to take measures to ensure that waste, including the 'inherited' one, is reduced and recycled. In addition, the average length of rail franchises could act as a barrier when corporate sustainability is viewed from a cultural change perspective. Though the exact length of each rail franchise is established on an individual basis taking into account the characteristics and the risks associated with each franchise (Butcher, 2014), they are typically awarded for six to seven years (Gevaert, 2013). In an industry where environmental improvements are expected alongside the provision of their business case (DfT, 2012) within the time scale set by the franchise, this represents a challenge to the implementation of sustainability programmes which span across several years: "[the franchising] framework makes all the thinking naturally short term [whereas] (…) if you are delivering something that is truly sustainable, you may not measure the results for 25 years" (HE, 2014, Int. 2). Nevertheless, in the recent years there have been various proposals (e.g. the 2013 *Brown Report Into Franchising*) to reform the franchising system. These proposals have acknowledged the issue of the franchise length which was discouraging TOCs from committing themselves to long-term investments (Butcher, 2014). In line with these proposals, the DfT has introduced, for some rail franchises, the

residual value mechanism in its latest franchise invitation to tender, which is a compensation scheme aimed at encouraging TOCs to make longer-term investments (Rail Business Intelligence, 2015).

6.4.3 RailCo's value delivery

When value is created it is also important to understand how that is achieved. From the analysis developed in chapter five the key activities involved in the process of value creation and delivery have already emerged. Resources and capabilities linked to that process are explored in paragraph 6.5.1 whereas now it is considered the value network or partnerships perspective. From a value network perspective it can be argued that RailCo's BM is characterised by a *boundary-spanning* relational structure since there appears to be some evidence that engagement and collaboration with its partners (e.g. tenants, waste contractor, local councils, community rail partnerships) enable value creation and this is very relevant for the zero waste to landfill project and for the B-line project. In addition, the overall aim of the corporate sustainability strategy, '*minimising environmental impact now and beyond the franchise'* underlining the initiatives mentioned above, is itself boundary spanning as it intends to deliver sustainable value beyond the time boundaries set by the franchise and beyond the physical boundaries of the business itself, reaching the wider community in which the company operates.

Figure 6.8 summarises the characteristics of RailCo's BM in terms of value proposition, value creation, delivery and capture.

Value proposition	Value creation & delivery	Value capture
1) Passengers services with the provision of facilties encouraging modal shift and enhancing attractiveness of stations; 2) Travellers and commuters. *Offering and target segments*	1) Passengers services; 2) Initiatives are taken to minimise environmental impact and to restore natural capital; 3) Infrastructural and digital technology investments to encourage modal shift; 4) The engagement pillar of the corporate environmental strategy has acted as key enabler of the renewed approach to corporate sustainability; 5) Diffused and interconnected value creation: customers, nature, communities, employees and industry; 6) Boundary spanning relational structure; 7) Collaborative, fulfilling and rewarding working experiences. *Activity system and value network perspective*	1) Cost savings (potential additional reduced waste disposal costs through the extension of the zero waste to landfill project; regenerative braking; potential further energy savings from electricity consumption metering; potential fuel savings from trial of driver advisory systems; B-line project; donations of abandoned bikes); 2) Potential additional revenues from assets utilisation (office spaces available for rental in the new bike hub); 3) Reputation for doing well may support bidding in the franchising process, hence value capture; 4) Potential additional revenues from increased attractiveness of stations; 5) Collaborative working practices may create additional opportunities for value capture; 6) Mitigation of future regulatory risks via the zero waste to landfill project. *Costs and revenues*

Figure 6.8: RailCo's BM characteristics
Source: The researcher and based on Bocken et al. (2014 a) and Richardson (2008)

6.4.4 UniCo's value capture

Turning to UniCo, it might be argued that there are some opportunities for value capture deriving from the implemented circular measures. If we consider UniCo's waste management strategy, the increased amount of waste streams separated for recycling and other initiatives such as the students' reuse project, while contributing to lowering the tonnage of waste to dispose of, could result also in reduced waste disposal costs. Initiatives for the reduction of food waste (e.g. UniCo has signed the WRAP HFSA) and the disposal of food waste via anaerobic digestion instead of maceration, could be beneficial to value capture for the reasons explained earlier. The sustainable travel plan also offers opportunities for costs reductions as the uptake in the use of more environmentally sustainable means of transport could lower business travel costs and pressure for parking spaces, the latter potentially leading to additional costs (e.g. construction and maintenance of parking costs). Systems in place to lower water, gas and electricity consumption (e.g. BEMS; some rainwater harvesting; the adoption of the BREEAM standard for construction and refurbishment of buildings) can further contribute to reduced operations costs

(e.g. lower utilities bills). Contributions to costs savings could also derive from the internal re-use of furniture, from considering sharing, renting and reusing prior to the purchase of a new item. UniCo's environmental performances are relevant also because they might enhance its capabilities to access public funds. The capital funding provided by HEFCE to fund physical infrastructures is subject to the requirements of the Capital Investment Fund (CIF) which demands universities to demonstrate their commitment to reduce carbon emissions, to manage their environmental impact and improve usage of space (HEFCE, 2014).

In addition to reduced costs and access to public funds, the measures implemented to improve environmental performances might generate "an opportunity platform" (Fombrun et al., 2000, p. 85) which could further contribute to value capture through reputational gains and organisational learning. Separation of food waste for anaerobic digestion might increase reputation as it appears that the majority of food waste is still disposed of in landfills in England (Downing et al., 2015). This could be regarded as an example of "positive organizational deviance" (Walls & Hoffman, 2013, p. 254), which the corporate sustainability literature considers as critical for the emergence of innovative business practices leading to sustainability at scale (ibid). This might also contribute to mitigation of regulatory risks, as noted earlier, in the light of the recently released new EC CE package. It is also pertinent to highlight that one aspect of the UK's government reform of the higher education, which came into effect in 2012, is that it determined a change in the funding mechanisms of universities now more dependent on tuitions fees than public funding for teaching than before (UUK, 2015). This coupled with deregulation on the number of students has increased dramatically competition among institutions (ibid). As students are now largely responsible for the cost of their own education, they have more expectations towards universities (ibid) and within these they are interested in the sustainability performances of HEIs and in the acquisition of 'green' skills (HEFCE, 2014; UUK, 2015). Therefore, reputation for 'doing good' and the provision of degrees and courses enabling the acquisition of skills in sustainable development could enhance Unico's value proposition and thus opportunities for value capture via attracting more students.

Finally, opportunities for value capture can derive from organisational learning and particularly from participation in schemes like green impact. Green impact is a national scheme promoted by the National Union of Students (NUS) encouraging universities staff to engage with projects to improve the environmental performances of their workplaces (NUS Green Impact). In the academic year 2014-2015, more than 30 teams from the university participated in the scheme with more than 1,000 actions initiated (UniCo's website). The following quotes emphasise the relevance of the participation in green impact for individual and organisational learning and for value capture:

> [Green Impact] reduces costs and (…) impact on the planet (…) and I think it makes people think, just making people think before they do things, don't just put everything in the bin, don't just do this. I think it is just trying make everybody feel that this is our planet and we need to look after it (…); [it has other benefits such as] materials lasting longer and being able to use them again and again and not just producing more and more glass and plastic and therefore taking away minerals from the planet, you know we are recycling and this saves (…). It joins people up who wouldn't normally interact or offer each other information (…) we work in partnership with the sustainability team, we go to them for guidance, they come to us for trials. There is very much interaction (SC a, 2014, Int. 1).

And:

> I suppose you get the team building because obviously you are engaging in all these projects together. It's great from that perspective. I think also and this touches on environmental from an education perspective, it probably gets you to think about things you haven't been considering before. I can walking around with my plastic bottle in my hand and thinking I can't just chuck it into the bin I have to find a plastic bin because I am in that mindset now (SC b, 2014, Int. 1).

And:

> green impact is a good example, you have lot of different departments doing things and where they had success they shared with other teams how they have done it (…). It gives rewards in the sense of recognition (SM, 2014, Int. 1).

6.4.5 UniCo's value creation

In addition to capturing economic value for itself, UniCo contributes to create environmental and social value. This is why UniCo's value creation might be regarded as *diffused and interconnected* in a similar line with RailCo. The re-

use project enabling students to donate unwanted items and food is a pertinent example for illustrating how the multiple value creation works. This project can contribute to disposal costs savings. In addition, it reduces environmental impact and creates social value. The educational aspect of the reuse project, in the sense that students are encouraged to think about alternative ways to dispose of unwanted items as opposed to just throwing them away, and donations of collected items to food banks and partner charities, explain why social value is created.

The initiatives established to reduce food waste and to dispose of unavoidable food waste are just other examples of multiple and interconnected value creation. Reducing and disposing of food waste through anaerobic digestion can contribute to operations costs saving, thus benefiting UniCo's bottom line. Reducing food waste and anaerobic digestion of food waste have also environmental benefits as a renewable form of energy and bio-fertilisers are produced off-site and there is mitigation of negative externalities associated with food demand such as soil degradation. Social positive outcomes are produced because students are encouraged to think about their food behaviour and they learn skills, such as separating food waste in the kitchen shared in self catered accommodation, that they can bring at home and to their future workplaces to spread responsible behaviour. The establishment of a collaborative working relationship (the task and finish group) to devise how to reduce food waste also explains why social value is created. Multiple value creation stems also from UniCo's sustainable travel plan. UniCo has adopted the higher education sector carbon reduction target: 43% by 2020 against the 2005 baseline (CMP, 2010-2020). Though HEIs are required to have a carbon management plan addressing only scope 1 and 2 emissions (e.g. direct emissions from sources controlled by the organisation deriving from combustion in boilers and from the use of electricity) to access HEFCE capital funding, HEIs are encouraged to include arrangements for managing scope 3 emissions (e.g. those resulting from business travel, students and staff commuting, waste and procurement) in their carbon management plan (HEFCE, 2010). From 2012-2013, in the Estate Management Statistics collected by the Higher Education Statistics Agency, there are provisions to enable all scope 3 emissions calculation though reporting on these is recommended and not mandatory

(HEFCE, Carbon FAQ). As a consequence, the existence of a sustainable travel plan could place UniCo in a good position to demonstrate its commitment to contribute to scope 3 emissions reduction and thus enhancing its reputation. The uptake in the usage of more environmentally sustainable means of transport reported earlier, would seem to suggest that environmental value is created from reduced emissions and that social value is created too. Car sharing is an example of why the latter occurs as this quote emphasises:

> we have lot of staff that come from outside the city, they drive quite a lot on their own, they can save a hell lot of money by car sharing and they can also improve their quality of life by sharing their cars with colleagues, chat on their way to work (FTPC, 2014, Int. 1).

Figure 6.9, recalling the stakeholders map presented in chapter two, indicates how UniCo creates value for a broader category of stakeholders following from the discussion of the features of the company value proposition and operating model presented in chapter five.

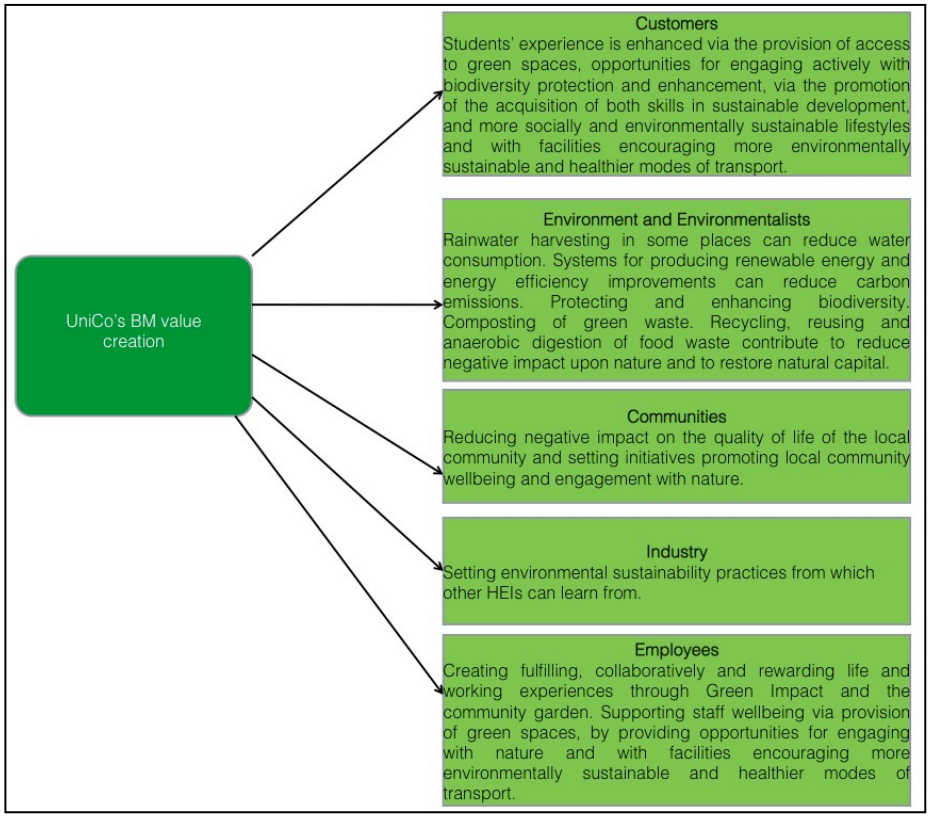

Figure 6.9: UniCo's value creation for a broader set of stakeholders
Source: The researcher and based on Donaldson & Preston (1995); Driscoll & Starik (2004); Starik, (1995) and in accordance with SBMs literature (e.g. Bocken et al., 2013; Stubbs & Cocklin, 2008)

Nevertheless, this multiple value creation is not exempt from challenges likewise the other case studies considered in this research. These difficulties are due to some factors including: a) the complexity of UniCo's organisational structure; b) the variety of services provided; c) the time frame within which universities work; d) influencing attitudes and behaviours; e) staff's turnover; f) competing objectives. The following quote explains the attitude and behaviour aspect in relation to the choice of modes of transport:

> the biggest challenge is always change attitudes so especially with regard to travelling and cars. We have this car culture in the UK and I think [here] more so than a lot of other places, in other cities in particular. Cities tend to be slightly easier to convince people to use public transport because often facilities are better than in rural areas but we are in a very difficult position [here]; we are a very compact city in a large, rural area, so we have lot of staff and students living outside the city with varying access to public transport. Some of them may live very rurally so they do not have a bus service or a rail service so that limits my option in what I can promote to them (…). What we really tried to do more so in the last 6 months is target our demand area rather than just saying hey everyone let's all look at riding the bus (…) and that is the only way to overcoming that challenge of people being very stuck in their habits and ways and having set attitudes about I can't do that I can't do this (…). I think the biggest challenge is attitudes and changing attitudes and making people see that cycling is not a scary option and the bus is on; late and unreliable is a very old fashioned view (FTPC, 2014, Int. 1).

This quote evidences the complexity of UniCo's organisational structure:

> it is a very complex institution (…) lot of different departments, lot of different people, lot of different mechanisms and systems you have to influence (SM, 2014, Int. 1).

The following stresses the diversity of the services provided:

> we actually own and manage a small town in its own right, we are about a fifth of the size of the population of (…) and we are very diverse. We have students residences, we have research, we have restaurants, night clubs, swimming pools, sports centres and the challenge for us is that (…) our [carbon] targets are against a baseline of what the university looked like in 2005/2006 and the university is a very different place than it was in 2005/06 (…). The university is growing and the challenge for us is to keep reducing carbon when numbers increase all the time (DDED, 2014, Int. 1).

The time frame of UniCo's curricular activities is not without complexities:

> I think time is [a challenge] (…). Part of that time frame is also that students are only here during term time, they go home for their holidays so if you have a project that has to run on campus it has to work around those scales (…). Effectively, what we have to do is to turn an idea into a reality in 12, 24

> weeks. It's no time at all really to make something exciting, to communicate what we want to achieve, to get people to believe in that concept (SGUCs, 2014, Int. 1).

Staff's turnover appears to create some concerns too:

> I think transition population [is a challenge] (…). With staff, we have to agree a staff turnover (…); when you have changes to personnel, personnel leave and they are replaced and you lose your resource and that can be a real challenge (SM, 2014, Int. 1).

Competing objectives are other sources of challenges. The former may arise in the following situations. For example:

> if someone is having to clearing up an office area, if someone say the main thing is to clear up it by tomorrow, then they clearly don't have time to reuse or make sure that things are recycled, whereas if they can plan over a couple of weeks they can do that (…) (SM, 2014, Int. 1).

The tension existing between growing as a research institution and the impact it has on the use of resources is another example as the following quotes emphasise:

> the university is becoming much more research oriented particularly in the STEM subjects and that research requires laboratories that are very energy hungry, requires high performance computers which are very energy hungry and we have to make sure that we can make that [carbon] savings (DDED, 2014, Int. 1).

And:

> the water is a good example of where you have then conflicts in terms of university different strategies because they have been developing a big important research area up at life sciences where they have got a whole huge aquarium. So they brought in an enormous aquarium, so they have a massive increase in water use but it is absolutely related to a big research project (SGM, 2014, Int. 1).

6.4.6 UniCo's value delivery

In a similar line with RailCo, when considering partnerships for the aspect relating to value delivery, the examined BM can be considered as characterised by a *boundary-spanning* relational structure since there appears to be some evidence that engagement and collaboration with partners enable value creation. This is evident in the case of the students' reuse project (students, food bank and partner charity), for the initiatives to reduce food waste (students,

students' green unit, WRAP) and to provide improved bus services to, from and between UniCo's campuses (local council and bus service provider).

Figure 6.10 summarises the characteristics of UniCo's BM in terms of value proposition, value creation, delivery and capture.

Value proposition	Value creation & delivery	Value capture
1) First class undergraduate and postgraduate higher education delivered in an environment that supports students' health and wellbeing, with provision of skills in sustainable development; 2) Undergraduate and postgraduate (masters and research) students. *Offering and target customers*	1) The management of operations seeks to minimise negative environmental impact and to do good both socially and environmentally (biodiversity protection and enhancement plan; sustainable travel plan; sustainable waste management; sustainable construction and refurbishment; sustainable procurement; renewable and more efficient energy solutions); 2) Education for sustainable development; 3) Diffused and interconnected value creation: customers, nature, communities, employees industry; 5) Boundary spanning relational structure; 6) Bottom-up initiatives for the greening of the work place (e.g. Green Impact) and student-led initiatives to develop skills in sustainable development and more environmentally and socially sustainable lifestyles. *Activity system and value network perspective*	1) Costs savings (reduced waste disposal costs via initiatives aimed at recycling and reusing; signed to the WRAP hospitality and food service agreement leading to potential reduced operations costs; separate collection of food waste means that macerators are not needed any longer and thus water and energy consumption is reduced; potential costs savings from the internal reuse of furniture; some systems in place to enable water and electricity savings: e.g. BREEAM, rainwater harvesting; BEMS; sustainable travel plan might reduce business travel cost and parking costs; reusing, sharing or renting is considered prior to the purchase of a new item); 2) Mitigation of regulatory risks via the separate collection of food waste, measures to reduce food waste and recycling and reusing initiatives. 3) Environmental performances of its operations increase reputation with potential benefits deriving from securing funds (HEFCE CIF) and from attracting students; 4) Organisational learning through schemes like Green Impact leads to sharing of best practices with potential opportunities for value capture. *Costs and revenues*

Figure 6.10: UniCo's BM characteristics
Source: The researcher and based on Bocken et al. (2014 a) and Richardson (2008)

Summarising the analysis of RailCo's and UniCo's BMs presented in this paragraph and drawing on chapter five for key elements qualifying the value propositions of the investigated BMs, Table 6D below compares the identified features of the two examined BMs and proposes their conceptualisation. Likewise FurnitureCo and PlanksCo, the conceptualisation that follows is based on a framework originating from the BMs literature (Richardson, 2008) and applied also within SBMs studies (e.g. Bocken et al., 2014 a). Nevertheless, the following conceptualisation does not merely apply Richardson's model in the context of circular BMs, but it also identifies qualifying features of the value proposition, value creation and delivery and value capture.

BM framework	RailCo's BM features	UniCo's BM features
Value proposition	Passengers services with attention given to the provision of facilities encouraging modal shift and enhancing attractiveness of stations.	First class undergraduate and postgraduate higher education delivered in an environment that supports students' health and wellbeing, with provision of skills in sustainable development.
Value creation & delivery	▪ Diffused and interconnected value creation; ▪ Value is created for a broader category of stakeholders. ▪ Boundary spanning relational structure.	▪ Diffused and interconnected value creation; ▪ Value is created for a broader category of stakeholders. ▪ Boundary spanning relational structure.
Value capture	Idiosyncratic value capture mechanisms.	Idiosyncratic value capture mechanisms.
Circular business models might be conceptualised as characterised by diffused and interconnected value creation and idiosyncratic value capture mechanisms; their value creation and delivery systems are characterised by a boundary spanning relational structure and their value proposition by enhanced customers' value.		

Table 6D: A comparison and conceptualisation of RailCo's and UniCo's BMs
Source: The researcher

6.5 RailCo's and UniCo's business models: emergence and development

After having conceptualised the examined BMs, this paragraph analyses what could explain their emergence and development in the light of the empirical evidence and of the conceptual framework presented in chapter two comprising the NRBV of the firm (Hart, 1995) and the neo-institutional theory (Di Maggio & Powell, 1983). This is expressed by the second research question, which is recalled here:

2nd RQ: *How can the emergence and development of circular business models be understood?*

The analysis of the processes leading to the emergence and development of the examined BMs follows the same structure as for the two SMEs. Consequently, it is firstly explored the organisational level (resources, capabilities and organisational characteristics) and then the institutional level.

6.5.1 RailCo and UniCo: organisational level

Resources and capabilities seem to have had a rather crucial role in the transformation of RailCo's BM and particularly the responsible leadership demonstrated by its head of environment. Though the individual level is not contemplated in the conceptual framework used to understand the process leading to the emergence and development of the initiatives characterising the examined BMs, in the case of RailCo it can be considered as one of the most relevant drivers. This finding is consistent with management studies emphasising the relevance of people in organisational change for meeting sustainable development goals (Griffiths, Dunphy, & Benn, 2005). The transformation of the corporate sustainability approach and of its BM follows from the head of environment willingness to spread new values and beliefs across organisational and inter-organisational boundaries through the engagement pillar of the corporate environmental strategy, an activity that Chertow & Ehrenfeld (2012) qualify as a boundary spanning activity. The head of environment could be considered as a change agent catalysing more environmentally and socially sustainable business practices and this is line with Hesselbarth & Schaltegger's (2014) view of a sustainable change agent. They define the latter as "an actor who deliberately tackles social and ecological problems with entrepreneurial means to put sustainability management into organizational practice and to contribute to a sustainable development of the economy and society" (p. 26). As noted earlier, TOCs are considered as 'bizarre constructs' because they do not own key assets following from the complexity of the franchising system. Yet notwithstanding that, the head of environment, supported by a nurturing and collaborative approach deriving from the willingness to create "shared value" (Porter & Kramer, 2011), has leveraged upon the company main asset (its staff) to promote change within and across the business boundaries. The following quote expresses that staff is seen as a key resource for the achievement of environmental objectives:

> I am the only head of environment, I don't have a team, a formal team [but] (…) the influence model and how I am trying to work with that actually makes everyone a key resource (…). The challenge out of that is that I had to find ways of reaching everyone (…) that's what the training model is all about (…) and the more people I engage then the more resource we have (…). The challenge there is obviously the franchise. We may lose some of these people (…) it's hard work but if you get it right, those people will take that

> value, that sustainability value with them wherever they go. So they will take at home (…) or they will take it to the next role and if the next role happens to be in the next franchise than I have delivered what I set up to deliver (HE, 2014, Int. 2).

Though the change initiated at RailCo has had in responsible leadership its main source of influence, the support that the new sustainability approach and the head of environment received by RailCo's board of directors has been crucial to enable that change process. This support has been manifesting in several ways including: a) the sponsorship of the head of environment participation in the One Planet MBA, b) the inclusion in the internal career progression scheme aimed at developing employees that might achieve a senior role within the business, and c) the progression of the head of environment from a management role to a senior leadership one. The following quote just emphasises the relevance of the RailCo's board of directors' support in the transformation initiated by its head of environment:

> when I came here and had the support of the board (…) and when they said, literally few weeks in, you need to review the strategy (…) I just rewrote the strategy (…). I wrote my dream strategy (…); it was just a real opportunity to say this is what we could do and I fully expected them to go, that's never going to work, go back and try again and they signed it straightaway without even pulling it apart. It was just like you know this is a very good strategy, go ahead with it (…). I have been very lucky to be allowed to do that (HE, 2014, Int. 1).

In addition to responsible leadership and board support, RailCo's core corporate value of improving everyone 'journey', which underlines its value proposition has been relevant in the examined transformational process especially because it has assisted the engagement aspect of the new corporate sustainability strategy as the following quote explains:

> that core value (…) is not just about people train journey. It's actually quite clever because it's actually looking at individual journeys, so it's about investing in people and those kind of things, which basically gave me a great framework to work with because I was able to draw from all those aspects and I think ok, how can I wave that into a sustainable strategy. So I was able to draw on the investing into people and [improving everyone journey] to pull that in the engagement piece for the staff, turning in the development pyramid and then lead on to all the others bits and pieces of the training that I am trying to bring in. So I couldn't have done that if there wasn't a basic framework that pushed towards good values. So, that's the real strength of what we do I think, it's quite a key to the all set-up (HE, 2014, Int. 2).

There are also other resources that have been supporting the transformation and development of the examined BM, such as for instance the ACE's engagement work, dedication and genuine willingness to promote behavioural change. However, as the role of ACEs has already been described earlier along with other resources and capabilities, to avoid repetition, Table 6E below summarises the internal influences enabling RailCo's BMI split in organisational resources, capabilities and characteristics.

Resources	Capabilities	Organisational characteristics
▪ Responsible leadership; ▪ Board of directors; ▪ Corporate core value of improving everyone 'journey'.	▪ Innovation capabilities (e.g. promoting cultural change within and across the business boundaries; expanding the purpose of the corporate environmental strategy: '*minimising environmental impact now and beyond the franchise'*); ▪ System and anticipatory thinking; ▪ Relational capabilities; ▪ Capability to create collaborative working environments; ▪ Capability to create fulfilling and rewarding working experiences (e.g. the personal development pyramid); ▪ Capabilities to moderate the complexities of the rail business.	Existence of a dedicated team of individuals (ACEs) committed to the implementation of RailCo's environmental sustainability strategy.

Table 6E: Synthesis of RailCo's resources, capabilities and organisational characteristics
Source: The researcher

In a similar line with RailCo, there appears to be some evidence of responsible leadership, organisational resources, capabilities and characteristics behind the emergence and development of UniCo's BM. UniCo has endorsed one of the sector declarations that commit HEIs to sustainable development. It has also established a dedicated governance structure for environmental sustainability involving: a) senior management representatives, b) the sustainability manager, c) a sustainability steering group (providing consultancy to the senior management representatives on sustainability policies), d) sustainability coordinators (promoting sustainability in their colleges by providing information regarding sustainability issues to their colleagues and leading on Green Impact) and e) the students' guild (UniCo's website).

Sustainable leadership is evidenced by these quotes which seem to suggest that the strategies enacted to promote a more resource efficient institution are driven by the desire to have a positive impact on the community within which UniCo operates:

> I don't feel that the drivers [of what the university is doing] are simply some corporate game plan that is just reputation because reputation means will get more students and more money. There are just some kind of corporate values that drive it. Actually when I go to this group and meet these people from all sort of different areas across the university, I have the sense that the driver is a genuine desire to make the university more sustainable and I do see that as a driver actually. I feel that and that is why I like going because I don't think it is just a cynical exercise. If it did, I wouldn't be part of it to be honest (SGM, 2014, Int. 1).

And:

> we have various requirements to report on our business emission, for instance (…) HEFCE (…) asks us to report on that annually as well, but at the moment is not mandatory. It is something that we have chosen to do as an institution that is committed to that and I think increasingly and going forward I think regulation will come into it more. But I think at the moment the development of [the sustainable travel] plan has been driven by corporate social responsibility more so, the idea that we want to be a good employer and part of this being a sustainable employer (…) a good neighbour (FTPC, 2014, Int. 1).

In addition to this top-down commitment, there appears to be the interest of motivated employees in ensuring that UniCo leads by example and that every opportunity is taken to use the university as catalyst to promote change for a more environmentally sustainable economy internally and beyond the business boundaries. One of the interviewees, commenting on a green impact project aimed at offsetting students' travel carbon emissions, has stressed both the importance of connecting to students and influencing students' behaviour through the project, and the willingness of its college to take further steps to improve its sustainability performances:

> it's a way of engaging students with the sustainable ethos of the [college]. Also we feel it is a sort of thing that will make them to take this idea at home, making them think about their own things so back to their own countries. And we hope that these people would become sustainable alumni perhaps one day go on and save the planet (…). As [college] we tend to run with everything and we are very enthusiastic and quite often the leaders in things. We are the first school going bin less, so I took everybody waste paper bin away from them. It wasn't easy and they now have a desktop recycling (SC a, 2014, Int. 1).

The importance of leading the change and influencing students' behaviour are highlighted by other interviewees:

> as university (…) we want to be well thought leaders, we want to be ahead of the curve, we don't want to cause lot of pollution; if we can do something to help, sorting out lot of junk that can be reused because that is about setting examples considering that we (…) students every year coming through (…) I think it's very important for educators to be ahead of the game really and that's why it is important for us to engage in Green Impact (SC b, 2014, Int. 1).

And:

> what motivates me [to work in this position] is that you want to make a difference (…) the joy of being out there and doing something that you know will make a difference because people attitudes and behaviour change, we can mitigate against future destruction. With students what motivates me is that at their early age they can pick up really good behaviours and they become the leaders of the future (HSGU, 2014, Int. 1).

Other organisational resources and capabilities support the emergence and development of the initiatives characterising UniCo's BM. For instance, UniCo's staff receives sustainability and carbon reduction training and collaboration across different organisational units is relevant too. This is just an example of collaborative working practices across different organisational roles:

> for cycle parking something that I have been really keen to do is to integrate really closely with the estate team so anytime they are doing a building a project whether it is a new building or an existing innovation or refurbishment I can get in there early on to make sure that they are incorporating cycling parking and cycle facilities, that is a really good partnership working exercise (…) and a really good way of integrating with teams and make sure that things happen (FTPC, 2014, Int. 1).

Working collaboratively appears relevant also for the implementation of UniCo's carbon management plan as the following quote highlights:

> we have also started working more with property services (…) [so] the people going around campus and doing maintenance if they see that there is inefficient lighting for example they are able to come back and report to us and than we take this into account to replace it and make sure that we are going for something that is more energy efficient (…). There is enthusiasm as well. A lot of people when you speak about they want to be involved and I think there is definitely a positive attitude towards this (CDC, 2014, Int. 1).

From an organisational characteristics perspective, UniCo's environmental sustainability governance structure and support of sustainability projects (e.g. green impact) linking across people from different organisational

roles and units, might stimulate and enable organisational learning for sustainability since they entail collaboration and sharing of best practices. These organisational characteristics and projects could contribute also to mitigate the institutional separation and autonomy of different departments and faculties characterising universities organisational structures. For these reasons universities are defined as "loosely coupled systems" (Weick, 1976, p. 1) which is seen as a possible source of hindrance to organisational learning (Albrecht, Burandt, & Schaltegger, 2007). Table 6F below summarises internal influences, split in resources, capabilities and organisational characteristics, considered relevant in relation to the emergence and development of the discussed initiatives characterising UniCo's BM.

Resources	Capabilities	Organisational characteristics
▪ Sustainable leadership; ▪ Sustainability team; ▪ Sustainability and carbon reduction staff training; ▪ Students' green unit.	▪ Collaborative working practices enabling organisational learning and mitigation of institutional separation; ▪ Relational capabilities within and across business boundaries; ▪ Capabilities to moderate organisational complexities.	Environmental sustainability governance structure (senior managers, sustainability manager, sustainability steering group, sustainability coordinators, students' guild).

Table 6F: Synthesis of UniCo's resources, capabilities and organisational characteristics
Source: The researcher

6.5.2 RailCo and UniCo: institutional level

In addition to the organisational level, this study has explored also, from the neo-institutional theory perspective, the influence of the institutional level on the emergence and development of the initiatives characterising the examined BMs. This influence is now considered in the next sections of this paragraph.

Some regulatory and normative expectations for more environmentally sustainable operations characterise the UK's rail industry. For instance, the DfT *White Paper on Delivering a Sustainable Railway*, emphasises that environmental sustainability is viewed as an integral part of the UK's

government long term strategy for the rail industry and that TOCs are expected to take measures to reduce their carbon footprint (DfT, 2007). In addition, the RSSB's *Rail Industry Sustainable Development Principles* aimed at becoming an integral part of the rail industry culture and strategic planning, demand rail industry companies to reduce their environmental footprint via developing strategies considering carbon, waste and biodiversity impacts among others (RSSB, 2009). The DfT, through the High Level Output Specification (HLOS) welcomed those sustainable development principles and set expectations for the rail industry to become more environmentally sustainable (DfT, 2012). The association of train operating companies has expressed commitment towards a more sustainable UK economy too (ATOC, 2013). Though there are expectations for a more environmentally sustainable railway industry in the UK context, which have driven RailCo's corporate sustainability measures to some degrees, it seems that it has been the head of environment responsible leadership that has enacted RailCo's transformation of its approach to corporate sustainability as the following quote highlights:

> the biggest thing by far is the carbon reduction commitment (…) and it ties in with the committed obligations that are written in the rail franchise (…). In terms of what is actually expected from us (…) [it] hasn't driven the strategy, it kind of comes back to me being the driver between a lot of values that are in the strategy (HE, 2014, Int. 2).

The UK's government *Energy White Paper* established the carbon reduction commitment in 2007 (Carbon Trust). Now called the carbon reduction commitment energy efficiency scheme, it demands large public and private organisations to measure their electricity and gas consumption annually and to buy allowances for every tonne of carbon emitted with effect from April 2013 (ibid). A source of normative influence on the transformational process initiated by RailCo comes also from the head of environment education. It is through the One Planet MBA that concepts like 'shared value' and practices like a nurturing and collaborative approach have been learnt and incorporated in the training the head of environment has carried for RailCo's staff and within RailCo's more ambitious sustainability strategy (Fieldwork notes, 2014). This influence seems to support studies that have underlined the prominent role of universities in developing responsible leadership (Hesselbarth & Schaltegger, 2014). The relevance of the head of environment education and how the skills learnt via the

MBA have influenced RailCo's approach to corporate sustainability are expressed by the next quote:

> in terms of shared value, it's about the behaviour change, the engagement piece, the education of individuals in the business. So it's about telling them what shared value is, what the opportunities are, and how they can engage with that, and working through people like myself and the ACEs I have trained up so that they can understand what they actually bring to the business using shared value principles (…). So the resource is the people themselves really and it's about education, rippling through the people and (…) the more people start to use those principles the more embedded it becomes (…). I think I have developed a different skill set to enable what I wanted to do and I had to think quite deeply about that and lot of that learning has come from the MBA actually, from the leadership module and the human factor module and all sort of different aspects we have been learning (HE, 2014, Int. 1).

Turning to UniCo, multiple sources of regulatory, normative and cognitive institutional pressures are pushing for the implementation of principles of environmental sustainability in the higher education sector (Benn, Edwards, & Angus-Leppan, 2013) and there seems to be a great relevance of these pressures in explaining the emergence and development of UniCo's initiatives aligned with circular principles. Sources of influences upon sustainability in the higher education include intergovernmental initiatives such as the UN Decade on Education for Sustainable Development (2005-2014), sector declarations such as the 1990's Talloires Declaration, the 1991's Halifax Declaration, the 2012's HESI, and comparative metrics classifying universities according to their environmental performances such as the students' led UK's People & Planet Green League (Benn et al; 2013; Derrick, 2013). In addition, as noted earlier, the HEFCE capital funding mechanism links funds to environmental sustainability performances and students, as the main source of funding for UK universities in the reformed system, are increasingly expecting universities to provide them with green skills as well as that their institutions perform well when it comes to the environmental sustainability of their operations. UniCo is aware of all these sources of influences and it might be argued that the combination of the latter with internal resources and sustainable leadership has determined the emergence and development of the examined initiatives characterising its BM. Among all the different regulatory and sectoral requirements UniCo complies with, it is useful to recall here the adoption of the higher education sector

carbon reduction target of a 43% by 2020 against the 2005 baseline and compliance with the waste hierarchy.

Overall, from the evidence presented in this paragraph several considerations can be put forward on the process explaining the emergence and development of the initiatives characterising the examined BMs. Responsible leadership coupled with other organisational resources and capabilities as well as normative institutional influences seem to explain the change initiated at RailCo. In the case of UniCo, there seems to be a more balanced contribution of the internal and external context in the process leading to the examined initiatives, which means that sustainable leadership coupled with other organisational resources and capabilities as well as regulatory, normative and cognitive institutional influences might be regarded as equally relevant. The ability to meet institutional demands increases its social legitimacy, hence its capability to compete in the more competitive institutional landscape determined by the UK's government reform of the higher education sector.

Adopting simultaneously a resource and institutional perspective is also useful to understand whether organisational resources and capabilities act as moderators of any perceived institutional influence upon the emergence and development of RailCo's and UniCo's BMs. Starting from RailCo, the head of environment vision of an integrated relationship between economy and ecology, the existence of the ACEs and RailCo's board characteristics, would seem to have amplified the company ability to respond to the normative and regulatory institutional influences described above. For UniCo the existence of a sustainability governance structure can act as an amplifier of the multiple institutional influences pushing for environmental sustainability in the HEIs.

Finally, there is another perspective that deserves to be explored when considering the relationship between structure and agency. This study has taken the perspective that the institutional environment would have influenced the examined initiatives to a certain extent. Nevertheless, likewise the organisations studied in the previous empirical chapter, there is some evidence of 'institutional entrepreneurship' in both RailCo and UniCo. This means that the

studied organisations have taken initiatives aimed at influencing the organisational and the wider field contexts within which they operate. RailCo's head of environment has acted as a boundary spanner spreading values and working practices within and across the organisational boundaries so as to enable the achievement of the ambitious environmental aim of *'minimising environmental impact now and beyond the franchise'.* This fits with the 'institutional entrepreneurship' perspective (e.g. Di Maggio, 1988) in institutional theory emphasising the role of change agents in promoting institutional change. Hence, it might be argued that RailCo's head of environment is an example of institutional entrepreneur who has worked to promote institutional change internally and externally. In going beyond compliance, RailCo is starting promoting "positive organizational deviance" (Walls & Hoffman, 2013, p. 254) delivering benefits to a wider category of stakeholders which the corporate sustainability literature considers as critical for the emergence of innovative business practices leading to corporate sustainability at scale (ibid). The following quotes are example of whether and how institutional entrepreneurship has occurred:

> we have definitively done some influencing (…). I have been doing a lot of attending conferences and networking and things like that to just break out the industry (…) and the feedback that I get as well (…) I mean (…) another rail company they were approaching me to look green roofs in one station that we share (…) that wouldn't have happened before. I have seen definite behaviour change that I would have to work hard to engage with people before, now they come to engage with me which is a complete turnaround. And the same within the business as well, you know, people are now approaching me to ask what they can do for the environment as opposed to me having to go out, find them and engage with them, that kind of thing. So a definite shift (HE, 2014, Int. 1).

And:

> I have been asked to take part in various workshops, I have started speaking on sustainable development in the railway and things like that. We are starting to have an impact through just talking about what we do (HE, 2015, Int. 3).

Similarly, UniCo in creating value for itself as well as promoting institutional change internally and externally could be considered as another example aligned with the 'institutional entrepreneurship' perspective. UniCo's sustainable leadership via supporting scheme like green impact might facilitate

internal organisational learning and thus more environmentally sustainable operations. In addition, via supporting students' acquisition of green skills and behaviour aligned with environmental sustainability principles, UniCo might empower them to act as change agents for a more environmentally sustainable society. Finally, by aiming at establishing more resource-efficient operations from which other HEIs can learn from, it is hoped that positive change can be enacted by others players in the sector and by the community within which UniCo operates.

6.6 Chapter six summary

Chapter six has presented the research findings relating to the four organisations that are investigated following from narrative and comparative analyses. Notably, a conceptualisation of the investigated BMs has been presented that is summarised here as follows: circular BMs might be conceptualised as characterised by *enhanced customers' value*, *diffused and interconnected value creation*, *boundary spanning relational structures* and *idiosyncratic value capture mechanisms.*

This chapter has explored also how the emergence and development of the examined BMs might be understood considering organisational (e.g. resources, capabilities and organisational characteristics) and institutional (e.g. regulatory, normative and cognitive) influences. In relation to this and with regard to the two SMEs, it seems that it is mostly the organisational level that explains the emergence and development of the discussed circular innovations with some cognitive and normative institutional influences affecting the business development stage. In addition, FurnitureCo's and PlanksCo's organisational structure and size of operations act as moderators (e.g. amplifier) of the relationship between institutional influences and BMs development. There appears to be also some evidence of institutional entrepreneurship in both FurnitureCo and PlanksCo, which means that these two companies have taken initiatives that might produce change within the wider context in which they operate via setting industry standards and by contributing to the greening of other organisations supply chains.

When considering the source of influences affecting the emergence and development of the two large service organisations, it would appear that normative institutional influences as well as responsible leadership and organisational resources and characteristics explain the transformation of RailCo's approach to corporate environmental sustainability. This transformation has then led to the measures and the initiatives that have been described in chapter five and that accord with CE thinking. In the case of UniCo, there seems to be a more balanced contribution of the internal and external context in the process leading to the initiatives examined in chapter five, which means that sustainable leadership coupled with other organisational resources and capabilities as well as regulatory, normative and cognitive institutional influences might be regarded as equally relevant. It is also interesting to note that responsible leadership in the examined organisations is driving innovations in the sense of 'doing good' environmentally and socially, whereas the responsible leadership literature would seem to emphasise responsible leadership in the context of 'doing less bad' (Stahl & De Luque, 2014). In addition, RailCo's and UniCo's organisational characteristics such as the existence of ACEs and of an environmental sustainability governance structure respectively, appear to act as moderators (amplifier) of these two organisations capability to respond to institutional influences. Finally, there is some evidence of 'institutional entrepreneurship' in both RailCo and UniCo, which means that they are promoting institutional change within and beyond their organisational boundaries.

Chapter seven
Conclusion

7.1 Introduction

This final chapter presents this research contribution to the CE, BMs, SBMs, management and sustainable innovation literature. Notably, the discussion of this thesis contribution is organised around the two research questions with aspects relating also to the thesis methodological approach and the type of organisations investigated. The last paragraph of this chapter considers the limitations of this enquiry. It also evidences opportunities for advancing the research on circular BMs and highlights some key lessons that this thesis can offer to other researchers, practitioners and policy makers.

7.2 Originality and contribution

This thesis is one of the first academic studies researching on the intersection between BMs and the CE. Despite the fact that the CE is gaining currency in both policy and business circles and that it requires BMI (Aldersgate Group, 2012; McKinsey & EMF, 2012; Schulte, 2013; Sempels & Hoffman, 2013; Sempels, 2013), there is little understanding of circular BMs in terms of concepts and categorisation, nor of the processes through which these BMs emerge, are transformed and implemented within the academic literature (Diaz Lopez et al., 2014; Planing, 2015; Roos, 2014). Therefore, this thesis has aimed at contributing to the SBMs literature via exploring what circular BMs look like and via explaining the processes leading to their adoption employing organisational and institutional perspectives. The following research questions have guided this enquiry:

1st RQ: *How can circular business models be conceptualised?*

2nd RQ: *How can the emergence and development of circular business models be understood?*

To attain the research aims, the following objectives established in chapter one have been met:

1) *Review of the circular economy, the business model and the sustainable business model literature.*

The first aim of this thesis was to conceptualise circular BMs in order to contribute to the SBMs literature. The conceptualisation of circular BMs has required the intersection between the CE and the BM/SBMs literature. Therefore, a review of the relevant literature has been conducted in part two of chapter two so as to identify the conceptual framework used for the conceptualisation of circular BMs. Notably, the former is based on the ReSOLVE framework (McKinsey et al., 2015) the SBMs archetypes (Bocken et al., 2014 a) and Richardson's (2008) BM framework and the rationale for this choice has been explained in chapter two (part two). Chapter two (part two) has also identified opportunities for advancing the CE and the SBMs literature.

2) *Review of the literature employing the theoretical perspectives of the natural-resource-based-view of the firm (Hart, 1995) and the neo-institutional theory (Di Maggio & Powell, 1983) in the study of corporate sustainability.*

This second objective has been met in chapter two (part three) and this has been conducive to the identification of both organisational and institutional dynamics explaining corporate environmental sustainability, and opportunities for advancing the academic research in these two fields.

3) *Collect, analyse and report primary and secondary data from four British organisations implementing circular business model innovations.*

Chapter three discussed the methodological features of this thesis that are summarised as follows: a) research philosophy (contemporary philosophical hermeneutics); b) research strategy (four holistic case studies considered as 'contextualised explanation' representing the manufacturing and service sectors); c) case selection criteria (*purposive* selection with *reputational* and *comparable* case selection; d) data collection methods (multiple qualitative

methods: semi-structured interviews, participants observations and shadowing have been used to collect primary data but the research also relied on secondary data); e) data analysis techniques (narrative and comparative analyses) and f) research temporal frame (cross-sectional). Paragraphs 7.2.3 and 7.2.4 highlight how the methodological features of this thesis contribute to the CE, BM, management and case-based research literature.

4) *Combine the evidence emerging from the data and themes from the business model, the circular economy and the sustainable business models literature to provide a conceptualisation of circular business models.*

Chapter four and five have presented an initial overview of the investigated BMs, which means that they have described how the features of their operating models accord with CE principles and the SBMs literature and they have qualified the underlying value propositions. This description has been accomplished via matching empirical data against the ReSOLVE framework (McKinsey et al., 2015) and the SBMs archetypes (Bocken et al., 2014 a). This has been then propaedeutic to the attainment of objective four in chapter six where the conceptualisation of circular BMs has been presented and articulated around the key theme of 'value' following Richardson's (2008) BM framework based on value proposition, value creation and delivery, and value capture. Though based on a framework originating from the BMs literature and applied also within SBMs studies (e.g. Bocken et al., 2014 a), this thesis contribution rests on the application of Richardson's (2008) framework within the context of circular BMs to provide a conceptualisation of these BMs. Nevertheless, this study has not only applied Richardson's model in a different context but has also identified qualifying features of the value proposition, value creation and delivery and value capture. Such a conceptualisation is neither a typology (purely theoretically driven) nor a taxonomy (purely empirically driven) but can be considered closer to Weber's 'ideal type' (Weber, 1904), which according to Baden-Fuller & Morgan (2010) is a construct sitting between the two. Particularly, circular BMs have been conceptualised as characterised by *enhanced customers' value, diffused and interconnected value creation, boundary spanning relational structures and idiosyncratic value capture mechanisms*. How this conceptualisation contributes to the CE, the SBM, the

sustainable innovation and management literature is emphasised in paragraph 7.2.1.

5) *Identify organisational and institutional influences that explain the processes leading to the emergence and development of the investigated circular business models.*

The analysis of the processes leading to the adoption of the examined circular BMs has been conducted in chapter six starting for each case with the organisational level and thus considering organisational resources, capabilities and characteristics. The institutional analysis has then followed with consideration of regulatory, normative and cognitive influences. A combination of organisational and institutional influences has appeared as explaining the emergence and development of the circular BMs considered in this study.

Particularly, with regard to the two SMEs, it seemed that it is mostly the organisational level that explains the emergence and development of the discussed circular innovations. Some cognitive and normative institutional influences affect the business development stage with the organisational structure and size of operations acting as moderators (e.g. amplifier) of the relationship between institutional influences and BMs development. In addition, it would appear that there is some evidence of institutional entrepreneurship in both FurnitureCo and PlanksCo, which means that these two companies have taken initiatives that might produce change within the wider context in which they operate via setting industry standards and by contributing to the greening of other organisations supply chains.

Turning to the two large service organisations, it might be argued that normative institutional influences as well as responsible leadership and organisational resources and characteristics explain the transformation of RailCo's approach to corporate environmental sustainability. In the case of UniCo, there seems to be a more balanced contribution of the internal and external context in the process leading to examined initiatives, which means that sustainable leadership coupled with other organisational resources and capabilities as well as regulatory, normative and cognitive institutional influences might be regarded as equally relevant. In addition, RailCo's and

UniCo's organisational characteristics such as the existence of ACEs and of an environmental sustainability governance structure respectively, appear to act as moderators (amplifier) of these two organisations capability to respond to institutional influences. Finally, there is some evidence of 'institutional entrepreneurship' in both RailCo and UniCo, which means that they are promoting institutional change within and beyond their organisational boundaries. Paragraph 7.2.2 discusses how the findings of this thesis emerged from the use of organisational and institutional perspectives contribute to the BMs and management literature.

After having explained how the research aims and objectives have been met, the following four subsections present the main contribution of this thesis.

7.2.1 Conceptualising circular business models

The attention towards BMI for developing SBMs is gaining momentum in the academic literature. However, at this point in time, it appears that comprehension of SBMs is insufficient and inadequate (Bocken et al., 2014 a; Stubbs & Cocklin, 2008), that research on SBMs is not well established yet (Boons & Lüdeke-Freund, 2013; Schaltegger et al., 2015; Sommer, 2012) and that it is characterised by a shortage of empirical studies (Evans et al., 2012; Roome & Louche, 2015; Short et al., 2014). BMI is also considered a crucial constituent to achieving a CE (Aldersgate Group, 2012; McKinsey & EMF, 2012; Schulte, 2013; Sempels, 2013; Sempels & Hoffman, 2013). Nevertheless, there is little understanding of circular BMs in terms of concepts and categorisation, nor of the processes through which these BMs emerge, are transformed and implemented within the academic literature (Diaz Lopez et al., 2014; Planing, 2015; Roos, 2014). Hence, this research, which conceptualises BMs based on CE principles and explores the processes leading to their emergence and development, is an initial contribution towards the development of conceptual clarity on the link between BMs and the CE within the SBMs literature.

The conceptualisation of the examined BMs, as opposed to their categorisation, is in itself a source of novelty. As noted in chapter one and two, while the academic literature at the intersection between the CE and BMs is constrained (Lewandowski, 2016), some elements and categories of circular BMs are developing within practitioner studies (e.g. Accenture, 2014; McKinsey & EMF, 2012; McKinsey et al., 2014; 2015; WRAP e). However, it would appear that practitioner literature gives implicit consideration to the BM concept. While acknowledging that BMI is a crucial constituent in the attainment of a CE (McKinsey & EMF, 2012), the BM concept is not addressed comprehensively for two reasons. Firstly, it is not explained what the BM refers to and secondly, when the BM is addressed, this is done only partially missing the complexity of the BM concept, which describes "the rationale of how an organization creates, delivers and captures value" (Osterwalder & Pigneur, 2010, p. 14). Zott et al. (2011) have argued that not clearly articulating the BM concept is not beneficial to the development of the BM literature since it hinders the understanding of what the studied BM is referring to. As a consequence, this could limit application in the business community where the rapid scaling up of circular BMs is welcomed to attain a more environmentally sustainable economy. Therefore, this thesis building on Zott et al. (2011) has articulated the conceptualisation of circular BMs around the core theme of 'value' that is central in the BM, CE and SBMs literature. This represents a contribution to the academic literature on SBMs and also to the practitioner literature on the CE. Such contribution has been built using an integrative conceptual framework (Bocken et al., 2014 a; McKinsey et al., 2015; Richardson, 2008) that has enabled the description of the investigated BMs. From this description it has been then possible to derive some key elements qualifying the value proposition, value creation and delivery, and value capture of the investigated BMs, upon which their conceptualisation has been proposed. Therefore, another contribution of this thesis follows from the use of a conceptual framework resting on three different areas of the literature (CE, BMs and SBMs) to conceptualise circular BMs. Some common themes have emerged from the conceptualisation of the examined BMs and they are now reviewed with regard to the key dimension of 'value'.

Starting from the value proposition, it might be argued that the examined BMs are characterised by *enhanced customers' value.* This finding supports practitioner studies which have highlighted the benefits that consumers could gain from products that accord with CE principles. For instance, Accenture (2014) suggests that circular BMs increase customer value in terms of "price, quality and availability" (p. 4). On a similar line, McKinsey & EMF (2012) highlight benefits such as reduced premature obsolescence and more convenient and diversified options for satisfying needs. The cases analysed in this research have shown that a) organic and natural materials mattresses have increased durability and enhance consumers' wellbeing; b) recycled plastics scaffolding boards have higher durability and health, safety and financial benefits; c) scaffolding boards can be leased or purchased and in the latter case when returned at the end of their useful life can be used as a credit against the purchase of new boards; d) that mattresses and scaffolding boards environmental sustainability credentials contribute to the greening of hotels and scaffolding companies supply chains respectively; e) passengers services are provided in addition to facilities that may encourage modal shift and thus healthier and more environmentally sustainable travel options and f) higher education is provided while supporting the acquisition of skills in sustainable development and more sustainable lifestyle as well as students' wellbeing (e.g. opportunities to have access to green spaces and actively engage with the natural environment, and provision of facilities that encourage healthier and more environmentally sustainable travel options).

In relation to value creation, it would appear that the examined BMs are characterised by *diffused and interconnected value creation* which confirms themes identified in the literature review. This aspect accords with the CE and the SBMs literature whereby it is argued that the CE is "an economy that provides multiple value creation mechanisms" (McKinsey et al., 2015, p. 23), and that SBMs are concerned with the simultaneous creation of economic, social and environmental value (Bocken et al., 2013; Boons & Lüdeke-Freund, 2013; Roome & Louche, 2015; Stubbs & Cocklin, 2008). Nevertheless, the contribution of this study is twofold. It evidences the creation of multiple values in circular BMs whereas the CE practitioner literature, though acknowledges the environmental benefits of a CE, emphasises economic value only (Domenech

et al., 2013). It also illustrates how value creation takes place within the organisations investigated. This is relevant for advancing the SBMs literature whereby although is acknowledged that SBMs should create multiple forms of value, there is a shortage of empirical studies and a prevalence of conceptual ones.

The multiple value creation within the two SMEs that are investigated sheds some light on the discussion concerning what is the most appropriate form of enterprise for the achievement of environmental and social sustainability goals. Within the SBMs literature Haigh & Hoffman (2014) have argued that hybrid BMs are more suited to produce significant environmental and social benefits than traditional BMs. Hybrid BMs create economic value via addressing the most pressing environmental and social concerns (Boyd, 2009). Though not representing examples of hybrid BMs, FurnitureCo's and PlanksCo's for-profit BMs produce environmental and social benefits (they are both eco-effective and socio-effective) rather than simply minimising harm (eco-efficient). The research findings relating to FurnitureCo and PlanksCo also contribute to the rather polarised debate on how SMEs approach corporate sustainability. For some studies SMEs show a fairly limited familiarity and comprehension of environmental issues (Tilley, 1999) and they are not much involved with actions that do not relate directly to their survival (Hunt & Auster, 1990). For others, SMEs are suited to pursue radical innovation (Klewitz & Hansen, 2014) because of their enhanced flexibility (Etzion, 2007), they engage not only with reactive but also with environmentally proactive strategies (Aragón-Correa et al., 2008) and are involved in the implementation of BMI for the attainment of environmental and social sustainability goals (Clinton & Whisnant, 2014). This study is more aligned with the perspective positioned at the positive side of that debate, and this is relevant also from a practical point of view since SMEs account for 99% of EU's businesses and for more than half of the EU's GDP (EC, 2013 b). This research finding serves to illustrate that though circular BMs are not well understood yet and are not without challenges, small organisations can implement them. Recalling from chapter two Baden-Fuller & Morgan's (2010) BMs analogy with "recipes" (p. 157) to learn from, FurnitureCo's and PlanksCo's BMs can be considered as examples to encourage the scaling-up of more circular BMs among SMEs.

The process of sustainable and multiple value creation in the two service organisations that are investigated, offers further opportunities for contributing to the corporate sustainability literature since it is characterised by the existence of some sources of tensions from a temporal perspective. Notably, RailCo's cultural change approach, driving and enacting a major turn in its environmental sustainability strategy, is time demanding and therefore in contrast with the average short length of rail franchises within which the business case of any corporate environmental sustainability improvement has to be demonstrated. At UniCo, people's turnover is a source of concern in the implementation of projects enhancing environmental sustainability that span over the long term, in the sense that key resources involved in those projects could be lost and replaced. In addition, the time frame within which universities work, is in itself too short when it comes to the set up and implementation of initiatives engaging students for the attainment of environmental sustainability goals. This emerged temporal tension (short versus long term) is a novel contribution to the corporate sustainability literature. Recent academic studies (e.g. Hahn et al., 2015; Slawinski & Bansal, 2015) have emphasised that the conflicts deriving from managing organisations in accordance with comprehensive sustainability principles are mostly framed in terms of financial versus environmental/social goals, with the temporal aspect almost neglected.

Moving to value delivery, the empirical chapters have stressed that there appears to be some evidence of the existence of a *boundary spanning relational structure.* This highlights the relevance of cooperation within the value creation network, which is considered crucial for the development of more SBMs and circular business practices (Green Alliance, 2013; McKinsey et al., 2012; Sommer, 2012; Stubbs & Cocklin, 2008). Nevertheless, the boundary spanning nature of the examined BMs has an additional perspective that is now presented. Notably, from the two large organisations that are investigated it emerges that crossing internal boundaries to enable value creation and capture is equally relevant. This means that for UniCo and RailCo the boundary spanning connotation of their BMs has not only a value network dimension but also an internal, organisational one. Universities are defined as "loosely coupled systems" (Weick, 1976, p. 1) for their high degree of institutional separation. The collaboration across different organisational units (e.g. students'

representative, students' green unit, UniCo's staff) started to reduce food waste is an example showing how institutional separation has been moderated to a certain extent, contributing to potential value capture as well. Similarly, in RailCo the head of environment has carried boundary spanning activities. This has involved spreading new values and beliefs across organisational boundaries through the engagement pillar of the new environmental sustainability strategy so as to achieve the ambitious aim of *'minimising environmental impact now and beyond the franchise'*. In addition to the boundary spanning aspect, some other elements that qualify the value configuration and delivery system were identified. FurnitureCo and PlanksCo have been defined as 'place-based enterprises' because of the stewardship of the local social and natural environments that they seem to promote. The relationship between the engagement with 'place' and commitment to more environmentally and socially sustainable business practices is overlooked in corporate sustainability studies (Guthey, Whiteman, & Elmes, 2014; Hahn et al., 2015; Shrivastava & Kennelly, 2013) and thus this thesis offers another contribution to the development of corporate sustainability theory.

In relation to value capture, the analysis of the findings has identified *idiosyncratic value capture mechanisms* associated with the initiatives characterising the investigated BMs. Some evidence of costs savings, reputation and differentiation building, premium branding, establishment of long term relationships with customers and additional revenue streams, has emerged from this enquiry. While this is consistent with corporate sustainability and CE literature (e.g. Hart, 1995; Lovins et al., 1999; McKinsey & EMF, 2012), it is nevertheless useful to place the identified opportunities for value capture in relation to BMI. Whereas sustainable innovation studies tend to focus more on product/process innovation (Boons et al., 2013), this study finds that even more complex organisational tasks such as transforming or designing completely new BMs can lead to value creation and value capture. It is also interesting to note that despite the globalisation and complexity of supply chains (McKinsey, EMF & WEF, 2014), it is because of the setting up and control of their own supply chains (e.g. local natural fibres and local plastics recyclate supply chains) that opportunities for value creation and capture are created for FurnitureCo and PlanksCo.

Overall, the conceptualisation of BMs based on CE principles can also advance organisations studies and management theories and the sustainable innovation literature. In the former, recent studies (e.g. Hahn et al., 2015; Starik & Kanashiro, 2013) have argued that enhancing the environmental sustainability of business practices via mirroring the cyclical functioning of the eco-system where waste does not occur (a possibility explored within industrial ecology), and via framing the economy/ecology relationship in co-evolutionary terms, has rarely been considered. Circular BMs replicate the cyclical functioning of nature and are based upon the premise of reintegration of economy within ecology. Therefore, their conceptualisation, contributing to the SBMs literature, goes in the direction welcomed by the authors above to expand the range of opportunities that the corporate sustainability literature proposes to bring forward more environmentally sustainable business practices. In addition, the holistic perspective on what organisations do and how they do it that the BM concept illustrates (Zott et al., 2011), is an opportunity to enrich the sustainable innovation literature where, by contrast, there is prevalence of either micro level (product/process innovation) studies or macro level (broader socio-technical transitions for a more sustainable economy) studies (Boons et al., 2013).

Finally, chapter two has already evidenced some overlapping areas between the SBMs literature and the practitioner literature on the CE identifying elements and categories of circular BMs. Particularly, the CE is acknowledged a) within the '*Create value from waste'* archetype (Bocken et al., 2014 a); b) '*product-service systems'* and '*circular value systems'* are considered as components of a SBM (Wells, 2013) and c) Boons & Lüdeke-Freund (2013) suggest that a SBM is characterised by an operating model based on sustainable supply chain management criteria, which are clearly attuned to the underlying principles of an economy in loops characterising the CE proposition. However, this study's conceptualisation of the circular BM differs from that presented in the *'Create value from waste'* archetype (Bocken et al., 2014 a) which contemplates frameworks, including the CE, aiming at designing out waste from production processes. Whereas the '*Create value from waste'* archetype suggests that value for society derives from reduced negative environmental impact only, this study has highlighted a more articulated

representation of how value is provided for a broader set of stakeholders. Indeed, it has demonstrated that not only is it the case that negative environmental impact is minimised but also that a) collaborative and fullfilling working experiences are created; b) that the welfare of the local communities is pursued; c) that initiatives are taken by the organisations investigated to promote the adoption of more environmentally sustainable business practices within their industries and d) that the products and services provided enhance customers' health and wellbeing. In addition, while the archetype highlights opportunities for value capture deriving from costs reduction, this study has also identified opportunities deriving from additional revenues streams, attracting funds, the establishment of long-term relationships with customers, improved reputation and mitigation of future regulatory risks.

7.2.2 Contextual influences on circular business models

In addition to the conceptualisation of the examined circular BMs, this study has sought to explore how their emergence and development might be understood. This contributes to advance the management literature where there is still a relatively limited understanding of the processes through which more sustainable enterprises emerge, having primarily focused on both why companies pursue environmental and social sustainability goals in addition to economic ones, and what a sustainable company can look like (Stubbs & Cocklin, 2008; Van der Byl & Slawinski, 2015; Zollo et al., 2013).

To investigate into the processes, this enquiry has employed the NRBV of the firm (Hart, 1995) and the neo-institutional theory (Di Maggio & Powell, 1983) and thus a dual focus on agency and structure. The combined adoption of organisational and institutional perspectives, in reconciling structure and agency, represents another opportunity to contribute to the corporate sustainability literature, which, on the other hand, seems to reflect the "much lamented micro–macro chasm in the field of management" (Aguinis & Glavas, 2012, p. 954). Few studies have combined these two perspectives (Bansal, 2005; Clemens & Douglas, 2006) despite the fact that "applications of organization theory within work on organizations and natural environment

necessitate and facilitate the bridging of theories that are often treated independently" (Bansal & Roth, 2000, p. 733). The paucity of studies integrating resource-based and institutional approaches has given rise to two different research streams leading to contrasting and incomparable results (Menguc et al., 2010). The BM literature has also tended to focus on agency giving little or implicit consideration to the context (Wells, 2013; Randles & Laasch, 2016) despite the fact that "business models are a form of agency that arises from and flourishes (or fails) within a distinct structure" (Wells, 2013, p. 61).

The organisational perspective employed in this thesis has revealed that there is some overlap between the identified resources and capabilities and those discussed in van Kleef & Roome's (2007) study, which categorises capabilities to be developed for sustainable business management innovation. There is concordance on capabilities such as learning and performing, collaboration and coalition building and system thinking. This research has also identified anticipatory thinking and capabilities to mitigate organisational complexities. The latter are particularly relevant for RailCo and UniCo given that TOCs are defined as "bizarre constructs" (Woolmar, 2001, p. 231) and universities as "loosely coupled systems" (Weick, 1976, p. 1). It is in the way in which RailCo and UniCo use their resources that these complexities are moderated. Leveraging upon its key asset (its human resources), RailCo has initiated a transformational cultural change approach for the attainment of its corporate environmental sustainability more ambitious aims. This has started producing also organisational learning (e.g. skills learnt by the ACEs in the development of projects enhancing environmental sustainability can be transferred to other tasks performed within the company), and benefits from a social perspective in the form of rewarding and more collaborative working experiences (e.g. the personal development pyramid and cross-functional working groups). Green impact projects and Unico's environmental sustainability governance structure link staff from different roles and units around a shared purpose. This mitigates the high degree of separation which characterises universities but it also enables both organisational learning (e.g. in the case of green impact, teams that have succeeded in their environmental sustainability projects have shared their expertise with other teams), and staff recognition. Penrose (1959) argued that resources are relevant not only as

such but also because of the services they produce, which depend on how resources are used. From the discussion presented on how human resources are mobilised within UniCo and RailCo for the development of environmental sustainability projects, it would appear that the argument raised by Penrose is corroborated.

The findings emerging from the organisational perspective offer another opportunity to advance the strategic management literature. Chapter two has evidenced that a direct acknowledgement of the potential of BMI for creating sustainable competitive advantage within the NRBV of the firm and in Hart's subsequent works is missing. On the other hand, this study illustrates that the implemented circular innovations can create opportunities for value capture. Hence, in concordance with Zott et al. (2011), viewing the BM per se as a source of competitive advantage, it can be argued that circular BMs expand the range of strategies that Hart (1995) was suggesting as sources of sustainable and sustained competitive advantage and that were identified in pollution prevention, product stewardship and sustainable development. The boundary spanning relational structure qualifying the value delivery system of the examined BMs, provides the basis for rejecting some of the criticism that the NRBV of the firm in its original conceptualisation has attracted. Notably, studies have argued that "influential theories such as the natural resource based view (…) have a tendency to deal with firms in an atomistic way" (Lifset & Boons, 2012, p. 9) and that resource-based theories contrast with sustainability management theories as they emphasise competition over collaboration (Starik & Kanashiro, 2013). Expanding the original model of the NRBV of the firm to incorporate circular BMs characterised by a more cooperative stance in the process of value creation, would thus reconcile irreconcilable perspectives.

The institutional perspective of this thesis conceptual framework is another source of contribution to the corporate sustainability literature. The first of these contributions refers to the UK's CE organisational field illustrated in this thesis. Chapter two has evidenced that a field is "a community of organizations that partakes of a common meaning system" (Scott, 1995, p. 56) and that incorporates any actor exerting regulatory, normative or cognitive influences upon organisations (ibid). This study, building on Hoffman's (1999) view of

organisational fields forming around common issues, has developed conceptual and graphical (Figure 2.3 chapter two) representations of the UK's CE organisational field with the identification of some regulatory, normative and cognitive field forces. Though this CE organisational field is not highly structured yet (the CE has started gaining momentum in the very recent years) but is emergent, and the description of its constituents does not intend to be exhaustive, it is nevertheless useful to represent it not only from an academic point of view but also from a practical one.

At this stage appears appropriate to recall that BMs "are a form of agency that arises from and flourishes (or fails) within a distinct structure" (Wells, 2013, p. 61). If agency (BMs emergence and development) is dependent on structure (institutional influences) to a certain degree, the unfolding of field forces (e.g. policies, industry endorsement, consumers' interest) around the CE in the UK context might serve to start reducing the uncertainty surrounding the CE concept. The representation of these field forces is thus relevant to signal this emerging institutional trajectory to the UK's business community and could be beneficial to the uptake of circular business practices within the British context. Corporate sustainability studies employing resource and institutional perspectives demonstrated that when companies are confronted with new social and environmental sustainability concerns, the role of institutional influences is useful in eliciting corporate responses as they contribute to reducing uncertainty and ambiguity on the meaning and impact of the emerged issue (e.g. Bansal, 2005).

Secondly, this thesis has sought to explore whether field influences could explain the emergence and development of circular BMs in the organisations that are investigated. In doing so it has contributed to the development of the neo-institutional theory as it seems that field level research has concentrated on the explanation of macro to macro phenomena (Wooten & Hoffman, 2008): "field-level interactions leading to changes in structure, culture, and output at the aggregate field levels" (p. 141) rather than on the explanation of macro to micro phenomena: influences from the field to the single organisation. In the business and natural environment literature, the influence of regulatory, normative and cognitive institutions has been examined (e.g. Delmas & Montes-

Sancho, 2011; Hoffman, 2001; Jennings & Zandbergen, 1995; Rugman & Verbeke, 1998) though with a prevalent focus on regulatory and normative ones (Susse & Hoffman, 2013; Wirth et al., 2013). Within this research, which has considered simultaneously the three institutional pillars, there seems to prevail the cognitive aspect for the SMEs and a mix of cognitive, regulatory and normative influences for the large organisations. The emerging cognitive aspect (e.g. raising consumers' interest in the sustainability performances of products/services) is thus an opportunity to advance the business and natural environment literature. The field level cognitive influences traced in this study cannot be considered as highly structured yet (the CE field is in its early stages as noted earlier) and they can be fully appraised only over the long-term. Nonetheless, it would appear that they are emerging and there seems to be some evidence that they are contributing to the development of the initiatives aligned with CE thinking and characterising the BMs considered in this study. In addition, there is another cognitive influence complementing that of parties external to the organisations which contributes to explain the emergence and development of the examined circular BMs. Evidence of responsible leadership, attachment to the place where the business operates and the willingness to preserve the integrity of the natural environment, would seem to confirm the existence of what Scruton (2013) termed as British 'oikophilia', an influence included in the UK's CE field described in chapter two. Oikophilia stands for "the love and feeling for home" (p. 3) which, according to Scruton, is very strong in British people and it is the most relevant reason explaining the success of the country in preserving the beauty of its natural environment.

The emergent cognitive aspect traced in this study is also a source of reflection on how the transition to the CE could further develop within the UK. The studies reviewed in chapter two have emphasised that cognitive aspects influence people's behaviour but also innovation and economic outcomes. Changes in how an issue is culturally framed within organisational fields affect what constitutes an appropriate action. Maguire's (2004) study on the substitution of the insecticidal DDT is a pertinent example for explaining this. According to this author, *marketing, policy, popular* and *technical* discourses determined the uptake and the dismissal of DDT use. For instance, Rachel Carson's book, *Silent Spring*, which revealed the harmful impact of pesticides

use on human and other species health, dramatically changed into negative the stance of the media on the DDT use. Princen (2010) has made a similar argument when commenting on the shift of people's perception of smoking. He noticed that whilst smoking was considered as "acceptable" and "cool" (p. 180) for much of the twentieth century, a change in the language and in the rhetoric of smoking, backed by scientific research and by confronting opposition and the power of the tobacco industry and media, altered into negative the feeling towards smoking. In addition, chapter two has evidenced that cognitive, institutional and economic processes are tightly linked in the sense that "cognitive and institutional path dependence will ultimately lead to economic path dependence" (Mantzavinos et al., 2004, p. 81). And also that changes in rhetoric and beliefs are relevant in the explaining of innovation and economic growth (McCloskey, 2010). Increased cultural acceptance and engagement with the CE thinking might be thus conducive to bring business practices aligned with these principles to scale.

Thirdly, this study's interactive use of a resource and institutional perspective, in the sense that resources and organisational characteristics are considered as moderators of the relationship between BMs emergence and development and institutional influences, is a further opportunity to advance the neo-institutional theory according to Delmas & Toffel (2012). This approach is beneficial to advance the neo-institutional theory because it gives a more in depth understanding of the contingent factors affecting companies responses to institutional influences. For instance, this study has emphasised that the small size of operations and flat organisational structures have enabled the two SMEs to capitalise on the opportunity to explore and innovate more quickly in response to field influences and in anticipating these influences.

7.2.3 Organisations investigated

This study has focussed on SMEs and service providing organisations. This is both a source of originality and contributes to the corporate sustainability, the BM and the CE literature. Focussing on SMEs is relevant from an academic perspective as the majority of studies in the field of business and natural

environment has concentrated on large corporations (Bocken et al., 2014 b; Hoffman & Bansal, 2012) with the consequence that there is little understanding of sustainable innovation within SMEs to date (Halme & Korpela, 2014). In addition, as noted in chapter three, the two SMEs investigated in this research are an opportunity to advance practitioner studies on the CE since they manufacture 'consumables' (non-clothing textiles) and scaffolding boards with recycled plastics respectively. 'Medium-lived products' (e.g. washing machines, mobile phones) are explored more in-depth than 'consumables' in practitioner analyses (e.g. McKinsey & EMF, 2012) and significant opportunities exist to reduce negative economic and environmental consequences in a very wasteful plastic industry (WEF et al., 2016) by applying CE principles. Analysis of organisations from the tertiary sector is also beneficial to advance the practitioner studies on the CE. Notably, despite the fact that service providing companies can be an important lever for pushing the development of CE-oriented practices in the business context (McKinsey & EMF, 2012), services are not included in the related practitioner literature analyses. Within the tertiary sector, this research has analysed a rail organisation and a higher education institution which is a further source of originality. This is the case because the rail industry has received very little attention in the BM literature (de-Miguel-Molina et al., 2012) and the research on sustainability in the higher education sector, though increasing, is just starting to grasp why and how sustainability principles are implemented (Collins & Gannon, 2014; Hoover & Harder, 2015) and still misses examples of positive practices going beyond doing more with less (Derrick, 2013). Inclusion of the service sector is generally very relevant because it has received little attention compared to manufacturing companies in corporate sustainability studies as highlighted in chapter three (Carmona-Moreno et al., 2004; Etzion, 2007; Maas et al., 2014).

7.2.4 Research method

This thesis philosophical stance, which rests on the use of an interpretive research paradigm, represents a departure from the prevailing positivist paradigm in the study of corporate sustainability, whose research methods are also mainly quantitative. This research, which adopts multiple qualititative case

studies, complements the few empirical studies on SBMs based on qualitative, case-based approaches (e.g. Carayannis et al., 2015; Short et al., 2014; Roome & Louche, 2015; Stubbs & Cocklin, 2008). Interpretive research paradigms, qualitative research methods and multiple levels of analysis such as those used in this thesis are welcomed to advance the business and the natural environment studies (Hoffman & Bansal, 2012; Poldner et al., 2015; Purser et al., 1995).

It might be argued that the authors above are right in welcoming these approaches because the business and the natural environment literature concentrates on social phenomena and within these on corporate sustainable behaviour. Friedrich von Hayek, a Nobel Prize winning economist, characterised the phenomena studied by social scientists as of "organised complexity" (Hayek, 1989, p. 4) which means that in the study of these phenomena we cannot simply look at their individual components but we need to consider also how these components are related to each other. Sustainability problems are also framed as "wicked" issues (Haigh & Hoffman, 2012, p. 133; Waddock & McIntosh, 2011, p. 80) following from Rittel & Weber's (1973) definition of wicked issues as complex problems, with cause and effect difficult to establish, and thus hard to solve. Hence, this study's interactive use of multiple levels of analysis and its interpretive stance appear fruitful to unveil the many perspectives from which the phenomenon can be viewed, the relationship existing between these perspectives and their influences on the phenomenon under investigation.

A final contribution of this thesis is linked to how case-based research is used for theory development. Case-based research very often uses theory building or inductive approaches to theory development (Welch et al., 2013). This research, which adopts the view of case studies as a form of 'contextualised explanation', is thus also an opportunity to advance the methodological stances used for theory development based on case studies. Under this perspective neither a deductive nor inductive stance is used but rather an abductive reasoning which is close to that characterising the 'hermeneutical circle'. Using abductive reasoning means for the researcher to move constantly between the existing literature and the empirical findings to

produce theory that is context specific, a process also defined “systematic combining” (Duboise & Gadde, 2002, p. 555). Notably, this thesis elaborated on existing concepts and theories in the BM, SBMs and CE literature as well as on empirical findings, to conceptualise circular BMs. The resulting conceptualisation of BMs for a circular economy is neither a typology (purely theoretically driven) nor a taxonomy (purely empirically driven) but can be considered closer to Weber’s ‘ideal type’ (Weber, 1904), which according to Baden-Fuller & Morgan (2010) represents a construct sitting between the two. The analysis of the process leading to the emergence and development of the examined BMs took the same methodological stance, since empirical data as well as concepts derived from the strategic management and organisations studies literature, were used to generate an understanding of the phenomenon under investigation.

Figure 7.1 presents an overview of the research findings. Circular BMs (CBMs in the graph) are the unit of analysis of this thesis and their *conceptualisation* and understanding of the *process* leading to their emergence and development are the two broad aims of this research. The conceptualisation has been constructed considering the value proposition, creation, delivery and capture elements of the BM architecture (Richardson, 2008). The process has considered organisational (resources, capabilities and organisational characteristics) and institutional influences (regulatory, normative and cognitive). Within each circle, which represents the above influences, there are findings recalled from the empirical chapters. Responsible leadership is emphasised in the red typeface as a level of influence not considered in the conceptual framework but emerging from the empirical context. Institutional entrepreneurship also is highlighted in the red typeface to illustrate that the examined organisations are doing some influencing and are not merely passive actors responding to influences coming from the context.

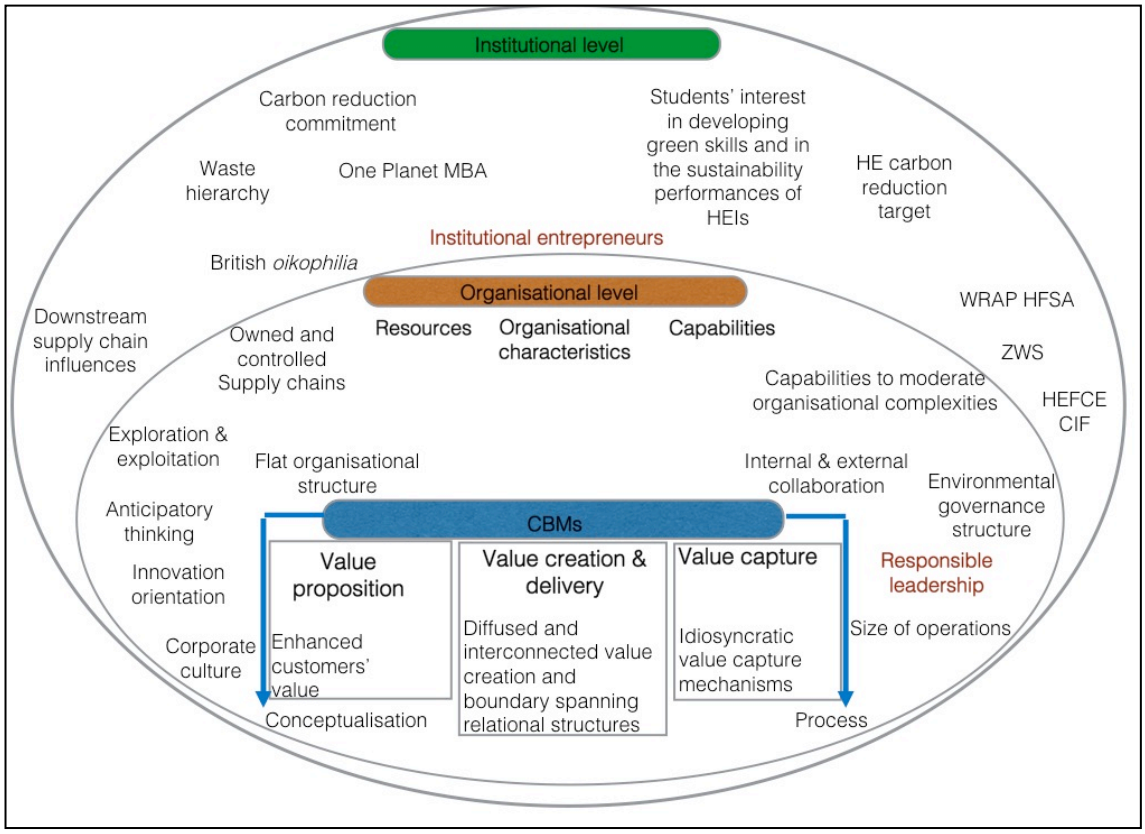

Figure 7.1: Overview of the research findings
Source: The researcher

Table 7A summarises this thesis contribution to the BMs, SBM, CE, sustainable innovation, management and case-based literature discussed in this chapter.

CE practitioner literature	This study conceptualises circular BMs whereas the practitioner literature on the CE identifies elements and categories of CBMs. This research is based on four case studies from the manufacturing and tertiary sectors. Tough considered as an important lever for the scaling up of more circular business practices, the tertiary sector has not been included in practitioner related studies so far. Within the manufacturing sector, 'medium-lived products' (e.g. washing machines) are considered as the "sweet-spot segment for circularity" (McKinsey & EMF, 2012, p. 36) and thus fully explored within practitioner related studies. However, it is also 'consumables' (e.g. textiles, food) that could benefit from the transition towards a CE. For instance, for textiles is recommended that their composition move from 'technical' nutrients to 'biological' nutrients so that at the end of their useful life can be used for a restorative purpose. This study, therefore, has presented the case of a company manufacturing mattresses (non-clothing textiles) with biological nutrients such as 100% organic and natural raw materials. Opportunities for the scaling up of practices aligned with the CE principles also lie within the plastic industry which is currently very wasteful with plastic not adequately recovered within the economy (WEF et al., 2016). By contrast, this thesis has presented PlanksCo as a successful example of a company manufacturing a product with 100 % recycled plastics, which is fully recyclable into other scaffolding boards at the end of its useful life. Multiple value creation (economic, environmental and social) occurs within circular BMs whereas the practitioner literature emphasises economic and business opportunities.
Management literature	This study has concentrated on the BM concept whereas the management literature tends to focus on more established concepts such as resources and capabilities (Baden-Fuller & Morgan, 2010). This study has examined how circular BMs emerge and develop. Within the management literature there is still a relative little understanding of the processes through which more sustainable forms of enterprises emerge. The combined adoption of agency and structure perspectives contributes to overcome the "much lamented micro-macro chasm in the field of management" (Aguinis & Glavas, 2012, p. 594) and advances the corporate sustainability literature where only few studies have used simultaneously resources and institutional perspectives (Clemens & Douglas, 2006; Menguc et al., 2010). Opportunities to advance the NRBV of the firm have been identified: circular BMs expand the range of strategies that Hart (1995) was suggesting as sources of sustainable and sustained competitive advantage and that were identified in pollution prevention, product stewardship and sustainable development. This study has also identified an emerging UK's CE organisational field and has made an interactive use of a resource and institutional perspective in the sense that resources and organisational characteristics are considered as moderators of the relationship between BMs emergence and development and institutional influences. The interactive use of those perspectives is seen as an important step to advance neo-institutional theory (Delmas & Toffel, 2012). Temporal tensions exist in the management of organisations in accordance with sustainability principles whereas the corporate sustainability literature has mostly framed such tensions in terms of environmental/social goals versus financial goals (Hahn et al., 2015; Slawinski & Bansal, 2015).
BMs and SBMs literature	The emergence and development of the investigated circular BMs has been explained using an institutional perspective among others, whereas BMs studies have given little or implicit consideration to the context within which they emerge and develop (Wells, 2013; Randles & Laasch, 2016). The intersection between the CE and BMs has received little attention within the academic literature so far and the SBMs literature is predominantly conceptual. The conceptualisation of circular BMs and the explanation of the processes leading to their adoption, based on four empirical cases, contribute to advance the SBM literature. Not only hybrid BMs contribute to the creation of multiple forms of value but also traditional, for-profit BMs.
Sustainable innovation literature	This study has concentrated on BMs as unit of analysis whereas the sustainable innovation literature focuses either on the micro level (product or process innovation) or macro level (much broader socio-technical transitions for a more sustainable economy) (Boons et al., 2013).
Case-based literature	Most of the case-based research adopts an inductive approach to theory development (Welch et al., 2013) whereas this thesis has adopted the view of case studies as a form of 'contextualised explanation' relying on abduction.

Table 7A: Summary of the thesis contribution
Source: The researcher

7.3 Limitations, recommendations for future research and key lessons

This thesis has adopted the perspective of case studies as a form of 'contextualised explanation' and a conceptual framework resting on theories giving prominence to organisational and institutional circumstances in explaining how agency is enacted. Consequently, the knowledge produced has a contextual connotation and its applicability in different contexts requires interpretation. Nevertheless, the approach taken would seem appropriate to the study of BMs which, according to Wells (2013), are "many and varied and contextualised" (pp. 134-135). This thesis approach resting on case studies as a form of 'contextualised explanation' differs from that of Stake (1995) who seems to exclude any possibility for generalising research findings as emerged in chapter three. Indeed, he argues that the aim of case study research is not to provide generalisable and context-free explanation but to provide an in-depth understanding of the case itself: "the real business of case study is particularization, not generalization" (p. 8).

Practitioner studies on the CE have gained a certain visibility recently and have given attention to circular BMs to some extent as noted earlier. By contrast, there is limited discussion of the CE within the business and natural environment studies (Murray et al., 2015). The academic literature on the topic is fragmented and overlooks not only implementation, but also the implications for BMs (Lewandowski, 2016; Lieder & Rashid, 2016). Since the academic literature on circular BMs is in its very early stages, there is a wealth of opportunities to expand this research area by building on the conceptualisation of circular BMs elaborated in this thesis and by further illuminating the processes leading to the adoption of these BMs in the business community. The scaling up of circular BMs in the business context is dependent, among other factors, on a clear identification of both the concept, and implications for their implementation. Researchers can contribute to add some clarity around the topic and some recommendations are discussed in the following sections of this paragraph.

Starting with how to choose the companies to examine, this research has concentrated on four organisations that although facing some challenges in the

implementation of their circular innovations, are managing to pursue this innovative path and thus are relevant positive examples of organisational transformation for other businesses wishing to implement CE principles. Nevertheless, it could be useful to investigate organisations that have attempted to implement circular BMs but have not succeeded. Studies of this type might help to identify organisational, market and policy barriers that have hindered the exercise of agency and from which lessons can be drawn from policy and practical perspectives.

In addition, as noted earlier, despite the relevance of the tertiary sector for the development of business practices aligned with CE principles, services are not included in the analyses proposed by the practitioner literature on the CE (e.g. McKinsey & EMF, 2012). By contrast, this study has included two service organisations. Nevertheless, there are two possibilities for expanding the research on service providing companies in a CE. Firstly, practitioner studies on the CE (McKinsey et al., 2012) highlight that it is the tertiary sector that would benefit the most from a transition to a CE because reverse loop services (e.g. collection and sorting) and financing of new BMs are to be developed to enable circular business practices in the manufacturing sector. Though the service sector would gain benefits from supporting the transition to a CE, Roos (2014) has evidenced that access to financial resources is one of the challenges that can be encountered in the setting up of BMs based on CE principles because investors perceive them as more risky than traditional BMs. Hence, future studies might explore whether and how the financial sector is developing financing tools specifically designed to address the needs of circular BMs.

Secondly, McKinsey & EMF (2012) have argued that service providing companies are an important lever for the development of circular business practices since as buyers of products they can promote behavioural change along their supply chains. This study has taken mostly an inward focus in relation to the two large service organisations that are examined. However, future research could examine whether service organisations have capabilities to influence upstream supply chains practices through their procurement policies which could ask suppliers to lease rather than selling goods, to reduce

packaging, etc. This future research opportunity could be pursued by focussing on large organisations as their bargaining power and thus their ability to influence suppliers' behaviour is higher and not only in the private but also in the public sector. Notably, public procurement across the EU accounts for 18% of the EU's GDP (EC, 2015 b) and thus the public sector purchase of goods could be a significant lever for the scaling up of more circular practices. The UK's government in its response to the European consultation on the CE package has encouraged the European Commission to devise tools assisting the public procurement process so that it becomes more aligned with CE principles (DEFRA, 2015). Focussing on public procurement appears very appropriate since the recently released CE package commits the European Commission to take action on green public procurement via revising or setting new standards that accord with CE principles (EC, 2015 c).

Thirdly, CE studies would be enriched by including examples of companies that have succeeded in implementing circular BMs in relation to 'consumables'. For instance, what are companies doing to prevent avoidable food waste and to treat unavoidable food waste as a resource? In addition, further examples of how circular BMs contribute to overcome the negative environmental externalities (e.g. energy use, use of toxic chemicals, water and soil pollution) (Allwood et al., 2006) associated with the manufacturing and disposal of textiles would be valuable as well.

Opportunities for adavancing this research could derive also from an expansion of the 'interpretive repertoire' used to develop a better academic understanding of circular BMs. This thesis has employed organisational (the NRBV of the firm) and institutional (the neo-institutional theory) perspectives to analyse the process leading to the emergence and development of BMs aligned with CE principles. Nevertheless, to gain a deeper understanding of that process, future research could investigate also into its micro foundations. This means to consider the influence of management values, mental frames and sensemaking process which would also contribute to the corporate sustainability literature since micro foundations appear to have been overlooked (Basu & Palazzo, 2008; Christensen, Mackey, & Whetten, 2014; Hahn & Lülfs, 2014; Zollo et al., 2013). Future studies, for instance, could explore whether

normative stances, one of the many approaches used to the study of corporate sustainability (Garriga & Melé, 2004), contribute to explain the phenomenon under investigation together with the NRBV of the firm and the neo-institutional theory which, according to the authors, are instrumental and integrative approaches respectively. A normative stance might look at managerial co-evolutionary thinking. Co-evolution, as emerged in chapter two part one, is a key concept within ecological economics (Kallis & Norgaard, 2010) whereby it is argued that social systems (including organisations) co-evolve with each other and with the environment (Norgaard, 1994). Framing the relationship between organisations and the natural environment in co-evolutionary term is considered as an opportunity to advance corporate sustainability studies, where it is argued that not much progress has been registered in acknowledging such relationship and its implications so far (Boons, 2013; Starik & Kanashiro, 2013; Whiteman et al., 2013; Winn & Pogutz, 2013).

Further research could advance this study also by complementing the the neo-institutional analysis developed in this thesis. The UK's CE field has started forming recently and this study has only investigated four organisations at a particular point in time. In the application of the neo-institutional theory this thesis has preserved its core in the sense that it has investigated how social choices, in this case circular BM innovations, are "shaped, mediated and channeled by the institutional environment" (Wooten & Hoffman, 2008, p. 130). Nevertheless, it was not possible to accomplish fully the tasks that a field level analysis requires, namely observing and explaining organisational isomorphism within the field. Hence, future longitudinal studies could build on the development of the organisational field that this thesis has traced to examine whether there is a more widespread uptake of circular BMs due to conformity to the institutional pressures coming from the field.

Finally, future studies might consider policy implications for the scaling up of circular BMs, specifically from an energy perspective. The advantages that CE could bring in terms of energy savings and thus also in terms of climate change mitigation are evidenced in the practitioner literature on the CE. The latter considers circular production processes more climate friendly than linear ones. This is the case not only because the CE aims to shift to renewable

energies but also because it is less wasteful, less virgin materials intensive and thus less energy intensive than a linear economy (McKinsey & EMF, 2012; ZWS, 2015). While the contribution that the CE could bring in terms of climate change mitigation cannot be overlooked in the light of the existence of a very serious climate concern, the impact of the development of circular BMs on the energy sector is not fully acknowleged by the practitioner literature on the CE (e.g. Mckinsey et al., 2012) despite the fact that recycling and reprocessing activities need reliable energy sources to run consistently (Remsol, 2014). Therefore, future studies could complement this research by investigating into the energy needs of the CE. Such studies would be beneficial to identify suggestions for the most appropriate energy policies mix to be developed so that a transition to a CE in the UK context is effectively supported.

Overall, there are some key lessons that this thesis can offer to other researchers, practitioners in the field and policy makers. This thesis has conceptualised circular BMs around the building blocks of the BM concept identified in the BM literature, which is to say value proposition, value creation and delivery and value capture. In doing so, it has taken into account Zott et al's. (2011) recommendation on how to advance BMs studies which cannot overlook the definition of the concept. Therefore, it is recommended that future academic research wishing to build additional conceptual clarity on circular BMs follows the same approach without missing the complexity of the BM concept. This recommendation is also relevant for practitioners in the field since as emerged, related literature would not seem to articulate clearly the concept while acknowledging the relevance of BMI for the transition towards the CE and identifying elements and categories of circular BMs. As the practitioner literature on the CE seeks to catalyse business attention to accelerate the transition towards a CE, it is very important that the business community clearly understand the complexity of the BM concept so that more circular business practices can be scaled up quickly.

This thesis has also adopted simultaneously agency and structure perspectives to explain the processes leading to the adoption of circular BMs. This comprehensive analysis, addressing the many angles (organisational and institutional) from which the phenomenon can be investigated, can be further

developed within future academic studies exploring the reasons why circular BMs are or are not adopted. This thesis approach has been also useful to highlights some key lessons for the business community and specifically for other companies wishing to implement circular BMs. An example of why this is the case serves to illustrate the relevance of the approach taken. Market and institutional failures (e.g. the lack of quality standards of much of the plastics recyclate) have been compensated by PlanksCo's capability to set up its own plastics recyclate supply chain, which has been instrumental to the development of the company BM. Can wider implications for companies interested in using secondary raw materials in the manufacturing of their products be drawn from this case study? Generalising from one case is not possible and it is not the purpose of this study. Nevertheless, the recently released EU CE package would seem to confirm that there are structural barriers to the uptake of secondary raw materials usage across Europe such as the uncertainty surrounding their composition, which the European Commission is committed to overcome through the development of quality standards especially for plastics (EC, 2015 c). Therefore, PlanksCo's agency in overcoming the challenges associated with the usage of plastics recyclate is an important lesson that companies interested in manufacturing with secondary raw materials can learn from this enquiry. It would appear that a structural barrier of that kind is likely to affect other businesses until the regulator addresses it.

From a policy perspective, this thesis has already discussed in chapter two the relevance of the regulatory environment in creating the conditions under which the development of more circular BMs is supported, drawing on the studies (Aldersgate Group, 2012; APMG & APSRG, 2014; Green Alliance, 2014, House of Commons Environmental Audit Committee, 2014 a) that have highlighted what type of government intervention is needed to facilitate the transition towards the CE. Nevertheless, PlanksCo example is appropriate to further emphasise why this is the case and to strengthen the call for regulatory intervention that facilitates the usage of secondary raw materials particularly within the plastic industry, which is actually creating major economic and environmental losses deriving from the limited application of CE principles (WEF et al., 2016). Fortunately, the recently released EC CE package seems to

have acknowledged that the lack of quality standards in the secondary raw materials market is a barrier for the development of circular BMs and thus actions that address this issue are likely to come into place both at the European and national levels.

In addition, from an energy policy perspective, Remsol (2014) has explored the energy needs of a CE and has raised some questions on the suitability of the current UK's energy policy to effectively support a transition scenario. Remsol's study has argued that the UK's energy policy focus on the decarbonisation of the power generation sector via prominence given to renewable energies, might not be supportive to the development of a CE within the country. According to that study, renewable energies alone cannot meet the energy demand of recycling companies because a) their supply is unpredictable, b) they cannot respond, because of their nature, to peak demand (e.g. recycling steel requires short but intense amount of electricity) and c) they only provide electricity whereas some materials recycling (e.g. glass) runs on gas. Remsol's study has suggested that more efforts should be placed on the development of anaerobic digestion plants for the production of biogas, on the storage of electricity generated from renewables (this would enable usage when energy is needed and not just when is produced), and on extracting energy from waste domestically instead of exporting waste, to enhance the reliability and availability of the energy supply to the recycling and reprocessing activities. Waste to energy and its role within the EU energy and climate change policy, is considered in the recently released CE package. Notably, the European Commission is committed to examine how waste to energy can be leveraged without hindering the attainment of a more resource efficient and thus CE (EC, 2015, c). Therefore, it would appear that there are some energy requirements that the policy maker could consider so that the transition towards a CE within the UK is more adequately supported.

This study has also evidenced that the small size of operations and flat organisational structures of the two SMEs have enabled them to capitalise on the opportunity to explore and innovate more quickly in response to field influences and in anticipating these influences. Though this finding is not surprising, it raises some questions on how the transition to a CE might develop

within the business community. For instance, given the relative recent business rethorics developing around the CE proposition, are SMEs better equipped than large organisations to start exploring with circular BMs from an organisational structure perspective? Recent practitioner literature (e.g. Clinton & Whisnant, 2014) categorising BMI for sustainability encourages to think that small organisations could catalyse CE innovations, since it has underlined that more than half of the examined innovations were implemented by SMEs. If this is the case, it would be beneficial that policies are implemented to support SMEs in the development of business practices that are aligned with CE principles. For instance, previous studies (e.g. Roos, 2014) have highlighted that getting access to financial resources is one of the challenges that those wishing to implement circular BMs are likely to confront since these BMs are perceived as more risky than traditional BMs. Chapter two has already emphasised that the UK's government through Innovate UK and WRAP has supported financially the uptake of circular business models including those developed by SMEs (e.g. REBus project). Nevertheless, given the relevance that a greater involvement of SMEs could have for the scaling up of circular BMs, strengthening the central government financing of circular BMI is certainly welcomed to reduce the barriers that small organisations could encounter in the implementation of business activities that are aligned with CE principles.

Finally, after having discussed this thesis limitations, recommendations for future research and key lessons for other researchers, practitioners in the field and policy makers, a concluding reflection on the circular innovations developed by the organisations investigated is now presented. As evidenced in chapter two, the CE proposition seeks to create not only economic and business opportunities but also environmental and social value. Among the latter the CE is considered as an appropriate strategy for climate change mitigation (ZWS, 2015) and a less wasteful resource utilisation has positive implications for intergenerational resource distribution (Murray et al., 2015). FurnitureCo, PlanksCo, RailCo and UniCo have implemented several initiatives that accord with the ReSOLVE framework (e.g. *Regenerate, Share, Optimise, Loop*) thus aligning their value propositions and operating models with CE principles and contributing to realise the environmental and social sustainability benefits that the CE seeks to bring.

FurnitureCo produces more durable mattresses using only natural, organic and biodegradable raw materials. It employs local people thus supporting the welfare of the local communities and its manufacturing processes are characterised by the use of renewable sources of energy, absence of chemicals and waste minimisation. Multiple forms of value are thus created and the implementation of additional measures of the ReSOLVE framework (e.g. taking back mattresses and either composting or recycling materials for other purpose), currently under consideration, not only might improve FurnitureCo materials productivity but also contribute towards a reduction of the second biggest environmental impact of mattresses associated with disposal in landfills (WRAP, 2013 a).

PlanksCo manufactures more durable and made with 100% recycled U-PVC scaffolding boards and in a similar line with FurnitureCo supports the welfare of the local communities via employing local people. Plastic waste is thus diverted from landfill, no virgin plastic is used in the manufacturing process, boards can be leased and a full closed-loop supply chain characterises its operating model. Not only boards are manufactured with recycled U-PVC and can be converted into other boards at the end of their useful life for a consecutive number of times (up to 7-8 times), but the hand-stripping of U-PVC also enables the recovery of other materials (e.g. aluminium, rubber, etc.) that are diverted from landfill and can be used in other manufacturing processes. Overall, PlanksCo creates multiple forms of value and it might be argued that its innovation capabilities could lead to additional social and environmental benefits if shared with other companies within the same industry and beyond.

RailCo provides passengers' services and has implemented several measures that not only can reduce its environmental impact (e.g. zero waste to landfill project; regenerative braking; installation of smart meters) but also they contribute to create positive environmental and social value (e.g. the B-Line project that seeks to protect and enhance biodiversity; stations development projects and investments in digital technologies encouraging the shift to more environmentally sustainable and healthier journeys; the personal development pyramid, a career progression and opportunity scheme for the employees trained to deliver the corporate sustainability goals). These initiatives are the

result of a recent transformation of RailCo corporate sustainability strategy. Therefore, it might be argued that by continuing to invest in these initiatives across the managed network, the positive environmental and social value created by its BM are likely to increase.

UniCo provides higher education and as a higher education institution committed to sustainable development, its operating model seeks to reduce negative environmental impact as well as doing good both socially and environmentally. The initiatives implemented to achieve its aims include:

a) protecting, enhancing and preserving biodiversity across its managed sites;

b) investments in some infrastructural facilities and incentives to encourage students' and staff's modal shift (e.g. car sharing; discounted bus and train passes; cycling facilities);

c) continuous improvement in waste recycling targets;

d) students' reuse project enabling donation of items like books, clothes, CDs and surplus, non-perishable food to charities and local food banks;

e) initiatives for reducing food waste and disposing of unavoidable food waste in the most environmentally friendly way;

f) investments in sustainable construction and refurbishment (e.g. BREEAM standard is adopted);

g) investments in facilities across the managed estate that can contribute to gas, electricity and water consumption savings as well as to the generation of some renewable energy (rainwater harvesting, solar thermal water, photovoltaic solar panels, biomass boilers, air source heat pumps, ground source heat pumps and combined heat and power systems);

h) sustainable procurement and sustainable food and drink strategies contain some measures aligned with CE principles (e.g. staff is encouraged to question the need of buying a new item and re-using, buying second-hand items, sharing or renting is considered prior to the purchasing of any new item).

Improving the environmental sustainability performances of its operations (e.g. recycling rates) could further strengthen the creation of positive environmental value and thus the attainment of CE promises. On a final note, as evidenced in chapter five, universities can have an important role in the development of a more sustainable society not only by disseminating research and through the

management of their own operations but also by educating responsible leaders (Ferrer-Balas, et al., 2008; Disterheft et al., 2015). Therefore, the provision of additional programmes geared towards the different aspects of the CE (e.g. policy, business models, etc.) could increase the overall impact that UniCo might produce in accelerating the transition towards a CE.

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Appendix I

An example of questions asked to interviewees and of an interview transcript

Questions[1]:

Before each interview started, participants were thanked for their cooperation with this research and were given opportunities to ask questions concerning the research, the interview and their participation.

- Could you explain me why did you enter this industry, please?
- Could you tell me what does your role involve, please?
- What do you think about considering socio-economic systems and natural environment as connected into a feedback loop?
- Which internally developed resources and capabilities support your manufacturing products/ processes or services?
- Have you developed any boundary spanning capabilities by building collaborative networks to support and implement your sustainable strategies, thus engaging in learning, action and change within these networks?
- Have your business practices influenced your industry?
- Do you think that internal and inter-organisational capabilities in managing sustainably have improved your company resource base and thus its competitive advantage?
- Have you perceived any influences from the institutional environment (regulatory bodies, industry, NGOs etc.) that have had an impact on your corporate sustainability strategy?
- Are there any organisational resources, capabilities or characteristics that have acted as moderator (i.e. amplify or diminish) of the relation

[1] This is a typical set of questions that normally required more than one interview with people in senior or managerial decisional roles. Follow-up questions were often asked to clarify and add details to the answer given to one particular question. Specific questions were asked in relation to the role of the people interviewed. The following transcript is an example of these specific questions.

between your corporate environmental strategy and institutional influences?

- Within your company business model what are the features of the value proposition?
- Within your company business model what are the features of the operating model?
- Which aspect of your company business model do you consider innovative?
- Do you consider your business model based on profit and mission motives?
- How does your business model contribute to advance corporate sustainability?
- Do you think that managing sustainably impact upon the success of your business model?
- Would you like to add any other element that we have not considered yet in this interview?

An example of interview transcript[2]

- Could you tell me which is the role of sustainability coordinators, please?

The role of sustainability coordinators is to really spread the message but also engaging people in getting involved as well, and if you take part in Green Impact, you automatically become one of the sustainability coordinators. Obviously the university is such a big place and it is a great way to send the messages out to everybody about the initiatives that the university is doing already and also how people can get involved. It is also a forum where we get invited as well. If the university has an issue, then we will be talking about (…) and also communicating messages back to our colleagues about the new recycling, how the recycling is now handled under the new waste contract.

- Is the participation to the sustainability coordinators voluntary or you are appointed by your college in the role of sustainability coordinator?

[2] The responsibility for any errors that may occur within this transcription lies with this researcher only. This interview was conducted face-to-face with one of UniCo's sustainability coordinators at the organisation location in November 2014. The interview lasted 15 minutes.

In my case because my team was taking part in Green Impact and I am one of the Green Impact leads, so automatically I became one of the sustainability coordinators.

- How often do you meet with the other sustainability coordinators?

Once a quarter.

- Which relationship do the sustainability coordinators have with the sustainability team? Do you work in partnership with them?

I certainly try to. For instance, this morning I was helping to clear out the wood shed the [theatre] used to use to build its set and we are going to take that waste which is going to be reused for something in our artists exhibition using waste materials, but it also saves money because they have to pay money to get someone to pick up and recycle the wood. So, instead of the wood being recycled it is actually being reused which fits quite nicely with the circular economy. That's one example of where as a sustainability coordinator I am personally engaged with the sustainability team up here at the university. And another example is that I have contacted (…) in the sustainability team to tell him about our samples we have received from clients and he is going to contact (…) on our behalf and ask what we might do with our waste stream. So we are not simply chucking everything into bins after all because that would defect the object of us being sustainable.

- Which are the specific roles of sustainability coordinators?

As I mentioned earlier, the main thing is to communicate the message, trying to be greener and to let people know about the opportunities to save energy and what they need to do with their waste. People may not have read the e-mails about the shredding consoles for instance, they may still chucking their papers in the bin not realising that actually there is a shredding console outside the door. So we need to make sure that things like that are not happening. Hopefully our coordinators efforts will help the university to achieve its sustainability targets.

- Could you explain me how Green Impact works, please?

Yes, absolutely. It is a national scheme which is run at a local level by universities and there is a different award you can receive: bronze, silver, gold, platinum or special awards such awards for labs, individuals. Last year [our college] went for the bronze award and this year we are going for gold. The way it works is that there are certain criteria you have to meet. If you go for bronze you have to meet the criteria for bronze; if you go for silver, silver; if you go for gold, gold and so on. The criteria are for instance, taking part in the community challenge day, we cleaned a beach in (…) for instance. Getting involved in helping with biodiversity on campus, taking part in activities like this really.

- Green Impact: is it a scheme that works on a college basis? Is each college taking its own initiative for Green Impact?

No. People decide. Obviously our college is taking part but individuals can take part, labs can take part, teams may take part. So every year the Green Impact team, (…) and her colleagues, holds an event introducing the concept of Green Impact to people working here perhaps not having heard of it before. They then go along and think ok, our team will take part and then we submit our workbook with evidence that we have carried out all the criteria. We submit those in February and then in March a student comes along and audits us. The number of students on board to actually do the Green Impact auditing, a lot of whom being involved in doing environmental courses, so it's a good opportunity for them and great for us because we got students engagement as well. They come along and audit us and we find out whether we have got the award at the ceremony a couple of months later.

- What is the role of sustainability coordinators in managing these Green Impact initiatives?

Well, essentially we have to make sure that as a team we meet the criteria, so, that means communicating to the team via e-mails, bulletin that we put up on our sustainability notice board that is in our office. Also, me and (…) are the Green Impact leads for the team, so we do meet periodically to make sure that things are still on track and we are due to have special meetings soon to talk about some of the criteria of Green Impact and come up with some ideas like energy savings opportunities, greening opportunities, environmental statement we can put on our web site and things like that.

- In your opinion, which are the drivers of these Green Impact initiatives?

Well, I suppose it is about recognising the importance of what we are doing. (…) as university, as a sort of reputation, we want to be well thought leaders, we want to be ahead of the curve, we don't want to cause a lot of pollution, if we can do something to help, sorting out lot of junk that can be reused because that is about setting examples considering that we got [lot of] students every year coming through and they are the ones that have to take this forward really. It is going to be them, their children, their grandchildren that are inheriting this world where we have depleted resources. So I think it's very important for educators to be ahead of the game really and that's why it is so important for us to engage in Green Impact.

- Which resources are used in the implementation of these initiatives? Do you do a lot of engagement with other people? Do you have training sessions that are dedicated to the implementation of Green Impact initiatives?

Not training sessions as such but as mentioned (…) and I meet periodically as Green Impact leads. Each member of the team that is part of Green Impact has got to take part in the on-line environmental sustainability

training and obviously I have got this meeting in January to come up with some greening ideas. Also we are going on campus walk, we are building bugs hotels. We had the community action day last year where we cleaned a beach. It's very much having meeting with the team, e-mail the team and say you know we are doing Green Impact and they are very enthusiastically on board which is great.

- In your opinion, which are the benefits of Green Impact, apart from the environmental ones?

I suppose you get the team building because obviously you are engaging in all these projects together. It's great from that perspective. I think also, and this touches on the environment from an education perspective, it probably gets you to think about things you haven't been considering before. I can walking round with my plastic bottle in my hand and thinking I can't just chuck it into the bin, I have to find a plastic bin because I am in that mindset now.

Appendix II

Summary of data collection activities

Cases and time frame of the research activities	Data collection activities	People interviewed, type, location and length of interviews[1]
FurnitureCo (November 2013-August 2015)	8 interviews.	▪ **MD a** (four times): 3 of these interviews were conducted face-to-face at the company location and one over the phone. Interviews length: 40, 45, 27, 10 minutes; ▪ **MD b** (once): face-to-face at the company location. Interview length: 34 minutes; ▪ **Supplier** (once): over the phone. Interview length: 8 minutes; ▪ **Marketing manager** (once): over the phone. Interview length: 15 minutes; ▪ **Corporate sustainability consultant** (once): face-to-face. Interview length: 15 minutes.
PlanksCo (July 2014-September 2015)	6 interviews.	▪ **MD a and b** (twice): one of these joint interviews was conducted face-to-face at the company location and the other one over Skype. Interviews length: 44 and 25 minutes; ▪ **MD a only** (once): over the phone. Interview length: 42 minutes; ▪ **MD b only** (once): over the phone. Interview length: 34 minutes; ▪ **Sales manager** (once): over Skype. Interview length: 7 minutes; ▪ **Carbon consultant** (once): over the phone. Interview length: 8 minutes.
RailCo (March 2014-January 2015)	▪ 7 interviews; ▪ participant observations in staff environmental training course:1; ▪ shadowing (over two weeks time: mainly the head of environment and for 1 day only a senior ACE).	▪ **HE** (3 times): two of them were conducted face-to-face at the fieldwork location and one was conducted over Skype. Interviews length: 1 hour and 2 minutes, 1 hour and 6 minutes, 36 minutes; ▪ **Senior ACE a** (once): face-to-face at the company location. Interview length: 32 minutes; ▪ **Senior ACE b** (once): over the phone. Interview length: 9 minutes; ▪ **Head of infrastructures** (once): face-to-face at the company location. Interview length: 10 minutes; ▪ **Energy manager** (once): face-to-face at the company location. Interview length: 30 minutes.
UniCo (October 2014-January 2015)	▪ 12 interviews; ▪ participant observations in organisational meetings: 3; ▪ participant observations in staff environmental training course:1.	▪ **SM** (once): Skype interview. Interview length: 24 minutes; ▪ **2 SCs** (once): face-to-face interviews at the organisation location. Interviews length: 15 minutes and 21 minutes; ▪ **SGM** (once): face-to-face interview at the organisation location. Interview length: 35 minutes; ▪ **HP** (once): face-to-face interview at the organisation location. Interview length: 30 minutes; ▪ **HSGU** (once): face-to-face interview at the organisation location. Interview length: 35 minutes; ▪ **DDED** (once): face-to-face interview at the organisation location. Interview length: 20 minutes; ▪ **FTPC** (once): face-to-face interview at the organisation location. Interview length: 33 minutes; ▪ **Reuse project coordinator** (once): face-to-face interview at the organisation location. Interview length: 22 minutes; ▪ **GOM** (once): phone interview. Interview length: 15 minutes; ▪ **BEMSE+CDC** (once): face-to-face interview at the organisation location. Interview length: 30 minutes; ▪ **SGUCs** (once): face-to-face interview at the organisation location. Interview length: 20 minutes.

[1] The abbreviations used for the interviewees can be found in the list of abbreviations.