A thesis submitted to the Department of Environmental Sciences and Policy of Central European University in part fulfilment of the

Degree of Master of Science

Disruptions for the future: Understanding sustainability-driven entrepreneurship in leading business transition towards sustainability – the case of shipping containers –

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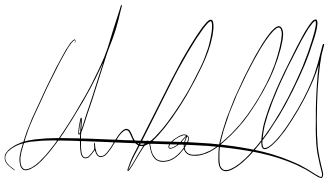

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for the degree of Master of Science and entitled: Disruptions for the future: Understanding sustainability-driven entrepreneurship in leading business transition towards sustainability – the case of shipping containers.

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Worldwide challenges such as global epidemics, climate change and economic fragilities highlight the pressing need to devise sustainable solutions for the future. In comparison with established firms that may be bound by shareholder structure and company culture, entrepreneurship embodies the freedom to innovate and design new business DNA from the start. This thesis examines the role that sustainability-driven entrepreneurship has in leading a business transition towards sustainability. This thesis aims to understand how entrepreneurs place their businesses within the wider context of sustainable development, respond to internal or external pressures, and engage with sustainability in practice through the business model. The study follows an interpretative phenomenological analysis that relies on a case study of two start-ups which build their business on a 60-year-old and once disruptive innovation, the shipping container. Given the interest in both organizational and individual aspects for change, the conceptual framework is grounded in the assumption that the business model is the mechanism for converting vison and strategy into practice and generate value. This study proposes the Framework for Sustainability-driven Business Creation, Development and Transition which describes the essential stages of the entrepreneurial approach to sustainability in business. The findings suggest that entrepreneurial motives and values are essential variables that determine the perception of and approach to sustainability, and frame efforts to balance and optimise at times competing economic, social and ecological aspirations. The findings also demonstrate that sustainability should be a non-negotiable foundation of the business model in order to lead and integrate sustainable business transitions.

Keywords: Sustainability-driven entrepreneurship, business models for sustainability, shared value creation, triple bottom line, sustainable business transition, shipping containers.

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I leave this inspirational journey in my life as a better person, friend, researcher, professional and more informed global citizen. For that, I am eternally grateful.

We can't solve problems by using the same kind of thinking we used when we created them.

– Albert Einstein –

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List of Abbreviations

AI – Artificial intelligence

BAU – Business as usual

BM – Business model

BMfS – Business model for sustainability

BSR – Business for Social Responsibility

CEO – Chief executive officer

CO_2 – Carbon dioxide

COVID-19 – Coronavirus disease 2019

CSR – Corporate social responsibility

EPFL – École Polytechnique Fédérale de Lausanne (Swiss Federal Institute of Technology Lausanne)

FEU – Forty-foot equivalent units

GHG – Greenhouse gas emissions

IISD – International Institute for Sustainable Development

IMO – International Maritime Organization

IoT – Internet of things

ISO – International Organization for Standardization

IP – Intellectual property

IPA – Interpretative phenomenological analysis

kWh – Kilowatt hours

MBARI – Monterey Bay Aquarium Research Institute

MSC – Mediterranean Shipping Company

R&D – Research and development

SDGs – Sustainable development goals

Sd- – Sustainability-driven

SdE – Sustainability-driven entrepreneurship

TBL – Triple bottom line

TEU – Twenty-foot equivalent units

UNCTAD – United Nations Conference on Trade and Development

USD – United States Dollar

USP – Unique selling proposition

VOCs - Volatile organic compounds

WCED – World Commission on Environment and Development

WSC – World Shipping Council

1 Introduction

In today's day and age, crises constantly prompt individuals to raise fundamental questions about the direction in which the world is developing. Sustainable development was defined over 30 years ago as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987). Worldwide challenges such as climate change, global epidemics and economic fragilities highlight the pressing need to devise sustainable solutions for the future. It is commonly known that these changes require a multitude of adjustments, not only on the political level, but also on the organizational, societal and individual level. The multi-faceted and trans-disciplinary nature of these challenges in addition requires that economic, social and environmental issues be dealt with holistically and simultaneously, and in the public and private spheres (Bocken *et al.* 2014). This has prompted organisations and researchers to explore the contributions that businesses, as drivers of the economy, can make towards sustainable development. On the organizational level, the vision of sustainable development has led to the development of corporate sustainability and sustainability management (e.g. Dyllick and Hockerts 2002), sustainable innovation and sustainable business models (e.g. Boons and Lüdeke-Freund 2013; Schaltegger *et al.* 2012; Stubbs and Cocklin 2008) and sustainable entrepreneurship (e.g. Schaltegger and Wagner 2011; Shepherd and Patzelt 2011).

Of relevance to this study, the emerging field of sustainable entrepreneurship has gained increasing attention in the past decade for its ability to penetrate the processes of start-ups, corporate innovation (i.e. intrapreneurship) and business model innovation by linking objectives of sustainable development with wealth creation and economic growth. The word entrepreneur has its origins in the French verb "entreprendre" which means to undertake or to initiate. Joseph Schumpeter (1934), the founder of modern entrepreneurship theory was one of the first to portray entrepreneurs as innovators. He coined the phrase "creative destruction" to illustrate the process "by which entrepreneurs discover new opportunities and stimulate change in society" (Tilley and Young 2009, 80). Some researchers describe entrepreneurs as catalysts that bring together money, people and ideas for new value network creations that transcend exiting markets (Schaltegger and Wagner 2011). Sustainable entrepreneurs differ from conventional entrepreneurs in that they build bridges between social and environmental issues and market success (Dean and McMullen 2007). Sustainable entrepreneurship in this context represents the potential to offer profitable solutions to global problems by creating value that mitigates those problems (Kuckertz *et al.* 2019). In this study, entrepreneurship is explored as a phenomenon which emerges from individual values, motives and intentions to challenge existing business structures and innovate industry practices towards sustainability.

Sustainability in business

The combined effects of sustainable entrepreneurship with corporate sustainability drive sustainable development and the transformation of business. Sustainability in the context of business can be defined as "the adoption of business strategies and activities that meet the needs

of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future" (IISD 1992, 11). Sustainability in management as a result, calls for addressing social, environmental and economic issues in an integrated manner to transform the way organizations contribute to sustainable development (Schaltegger *et al.* 2016). However, there is a tension in markets between financial profitability and environmental and social value creation (Dyllick and Muff 2016). Scholars argue that markets tend to create structural barriers[1] that prevent radical innovations from businesses, making it difficult for companies to fully align their search for profits with societal progress (Pacheco *et al.* 2010; Lüdeke-Freund *et al.* 2016; Tilley and Young 2009). Even with a heightened awareness of and commitment to The Sustainable Development Goals[2] (SDGs), most businesses prioritize economics first, followed by environmental, social and ethical issues (Markman *et al.* 2016). Additionally, there is an apparent disconnect between sustainability in business at the organizational level and sustainable development on a global level. The two fields of sustainable development and sustainable business have until fairly recently evolved on their own as sustainability discourses on a global scale tend to address macro societal or economic issues, while sustainability discourses in business typically centre around implementing eco-efficiency as a performance measure or creating a business case of sustainability which has predominantly economic rewards[3] (Dyllick and Muff 2016). Ongoing research in this area and the growth of sustainable entrepreneurship as a subfield of entrepreneurship theory has nevertheless provided greater awareness that sustainability requires businesses to balance environmental, societal and economic needs and goals (e.g. Markman *et al.* 2016; Tilley and Young 2009).

As influential and global actors, large companies have "the ability to change their normative settings and to generate concrete action" (Rauter *et al.* 2017, 144) as well as extend their societal contributions beyond paying taxes, creating employment or devising useful products and services (Lüdeke-Freund *et al.* 2016). This may include creating business cases *for* sustainability instead of business cases *of* sustainability. Business cases for sustainability combine economic activities and success with non-monetary social and environmental activities by implementing value creation geared towards achieving a tri-dimensional construct of social, environmental and economic goals (Elkington 1998; Schaltegger *et al.* 2012). Ideally, business cases for sustainability necessarily imply strong ecological, social and economic performance which mutually enforce each other.

The thought of creating value that extends beyond the firm's borders and addresses the needs and challenges of society, i.e. positive externalities, has been referred to as value co-creation (Markman *et al.* 2016) and, as it is referred to in this study, shared value creation (Porter and Kramer 2011). The notion of shared value proposed to redefine the purpose of business as "creating economic value in a way that also creates value for society by addressing its needs and challenges" (Porter

[1] These include pressures for short-term results, aversion to taking risks, lack in capabilities and resources to deal with sustainability issues, conflicting views on the nature of sustainability and business, and structural resistance to change.

[2] Encompasses 17 goals and 169 accompanying targets that the UN strives to achieve by 2030.

[3] These include brand reputation, talent recruiting, a competitive edge, better investor relations and economic savings.

and Kramer 2011, 4). The term implies a shift from value generated by firms that is predominantly centred on customers and shareholders to embracing all stakeholders in society, including nature. The concept of shared value recognizes that sustainable development is not very likely without the sustainable development of business, and thus views business as an essential engine of societal progress (Schaltegger *et al.* 2016). This has helped to shift the discussion away from the dominant market logic of free trade and maximizing shareholder value best described by Milton Friedman's famous (1970) *New York Times Magazine* article "The social responsibility of business is to increase its profits", and towards new types of business value creation that also generate value for society at large (e.g. Dyllick and Muff 2016). Indeed, in recent decades, there has been a growing awareness among businesses to value social and ecological systems and take stock of natural and social capital. However, this is not yet common practice and many lack the accounting and management processes needed to value these, often free, natural assets (Bocken *et al.* 2014).

It is important to note here that although corporate sustainability and corporate social responsibility (CSR) have significant overlaps, they remain distinctively different as they relate to business strategy. CSR initiatives typically target benefits such as improved reputation, enhanced learning capabilities and attractiveness to new talent, and which are detached from the business strategy (Dyllick and Muff 2016). Corporate sustainability on the other hand addresses the contributions of business in the ecological, social and economic spheres and in this sense, overlaps with the more recent concept of shared value creation by firms and intrapreneurs (Lüdeke-Freund *et al.* 2016; Walley and Taylor 2002; Gasbarro *et al.* 2018). This overlap offers an opportunity to draw insights from these more established and mature research fields that frame the present study for a better understanding of the critical role that sustainability and entrepreneurship have in shaping business practices and persuading firms to adopt more ethical, social and environment-driven practices.

Business model innovation for sustainability

While, institutionalising sustainability as a strategy is crucial to highlight progressive thinking, it does not address the inherent need to implement it in practice (Čadež and Czerny 2010). For this, sustainability needs to be interwoven into all aspects of the business strategy, company values and leadership, ultimately affecting decision-making and the company culture as a whole (Biloslavo *et al.* 2018). The business model (BM) in particular is an excellent tool for studying sustainability in practice because it represents the seat of the business's strategies, missions and value creation (Rauter *et al.* 2017). It shows how different interests are represented and organized and serves to effectively introduce innovation on the market and most importantly, to scale and sustain it for greater impact and value generation (Christensen *et al.* 2006).

Scholars and practitioners have been increasingly exploring how modifications or redesigns of BMs can help maintain or increase economic prosperity while reducing negative or enhancing positive social and ecological effects (e.g. Biloslavo *et al.* 2018; Lüdeke-Freund *et al.* 2016; Joyce and Paquin 2016). For many, BM innovation involves changing the way business is done rather

than what business does (Bocken *et al.* 2014) and going further than just delivering ethical products and services to reaching into the deeper levels of business DNA (Rauter *et al.* 2017). This view proposes businesses to look beyond strategies of shared value creation and to ask themselves how they can contribute to solving sustainability issues on a larger scale (Dyllick and Hockerts 2002). This perspective not only includes BM transformation for existing organizations (Bocken *et al.* 2014) but also entirely new models developed by young companies (Boons and Lüdeke-Freund 2013). An assumption is that by supporting an on-going creation of business cases for sustainability, BM innovation makes it possible for mainstream businesses to more readily integrate sustainability into their business functions and for young companies to design and pursue sustainable business from the start (Bocken *et al.* 2014; Schaltegger *et al.* 2012; Stubbs and Cocklin 2008). In the context of this research, BM innovation is understood as an attempt to align company value creation with sustainable development by "aligning interests, thinking systematically and purposely addressing environmental and societal needs" (Lüdeke-Freund *et al.* 2016, 22). Moreover, value creation through the BM is explored as the core of sustainability leadership and a key initiating component for businesses to create scalable solutions for sustainable business transitions (Schaltegger *et al.* 2012; Biloslavo *et al.* 2018).

Entrepreneurs as agents of change

Some scholars consider entrepreneurship to be the only phenomena that can directly incorporate and consolidate the values of the individual and the moral dimensions of sustainability (Walley and Taylor 2002, 37). An example noted by Schaltegger and Wagner (2011) is that while "environmental or CSR managers can leave a company without the company losing substantial character, sustainable entrepreneurs constitute and shape the 'face' of their company" (226). Entrepreneurship as a process of sustainability-driven innovation is understood to emerge from the personality of the company founder(s) and the motivation to combine competing identities aligned with commercial, social or environmental logics (York *et al.* 2016). Entrepreneurship can also be understood in terms of strategy that arises from "the mutually producing relationship between action and organisational or social structure" (Walley and Taylor 2002, 33). In this manner, entrepreneurial activities are developed iteratively through personal experience and identity formation, and are influenced by socio-cultural, political and economic structures and patterns (Meek *et al.* 2010; Walley and Taylor 2002).

In comparison with established firms that may be bound by shareholder structure and company culture, entrepreneurship embodies the freedom to innovate and design new business DNA from the start. In order to validate BMs for the joint pursuit of economic, environment and social goals, young companies may create new BMs or methods based on the principles of shared value (Markman *et al.* 2016; Porter and Kramer 2019). Extant literature suggests that while their impact is limited on the transformation of industries compared to larger established firms, young sustainability-driven businesses stimulate disruptive innovation in a niche market and motivate larger businesses or organizations to follow up with corporate sustainability (e.g. Christensen *et al.*

2015; Daepp *et al.* 2015; Hockerts and Wüstenhagen 2010). Together, they may pioneer sustainability innovation that accelerates the sustainable transformation of an industry.

1.1 Research objective

The goal of the present empirical study is to gain a deeper understanding of how sustainable entrepreneurial activities are placed within the larger context of sustainable development and business transition. The author seeks to respond to extant literature which highlight a disconnect between sustainable development, entrepreneurship and BMs (e.g. Jolink and Niesten 2015; Dyllick and Muff 2016). Given the interest in both organizational and individual aspects for social change, the conceptual framework is grounded in the assumption that the BM is the mechanism for converting vison and strategy into practice and generating value (Rauter *et al.* 2017). To this end, the BM provides the best consolidation of the entrepreneur's missions and their intended impact on society and business practices, yet few empirical studies have, in fact, examined this relationship (cf. Jolink and Niesten 2015). Most literature on sustainable entrepreneurship focuses predominantly on the identification of the sustainable entrepreneur (e.g. Brieger and De Clercq 2019; Kirkwood and Walton 2010) or the start-up (e.g. Schaltegger 2002; Isaak 2002; Bergset and Fichter 2015). Consequently, this places an overemphasis on the type of sustainability orientation without accounting for the decisions and actions that precede the business creation nor how these may fit within visions of broader value creation (Muñoz and Cohen 2018a). This results in an apparent oversimplification of the process of sustainable entrepreneurship as a subfield of entrepreneurship and risks neglecting to embrace broader perspectives of value creation and the complexity of the phenomenon (Muñoz and Cohen 2018b).

In sum, while the concept of sustainable entrepreneurship has received increasing attention in academic literature (e.g. Patzelt and Shepherd 2011; Thompson *et al.* 2011), empirical studies remain limited on how processes of sustainable entrepreneurship unfold (cf. Belz and Binder 2017) and more specifically, on how much of this process depends on the BM as a tool for creating value that mitigates sustainability challenges (e.g. Kuckertz *et al.* 2019; Schaltegger *et al.* 2016). Extant literature suggests that the value created by sustainable BMs, particularly in young businesses, mirror the entrepreneur's personal motives and values (Shepherd and Patzelt 2011), yet in practice, this may depend on various stakeholder decisions and the industry structure (Hockerts and Wüstenhagen 2010). Understanding how entrepreneurs place their businesses within the wider context of sustainable development, respond to internal or external pressures, and engage with sustainability in practice can enable a greater understanding of sustainable entrepreneurship as its own field and the potential impacts it can have on society, the environment and business culture.

In order to gain a better understanding of the multi-faceted nature of sustainability and the role that entrepreneurship has in transitioning business practices towards sustainability, this study moves through three stages of inquiry. First, it seeks to understand how entrepreneurs make sense of and give meaning to their endeavours in the wider context of sustainable development and business transition towards sustainability. Second, it explores how these perceptions get integrated

into the BM and business development towards reaching its goals. Finally, this study investigates how the nexus of individual and organizational characteristics are combined in practice to deliver shared value towards business transition. The ultimate aim is to enhance the understanding of the sustainable entrepreneur as an agent of change and the BM as a tool for entrepreneurs to scale-up innovation and lead business transition to ensure a more sustainable future.

To fulfill this aim, the study seeks to answer the main conceptual research question by building on three specific research questions, each one representative of one of the stages detailed above. Taken together, the research questions demonstrate the entrepreneurial approach to integrating sustainability value into the business and generate potential for pushing business practices towards sustainability.

Main conceptual RQ: What is the role of sustainability-driven entrepreneurship in the transition towards sustainability in business?

RQ1: How do entrepreneurs understand sustainability and where do they place their business within the wider context of sustainable development?

RQ2: How are entrepreneurial motives and values matched with sustainability in the business model?

RQ3: How are these motives and values represented in the daily business functions and generate value?

1.2 Research approach

One of the main points of departure for this research is the adoption of a transdisciplinary approach to sustainability science. Merging the interdisciplinary field of entrepreneurial phenomena with sustainability science allows the researcher to embrace different forms of knowledge and methods to achieve their motives. The unit of analysis for this study is the entrepreneurial mindset behind the BM used for interweaving sustainability into the business's values, decisions and culture (Biloslavo *et al.* 2018). It further draws from Lüdeke-Freund *et al.*'s (2016) framework, The Hourglass Model, which "synthesizes and structures the most important elements of sustainability-oriented and shared value creation on a systems level" (21). The framework, described in Chapter 3.3, offers a way of thinking for shared value creation that can be linked to the entrepreneurial decision-making process that is embedded in strategic considerations and opportunity recognition.

The nature of the study requires an in-depth analysis of the company and its founders' values, perceptions and goals. For this reason, the study follows an interpretative phenomenological analysis (IPA) that relies on a case study approach to conducting research which allows the researcher to draw holistic and meaningful conclusions from real-life events (Yin 2009). Since the research questions posed for this study can be relevant in a wide number of cases and context,

they were kept broad and the focus was set on choosing an industry that meets certain criteria such as one that currently has a large environmental footprint yet possesses significant potential for innovation and adoption of more sustainable practices. As a result, the shipping container was chosen not only because of its international presence and essentiality for efficient transport and trade of goods, but because the modern shipping container builds on over six decades of knowledge and continues to inspire innovative solutions for environmental, political, cultural, social and economic challenges across several industries (Tomlinson 2009).

The research involves a case study on two start-ups that build on the same existing product, the shipping container, to provide innovative and sustainable transformation beginning in two very different industries, one is within the cargo shipping industry while the other began by targeting the events industry and has now expanded to several other industries. Both start-ups are using the same tool that was once catalytic for shipping goods and revolutionized global trade and are improving it to create inter-industry innovation and sustainability. The first start-up, AELER Technologies SA., is reinventing the traditional steel container into a smart, automated container with the potential to transform global logistics operations for the shipping industry, and the second start-up, Continest Technologies Plc. is developing foldable containers which are optimising logistics and short-term housing in several different industries, such events, military, medical and humanitarian. Both are improving a system that has been in existence for over 60 years and represent the extent through which a once innovative idea intended to benefit one particular industry has, as a result of entrepreneurial activity, generated innovation and value in several industries. According to extant theories on entrepreneurship (e.g. Larson 2000; Tilley and Young 2009), the principles on which these start-ups are built may play an important transformational role in their respective industries and strengthen their mission within the wider context of sustainable development. Inquiring how and where motives and values are matched with sustainability and integrated in their BM, as well as how they are envisioned for growth can shed light on the potential that the entrepreneurial businesses have to confront pre-existing industry structures, enter current value chains and drive business towards sustainability.

1.2.1 Scope

Terminology

Sustainability itself is a contested subject and the literature is filled with attempts to define it through the use of many terms such as sustainable development, human sustainability, social sustainability, ecological sustainability, environmental sustainability and corporate sustainability as well as aligned concepts under corporate social responsibility and sustainable entrepreneurship (Thompson *et al.* 2011). The original and most cited definition of sustainability comes from the Brundtland report (WCED 1987) which touches on environmental, social, and economic aspects of sustainable development such as the notion of resource limits (energy, materials, waste, and land); equitable access to constrained resources; intergenerational and intragenerational equity; and a progressive transformation of economy and society (Stubbs and Cocklin 2008). However, because there are a variety of sustainability worldviews presented in the literature which may cause

confusion, it is necessary to distinguish the concepts which apply to this study and the terms used to refer to them.

The three research questions resonate with three main interlinked concepts and phenomena: sustainable entrepreneurship (e.g. Shepherd and Patzelt 2011; Thompson *et al.* 2011), sustainable business models (e.g. Boons and Lüdeke-Freund 2013; Bocken *et al.* 2014) and shared value creation (e.g. Porter and Kramer 2019; Bocken *et al.* 2015). To link the meaning of the concepts more strongly with the process of sustainable development as opposed to the process of sustaining something, the concept sustainable business models and sustainable entrepreneurship will here-on-out be referred to as business models for sustainability (Lüdeke-Freund *et al.* 2016) and sustainability-driven entrepreneurship (Parrish 2010). The study employs the terms business models for sustainability (BMfS) and sustainability-driven entrepreneurship (SdE) in efforts to draw more attention to sustainability as a means of extending or developing broader forms of value in addition to preserving the existence of business, society and the nature environment (Shepherd and Patzelt 2011). In this respect, the concept of business sustainability as it pertains to this study is understood as a distinct approach to balance, at minimum, the requirements of the triple bottom line (TBL), i.e. people, planet, profit (Elkington 1998; Schlange 2009).

Additionally, entrepreneurship as a process of innovation is indifferent to the location of the entrepreneur, i.e. in a start-up, large corporation or non-profit organization, not does it depend on the initiating actor, i.e. an individual, a team or a company (Larson 2000). While entrepreneurial behaviour can unfold in established companies, i.e. intrapreneurship, as well as in young businesses, studies show that disruptive innovation (Christensen *et al.* 2015) disproportionately originates in smaller, entrepreneurial businesses, implying that entrepreneurial endeavours may have a stronger impact in the transition towards sustainable business and social change (Bergset and Fichter 2015; Walley and Taylor 2002). Furthermore, recent empirical research shows that established firms often improve on innovation by investing in incremental innovation processes or by buying out smaller firms (Hockerts and Wüstenhagen 2010). As a result, this study chooses to focus on SdE as it relates to young and emerging businesses.

The study differentiates between the terms value and values. The use of value in its singular form refers to outputs and outcomes from business activities, such as financial revenue or environmental and social impacts (Lüdeke-Freund *et al.* 2016). Values, on the other hand, imply subjective ideals expressed as beliefs, attitudes, perceptions and behaviours which are held as fundamental criteria for decision-making and evaluation by individuals, organisations and societies (Lüdeke-Freund *et al.* 2016). If not stated otherwise, the use of value in the singular will be used to refer to resulting or intended outcomes or outputs from business activities, and values in the plural as intrinsic guidelines that inform business perceptions and decisions for the intended outcome or output.

The author is also careful to employ the right terms to describe entrepreneurs and their businesses. Terms such as business venture and start-up are often used interchangeably in academic literature

however imply different journeys. Whereas a business venture typically forms out of the desire to build on existing structures, a start-up may have more of a focus on innovation and employs unconventional methods which require higher risk (Picincu 2018). Thus, a start-up is designed to grow faster than traditional business ventures that may experience slow, gradual growth with the goal of providing steady income. Another important difference is that entrepreneurs, associated with start-ups, embody a growth mindset that is highly flexible, adaptable and driven by passion and motivation of creating something new. Businessmen on the other hand, tend to walk a defined path focused on generating profit and growing their venture. While both acquire a tolerance for risk, one can say that a venture enters the market as player, while the start-up seeks to become a market leader (Picincu 2018). Even though the term venture is often used in entrepreneurial literature, the author finds the terms start-up and young business or company to be more aligned with the nature of this study.

Analytical angle

Finally, this study adopts a business perspective on sustainability rather than a policy one. The focus is on the entrepreneur and their model for business value creation for themselves and for their stakeholders. Societal challenges and potential sustainability solutions are thus examined and described from a point of view of entrepreneurial business as it strives to succeed a competitive market context. While the author acknowledges that businesses are influenced and shaped by laws and public policies, they and other government interventions are taken as contingencies (Lüdeke-Freund *et al.* 2016). With that said, any dealings with sustainability and shared value creation inevitably requires an understanding of environmental and social issues which to a certain degree are surrounded by public policy frameworks and governmental action (Meek *et al.*2010). By extending the classic BM design that "yields value propositions that are compelling to customers, achieve advantageous cost and risk structures, and enable significant value capture" (Teece 2010, 174) together with the sustainability-driven (Sd-) entrepreneurial mindset, the business perspective of this study enables a more detailed analysis of the core BM functions as they create, deliver and capture broader value through relevant value proposition (Richardson 2008).

1.2.2 Significance of study

This study combines aspects of theory from the fields of entrepreneurship, management, institutional, environmental economic and psychology to help explain the multi-faceted and trans-disciplinary nature of sustainability challenges in business. This study also comes at a time when businesses concerned with social and environmental issues are moving into the mainstream. For the first time in the history environmental concerns dominate the top long-term risks by likelihood in the Global Risks Perception Survey by the World Economic Forum (WEF 2020). Indeed, the urgency for innovating practices in business has never been more relevant as pressures from climate change and accelerated biodiversity loss continue to warn severe economic, social and environmental consequences.

This calls to an increasing need for contributions to the field business sustainability that recognizes SdE as the engine of sustainable development. The exploratory and interpretative nature of this thesis helps to generate new ideas which may otherwise be missed from other methods and helps to bridge a gap between real-life experiences and conflicting theoretical concepts. In so doing, the results lead to greater clarity on how sustainability may shift from theory to practice and propose an integrative conception of entrepreneurial action embedded in complex, real-life situations and interactions that embrace emerging ideologies and business orientation for sustainable development. The study offers a framework for studying the Sd-entrepreneurial process of developing a business that moves beyond the TBL mentality (Elkington 1998) and towards a more nuanced and conceptualization of the phenomenon. To this end, this thesis serves to advance the nascent field of SdE that is currently fragmented and heterogenous.

1.2.3 Audience

The aim of this study to appeal to a variety of actors from different disciplines. This includes the academic community, entrepreneurs, students and other practitioners. It is considered that each audience may have differing degrees of interests and expectations from the present study. Considering this diversity, the research has been designed with the primary objective of remaining accessible and relevant to a wide audience. The aim is to build on the rich body of literature by taking a systemic view of the concepts and frameworks proposed in the academic publications. Together with an overall framework rationale, the attempt is to integrate the greater notion of BMfS and shared value with more practical issues of entrepreneurial business development. The process of defining the problem and developing the research design was, as a result, undertaken to create a balance between uniqueness and accessibility.

1.3 Disposition

This thesis follows a linear-analytic structure, beginning with the introductions and then a review of prior publications on the SdE in Chapter 2 and BMfS in Chapter 3. The thesis then proceeds to cover the methods used in this study and details of every step in the empirical research process in Chapter 4. This chapter is of essential importance because provides the frame for the thesis, describing the steps that were taken to add validity and reliability to the research process and the conclusions that were drawn. Following this chapter, is an introduction to context of the case studies and a company description of start-ups involved in Chapter 5. The findings and analysis of the case studies follow subsequently in Chapter 6, and the following Chapter 7 is devoted to discussing the findings together with some theoretical propositions developed and presented against extant literature. The thesis concludes with some final thoughts on the results from the study and suggestions for further research in Chapter 8.

2 Sustainability-driven entrepreneurship

Origins

The emergence of the field in its modern form can be dated back to the seminal works of Schumpeter (1934; 1942) and Kirzner (1973). Schumpeter (1934) viewed entrepreneurs as a "gale of creative destruction" with the potential to transform technology, products and society by disrupting the existing market equilibrium (Larson 2000; Schumpeter 1934). Creative destruction is described by "the process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, [and] incessantly creating a new one" (Schumpeter 1934). Coming from a different angle, Kirzner's (1973) entrepreneurial action arises from an awareness and alertness of market disequilibrium, which allows for "human choice, imagination, and boldness to play central roles in a world of imperfect information" (Thompson *et al.* 2011, 223). For Kirzner (1973), entrepreneurs move the market from initial disequilibrium toward equilibrium. The essence of these two theories lie in the potency of the entrepreneurial mindset to nudge market transitions towards new or better directions. The entrepreneur, in this sense, is an innovator who discovers profit opportunities and develops products, processes, strategies which have either not existed previously or been underutilised (Tülüce and Yurtkur 2015). Regardless of the point of departure, it is agreed that entrepreneurs represent a dynamic engine of capitalism (Shane and Venkataraman 2000) by responding to existing or future imbalances (Schumpeter 1934; Kirzner 1973), identifying market opportunities (Cohen and Winn 2007; Dean and McMullen 2007) and developing innovative approaches to exploit them (Tülüce and Yurtkur 2015).

Key concepts and distinctions

Until recent decades, the study of entrepreneurship had focused on why certain individuals become entrepreneurs or not (e.g. Schumpeter 1934; Kirzner 1973), rather than the types of entrepreneurs they become (Shane and Venkataraman 2000; Thompson *et al.* 2011). Today, the growing field represents an expansion of scholars' interests in traditional entrepreneurship toward understanding the similarities and differences between the key concepts, methods, intentions and disciplinary roots of overlapping concepts such as commercial, environmental, social entrepreneurship and SdE (Thompson *et al.* 2011). More specifically, entrepreneurship research is paying increasingly attention to instances where entrepreneurial activity creates outcomes motivated by the pursuit of multiple goals that reach beyond economic profitability (e.g. Shepherd and Patzelt 2011). This has led to a surge of studies on the various forms of entrepreneurship without defined boundaries or consensus among scholars, creating overlaps in theory building and empirical research and causing fragmentation in the field (Venkataraman 1997; Thompson *et al.* 2011; Schaefer *et al.* 2015).

Unlike traditional entrepreneurship, which mainly focuses on economic development (Shane and Venkataraman 2000), SdE includes the pursuit of social and environmental goals rooted in the understanding of sustainable development as defined by the Brundtland Report (WCED 1987; Stubbs 2017). The maturing field, driven by a community of scholars with varying interests, can be viewed as an encapsulation of social, environmental and economic entrepreneurial activities. Belz and Binder (2017) propose two perspectives which various understandings typically fall into.

One group of scholars place SdE activities as a means to achieve sustainable development and a TBL (e.g. Parrish 2010; Schlange 2009; Young and Tilley 2006) and the other view these objectives as aligned with the process of entrepreneurship and embedded in the entrepreneur's mindset, intentions and ability to pursue opportunities for sustainable development (e.g. Cohen and Winn 2007; Dean and McMullen 2007; Shepherd and Patzelt 2011). In line with the latter, this study understands SdE as "supporting a combination of social equity, economic stability, and reducing environmental degradation through entrepreneurial action" which creates "bottom-up solutions to transform and redirect the path of socio-economic development toward sustainable development" (Thompson *et al.* 2011, 214). The field of SdE thus integrates sustainable development into goal setting and organizational processes and uses economic goals as both means and ends that contribute to solving societal and environmental problems through the realization of a successful business (Muñoz and Cohen 2018b).

The central requirement behind SdE is that in pursuit of profit and purpose, business activities must not undermine the ecological and social environments in which they operate (Stubbs 2017; Shepherd and Patzelt 2011). Instead, SdE activities must strive to restore or maintain the balance between natural, social and economic environments (Parrish 2010). Muñoz and Cohen (2018b) frame such activities as seeking to combine the best of both worlds by "initiating those activities and processes that lead to the development of profitable opportunities while contributing to sustainable development" (301). Social and environmental entrepreneurship on the other hand, are two subfield of sustainable entrepreneurship which are distinguishable in terms of their organization and outcomes.

Social entrepreneurship can be defined as the application of the entrepreneurial approach towards meeting societal goals (Schaltegger and Wagner 2011). According to Shepherd and Patzelt (2011), social entrepreneurship pertains to the development of (non-economic) gains for individuals or societies but do not necessarily sustain current states of nature, sources of life support and community. Belz and Binder (2017) summarize three main differences between social and SdE based on the multiplicity of goals, the notion of equity and the type of organization. While SdE embodies the simultaneous pursuit of the economic viability, social equity *and* environmental security, social entrepreneurship may just be confined with the pursuit of a double bottom line (i.e. social and economic goals) (Thompson *et al.* 2011). The second difference can be found in the root of the terms. The word "sustainable" stems from the concept of sustainable development defined by meeting the needs of present and future generation and thus takes intra- (present) and inter-generational (future) objectives (Belz and Binder 2017; Shepherd and Patzelt 2011). On the other hand, social entrepreneurship is primarily dedicated to problems affecting societies today and thus an intra-generational pursuit. Finally, Belz and Binder (2017) prescribe the third difference to the organizational characteristics of the two concepts. Building on the above two factors, social entrepreneurship is considered closer to the organizational structure of philanthropic and not-for-profit businesses while SdE denotes for-profit and pursuit-driven businesses. To sum up, scholars view social entrepreneurship as above all a social change activity

with the potential outcome of economic value (e.g. Haugh and Talwar 2016; Calás *et al.* 2009; Dey and Mason 2018).

Environmental entrepreneurship on the other hand, arises from the profit opportunities that try to remedy environmental degradation. This subfield is aimed at resolving "environmental challenges by overcoming barriers to the efficient functioning of markets for environmental resources" (Dean and McMullen 2007, 51). Dean and McMullen (2007) summarize the concept as the process of discovering, evaluating and exploiting economic opportunities that are present in environmentally relevant externalities. As opposed to social entrepreneurship, environmental entrepreneurship includes profitability as one of its aims which brings it closer in objective to SdE. In fact, several authors refer to this kind of entrepreneurial activity that is motivated by making money while solving environmental problems as "ecopreneruship" (e.g. Gibbs 2009; Kirkwood and Walton 2010; Schaltegger 2002; Schaltegger and Wagner 2011; Shepherd and Patzelt 2011). While the two terms are often interchanged in literature, ecopreneruship is not synonymous with SdE because it does not explicitly cover the aim of creating of non-economic gains for individuals and societies (Shepherd and Patzelt 2011). In addition, the emphasis on making money as a means or an end of ecopreneurship is subject to debate among current SdE scholars, and often relies on the theoretical lens through which the study is undertaken (e.g. Jolink and Niesten 2015; Tilley and Young 2009). Aside from economic theorists, the majority of scholars consider that ecopreneurship is motivated primarily by achieving an environmental target and secondly by financial profit, but also stress that the former is heavily dependent on the success of the latter (Schaltegger and Wagner 2011; York *et al.* 2016). Table 2-1 below illustrates the three subfields of SdE with the five defining dimensions for characterization borrowed from Schaltegger and Wagner (2011).

Table 2-1 The different kinds of sustainability orientations in entrepreneurship.

	Core motivation	**Main goal**	**Role of economic goals**	**Role of non-economic goals**	**Organizational development challenges**
Social Entrepreneurship	Contribute to solving societal problems and create value for society	Achieve societal goal and secure funding to achieve this	Means	Societal goals as ends	From focus on societal issues to integrating economic issues
Ecopreneurship	Contribute to solving environmental problems and create economic value	Earn money by solving environmental problems	Ends	Environmental issues as integrated core element	From focus on environmental issues to integrating economic issues
Sustainability-driven Entrepreneurship	Contribute to solving societal and environmental problems through the realization of a successful business	Creating sustainable development through entrepreneurial activities	Means and ends	Core element of integrated end to contribute to sustainable development	From small contribution to large contribution to sustainable development

(Adapted from Schaltegger and Wagner 2011)

To provide a systemic review and analysis of SdE, the literature review on entrepreneurship theory will build on Sahlman's (1997) framework that captures four interdependent factors that are critical to the entrepreneurial phenomenon: the people, the opportunity, the context and the outcome. In the following chapters, these will be labelled as: the sustainability-driven entrepreneur, opportunities for sustainability-driven entrepreneurship, the sustainability-driven start-up and outcomes from sustainability-driven entrepreneurship. The assumption behind the framework is that "businesses have attributes that are easy to identify but hard to assemble" (Sahlman 1997, 100) and any analysis of value creation from Sd-entrepreneurial activity should beforehand examine the essential interrelated components which make up its existence.

2.1 The sustainability-driven entrepreneur

Extant literature that attempts to differentiate between Sd-entrepreneurs can be divided into two pathways (Jolink and Niesten 2015): those concerned with identifying the orientations, motivations and intentions of Sd-entrepreneurs (e.g. Reynolds *et al.* 2018; Kirkwood and Walton 2010; Vuorio *et al.* 2018) and those that attempt to define, categorize and explain the many-faced groups of Sd-entrepreneurs with frameworks and typologies (e.g. Schaltegger 2002; Linnanen 2002; Walley and Taylor 2002).

The Sd-entrepreneur is an individual who participates in the creation or development of an economically viable business that aims to provide ecological and social benefits. Brieger and De Clercq (2019) propose that individuals who participate in the development of such businesses differentiate from conventional entrepreneurs based on the presence of particular individual and socio-cultural level resources that prompt them to develop social and ecological goals. A review by Muñoz and Cohen (2018b) suggests that the degree of sustainability orientation of the entrepreneur depends on six characteristics: prior knowledge and skills, self-efficacy, motivation and intention, values and attitudes, business orientation and moral cognition. Among these, prior knowledge and business orientation are considered to be central variables which lead individuals to create sustainability-driven businesses. Some scholars suggest that entrepreneurs who are interested or already involved in ecological and social environments are even more likely to be drawn to entrepreneurial opportunities that contribute to sustainable development, even if they might not intend to personally pursue such opportunities (Meek *et al.* 2010; Shepherd and Patzelt 2011). Additionally, Brieger and De Clercq (2019) find that in general, entrepreneurs are highly influenced by the social and environmental contexts in which them find themselves, which as a result shapes their willingness to address social and ecological issues.

Self-identity and self-efficacy of entrepreneurs informs the logic and purpose for business creation. Together with prior knowledge, self-efficacy plays a central role in motivating entrepreneurial action through the belief in one's own capabilities which in turn enables the cognitive, social, linguistic and physical skills to pursue such goals (Vuorio *et al.* 2018). According to Muñoz and Cohen (2018b), developing an orientation and motivation towards SdE is to "mobilize several sustainability values, such as equality, solidarity, freedom, tolerance, respect for nature and shared

responsibility, which guide their ambitions, frame their attitudes and provide standards against which their behaviour can be observed and assessed" (310). Moral cognition that gives rise to SdE is based on an equanimity between the self, other people and nature (Parrish 2010). Altruistic values as a result have been found to guide individual attitudes towards sustainability while intrinsic (i.e. creativity and problem solving) and extrinsic (i.e. personal gain) rewards guide the intentions of engaging with entrepreneurship (Vuorio *et al.* 2018). These personal experiences, knowledge and skills which make up the sustainability orientation of an entrepreneur, also affect the level of motivation they will develop for addressing sustainability in business. Kirkwood and Walton (2010) define five factors that motivate entrepreneurs to address environmental issues through their business. These are: green values, earning a living, passion, being their own boss and seeing a gap in the market. Aside from green values, these motivations are similar to those of entrepreneurs in general, minus the fact that, according to Kirkwood and Walton (2010), ecopreneurs place less emphasis of financial motivations. The authors denote the existence of push (negative) and pull (opportunity) factors that influence an individual's motivation level and find that ecopreneurs are predominantly guided by pull factors, which increase the likelihood of success. Their study conforms with the general assumption in the literature on SdE that Sd-entrepreneurs are more driven by a socio-ecological compass than traditional entrepreneurs.

Muñoz and Cohen (2018a) on the other hand, define motivational factors as they emerge from the narratives that entrepreneurs use which underly how they perceive and understand SdE. For example, they define three main narratives in their findings which articulate the pursuit of change and value creation for Sd-entrepreneurs: (i) the new path forward, (ii) a new responsibility for entrepreneurship and (iii) a new business ideology. Based on these three archetypes, the authors find that Sd-entrepreneurs self-identify and frame their logic for business creation according to their vision of the future and intended outcomes. These as a result guide the entrepreneur's actions and serve to legitimize the development of their businesses (Muñoz and Cohen 2018a). The process of legitimation is also argued to rely significantly on how well the entrepreneur can communicate their sustainability intentions during the start-up process (Reynolds *et al.* 2018). According to O'Neil and Ucbasaran (2016) being able to skilfully balance both what matters to the founder(s) and to the stakeholders in the business development leads to greater success in legitimizing the business without compromising the entrepreneur's own values and beliefs. Additionally, Tennant (2015) finds that reflecting on existing cultural and institutional factors as well as one's own experiences is the key to successful entrepreneurship. In fact, Sd-entrepreneurs are believed to periodically engage in critical reflection about their own goals and those of their stakeholders as a way of increasing the legitimacy of their business (O'Neil and Ucbasaran 2016; Schaefer *et al.* 2015).

There are a range of typologies characterising Sd-entrepreneurs in the literature. Table 2-2 summarizes some typologies identified that gather characteristics relevant to the Sd-entrepreneur. Linnanen (2002) identifies four types of environmental entrepreneurs, i.e. the self-employer, non-profit business, opportunist and successful idealist which are classified according to two criteria:

the desire to change the world and the desire to make money. Out of the four types, only the successful idealist builds a "dynamic equilibrium" between the two dimensions by virtue of positive feedback loops from customers and stakeholders, "providing additional momentum for positive business results and further strengthening the entrepreneurial motivation" (Linnanen 2002, 79). Schaltegger (2002) on the other hand, classifies entrepreneurial actors which place environmental goals as their core business goal into three categories and distinguishes between them based on their market effect: alternative activists, bioneers and ecopreneurs. A method to recognize these actors in practice, he argues, would be on their desire to achieve a large market share or having influence on competitors to take similar action. This leads to a fluidity of boundaries between the types of actors if they increase their market share, for example when bioneers move from a niche market to the mass market and become ecopreneurs.

Walley and Taylor (2002) offer a further typology that differentiates between Sd-entrepreneurs based on the nature of their contribution to society, deriving from their initial orientations and experiences. They define innovative opportunists, visionary champions, ethical mavericks and ad hoc enviropreneurs. The four "ideal types" result from an intersection between economic and sustainability orientations and external hard (i.e. regulations) and soft (i.e. personal networks) structural influences (Walley and Taylor 2002). In this manner, the innovative opportunist and the ad hoc enviropreneur are mostly economically driven and are differentiated based on the degree of influence from hard and soft structural factors, while the visionary champion and ethical maverick are much more sustainability driven. Their central argument rests on the reciprocal relationship between entrepreneurial action and socio-economic structures which in turn shape the respective evolutions and, similar to Schaltegger (2002), allows the entrepreneurs to move from one ideal to the next over time (Walley and Taylor 2002). It can be concluded that the typologies of Sd-entrepreneurs in the literature are wide-ranging and do not only include individuals with strong sustainability ideals. They all, nevertheless, result from the perceived desire to balance the three dimensions of economic, ecological and socio-ethical sustainability (Walley and Taylor 2002).

Table 2-2 Some typologies of sustainability-driven entrepreneurs from the literature.

Author (year)	Main characteristics of typology	Typology (actor types)	Central social unit	Main purpose of the typology
Linnanen (2002) "Environmental entrepreneurs"	Internal motivation: the desire to change the world and the desire to make money and grow the business	- Self-employer - Non-profit business - Opportunist - Successful idealist	Mixture of organisations and individuals	Unspecified
Schaltegger (2002) "Ecopreneurs"	Degree of environmental orientation of a company's core business and the market impact of the company	- Alternative actors - Bioneers - Ecopreneurs	Individuals and their role in a company	Framework provides a reference for founders or managers to introduce ecopreneurship
Walley and Taylor (2002) "Green entrepreneurs"	Internal motivation and external (hard and soft) structural influences	- Innovative opportunists - Visionary champions - Ethical mavericks - Ad hoc enviropreneurs	Interrelation between persons and external structures	Contribute to further research into ways of fostering SdE

(Adapted from Bergset and Fichter 2015)

2.2 Opportunities for sustainability-driven entrepreneurship

Opportunities for business creation are at the heart of entrepreneurship theory and many researchers have theorized on where and how they arise as well as what makes them attractive to SdE and what impact they can have for sustainable development. From an economics perspective, Dean and McMullen (2007) propose that "entrepreneurial action can overcome barriers to the efficient functioning of markets to contribute to the more efficient use of environmental and natural resources and the development of a more ecologically sustainable economy" (69). In this vein, opportunities for sustainability enable the pursuit of solutions that simultaneously address environmental and social issues while providing economic profit for the entrepreneur. Such opportunities are different from traditional business opportunities not only in terms of complexity but by supporting the well-being of natural and social environments in addition to providing greater business efficiency and economic profit for the entrepreneur and their stakeholders (Muñoz and Cohen 2018b; Shepherd and Patzelt 2011).

Extant research can be divided between opportunities seen as arising from market imperfections (e.g. Cohen and Winn 2007; Dean and McMullen 2007) and those from the characteristics of the entrepreneur (Muñoz and Dimov 2015; Larson 2000). The seminal works from Cohen and Winn (2007) and Dean and McMullen (2007) are known for advancing the environmental economic

view that the market failures[4] apparent in economic systems provide fertile ground for Sd-entrepreneurial action. According to them, negative externalities such as environmental degradation caused by market developments may offer business opportunities for entrepreneurs to simultaneously create or improve markets and enhance ecological sustainability. Dean and McMullen (2007) suggest that the "magnitude of potential opportunities for sustainable entrepreneurship corresponds to the level of degradation of economically valuable environmental resources" (53). They outline five categories of market failure: public goods, externalities, monopoly power, inappropriate government intervention, and imperfect information (Dean and McMullen 2007). Cohen and Winn (2007) similarly focus on pervasive ecology-related market imperfections and identify four types that can lead to Sd-entrepreneurial opportunities for improving social and ecological conditions: inefficiency in firms, negative externalities, flawed pricing mechanisms and information distortion.

The idea that some market imperfections or "disequilibrium" result from environmental negligence brings to light the fact that most natural and social processes that are essential to human and industrial progress, such as ecosystem services, are not traditionally defined in terms of economic value (Shepherd and Patzelt 2011). These components of the environment that are "directly enjoyed, consumed or used to yield human well-being" are often considered as free resources and excluded from market value (Shepherd and Patzelt 2011, 145). As a result of unchecked industrial activity, these components become market failures and can be threatening to communities with strong ties to public environmental resources (Shepherd and Patzelt 2011). Some scholars believe that entrepreneurship arising from such opportunities found in market failures can provide solutions to increase incentives to protect natural resources and in turn sustain the communities that are reliant on them (Tilley and Young 2009). In many ways, these arguments go back to the roots of Kirzner's (1973) vision of entrepreneurial activity as a process of stimulating change in society by discovering business opportunities in market disequilibrium, then making corrections and creating a new equilibrium. It is important to note however that in some cases, efforts to overcome a market failure in one aspect of the environment may actually lead to the creation of a market failure that degrades a different aspect of the environment (Shepherd and Patzelt 2011).

Taking a more philosophical view, York and Venkataraman (2010) build a framework that details three factors of the entrepreneurial process which define opportunities by virtue of addressing environmental uncertainty, innovation and resource allocation. They address the opportunities through which entrepreneurial action can target environmental issues while enhancing economic and ecological value and create personal and societal wealth (York and Venkataraman 2010). From the moment of alertness of an environment-related business opportunity, Shepherd and Patzelt (2011) describe the process of seizing the opportunity as moving from a third-person perspective,

[4] Defined as the failure of an idealized system of price-market institutions to implement all possible gains through trade (Dean and McMullen 2007).

whereby an individual recognises an opportunity that is open to anyone, to a first-person perspective, when doubt is overcame and the individual connects the opportunity with his or her self-efficacy and orientation (Vuorio *et al.* 2018). This process of recognizing an opportunity for SdE can be described as "an innovative, market-oriented and personality driven form of creating economic and societal value by means of break-through environmentally or socially beneficial market or institutional innovations" (Schaltegger and Wagner 2011, 226).

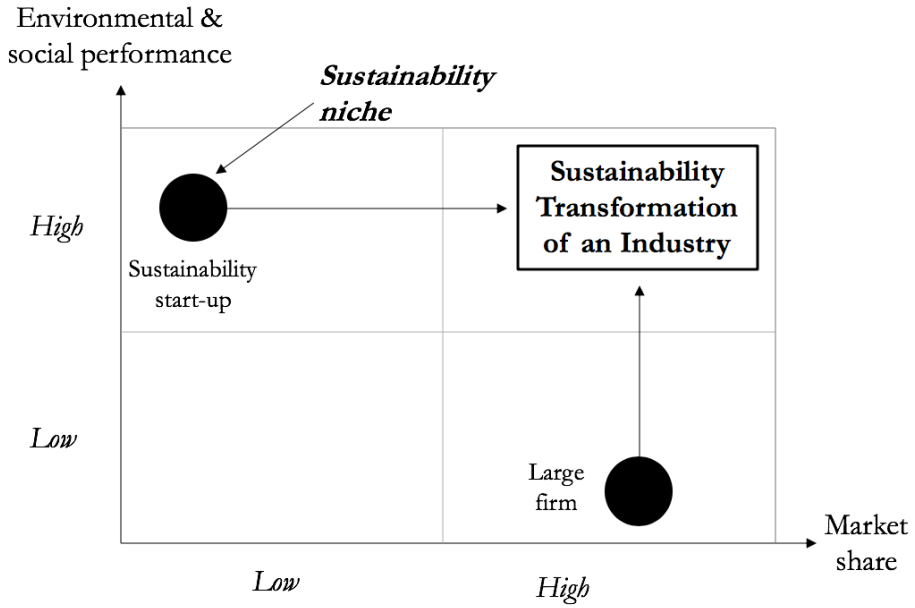
York and Venkataraman (2010) also argue that entrepreneurship may under certain conditions surpass efforts of governments, NGOs or existing firms to achieve sustainability. Entrepreneurial activity in this sense is seen as the panacea for not only market failures but also for institutional failures (Hall *et al.* 2010). Pacheco *et al.* (2010) suggest that proactive entrepreneurs are not only alert to imperfections within existing markets but may also actively develop the institutions that support the allocation of environmental resources and practices in the process of their endeavours. As a result, by creating developmental gains for the environment, entrepreneurial action for sustainability can cause institutional changes that indirectly contribute to community well-being (Shepherd and Patzelt 2011). On the other hand, extant literature also highlights that "the ability of the entrepreneur to recognise and realise an opportunity is conditioned by the dynamic between the entrepreneur and the social structure (context or local situation)" (Tilley and Young 2009, 84–85). In this view, SdE realises opportunities for business along a TBL through targeting environmentally related market failures according to the entrepreneur's understanding of the social and environmental context, values and norms in which they, themselves, are embedded (Brieger and De Clercq 2019).

2.3 The sustainability-driven start-up

A Sd-start-up requires the alignment of many contextual factors in order to succeed. Similar to the characteristics of the entrepreneur, the values and motives instilled into the company development decidedly determine the structure and potential impact of the Sd-business (Schlange 2009). According to Linnanen (2002), young Sd-businesses typically face three main barriers, the challenge of market creation, the finance barrier and the ethical justification for existence. The first barrier refers to the attempt of the business to create a market for their sustainable products or services (Schaltegger and Wagner 2011) or enter a niche market to later achieve mass market integration (Hockerts and Wüstenhagen 2010). Market-entry strategies are one such example which may be more difficult for Sd-businesses because the financial community may not be aligned yet with environmental or ethical innovations (Linnanen 2002). The challenge is also the diffusion of environmental and social awareness in existing institutions and, even more so, a change in consumer behaviour that may be slow (Linnanen 2002). Gibbs (2009) suggests that a method for ecological start-ups to enter markets is through strategic niches. He emphasises the role of innovative technological strategic niches as "nurturing sociotechnical configurations", which grow and eventually displace corporate regime activities (Gibbs 2009, 68). On a similar note, Hockerts and Wüstenhagen (2010) theorise that the compounded impact of young businesses, "Emerging Davids", and multinational incumbents, "Greening Goliaths", speed this process up and drive

sustainable transformation of industries. In their view, young businesses are more likely than larger firms to pursue sustainability-related innovation but rely on the support from these large firms to catch onto the innovation and bring it into the mass market (Hockerts and Wüstenhagen 2010). As a result, it is their compounded impacts that drive sustainable development and the transformation of business (Figure 2-1).

Figure 2-1 The co-evolution of sustainability start-ups and large firms towards the sustainability transformation of an industry.



(Adapted from Hockerts and Wüstenhagen 2010)

Due to their financial resources and process innovation capabilities, larger firms may catch-up with the innovation begun by entrepreneurial businesses by integrating the innovation, buying out the start-up or risk going out of business completely (Daepp *et al.* 2015; Hockerts and Wüstenhagen 2010). In fact, recent reports by Credit Suisse and Innosight show declines in corporate longevity from 60 years in the 1950s to less than 20 years today. This is due to rapidly emerging technological start-ups which are causing disruption at a greater speed and complexity, making it difficult for larger firms to keep up (Anthony *et al.* 2018; Klerk *et al.* 2017). While start-ups may enter a niche market for their products or services, when larger, cost-driven firms join in, they drive the prices down and extend the accessibility of the products of higher social and environmental quality for a wider part of the market (Hockerts and Wüstenhagen 2010). Although in some cases this may negatively impact the sustainability quality of the produces or services, research has shown that these cycles of development contribute positively to the transformation of business practices towards sustainable development (Hockerts and Wüstenhagen 2010; Pacheco *et al.* 2010).

Linnanen (2002) also proposes that start-ups with products or services with high environmental and social benefits may find it hard to find investors who share their objectives and ideals by virtue of inexperience with investments on the part of the entrepreneur or a resistance to change from

industry actors. Schaltegger *et al.* (2012) argue that this requires the Sd-entrepreneur to develop a strong business case for sustainability that not only responds to social or environmental demands but also places a focus on profitability. Pacheco *et al.* (2010) warn however that this may cause entrepreneurs to feel they need to make some difficult trade-offs between the goals of environmental, social and economic sustainability in a TBL (Bergset and Fichter 2015). According to Pacheco *et al.* (2010), this paradox arises when entrepreneurs face a system of incentives or challenges that compel them to downgrade their sustainability practices in order to satisfy market actors. Transcending this implies "escaping the green prison" by using strategies such as collective action through partnerships with industry and civil organizations that result in changing the competitive rules of the game and transform institutional structures (i.e. social norms, property rights and legislation) towards sustainability (Pacheco *et al.* 2010).

Escaping this green prison may also have the dual effect of strengthening the legitimacy of the business, especially as external contextual factors such as informal and formal institutional structures may interfere with sustainability-related strategic goals (Freimann *et al.* 2010). Drawing from institutional entrepreneurship theory, some scholars demonstrate that reconciling relationships with external actors represent an effective way to interact with institutional structures (Schlange 2009). How entrepreneurs perceive stakeholder relationships for example can be a large driver of sustainability, and appropriate management of stakeholders through identity coupling, i.e. enabling stakeholders to self-select based on their own incentives (York *et al.* 2016), motivates stakeholders to support Sd-business development (Schlange 2009).

Informal structures such as social institutions can also positively foster the creation of environmental and social activity which are instrumental for generating entrepreneurial value beyond market integration (Pacheco *et al.* 2010). For example, social norms promote the rules of conduct that include state-sponsored incentives, consumption patterns, norms of conformity and family interdependence which all influence individual decision-making for the founding and direction of a Sd-business (Meek *et al.* 2010). On the other hand, formal institutional structures such as government-led regulations and policy interventions can contribute to the survival of a business in its early stages of development but also be limiting in later stages (Shepherd and Patzelt 2011). In this view, Sd-businesses are able contribute to sustainable development and the sustenance of larger social-ecological systems by virtue of being embedded within these systems and mutually influence each other (Walley and Taylor 2002). The many elements within and outside the control of the entrepreneur will thus create the context in which the development of the business takes place. Appropriate conditions not only determine the creation of social, environmental and economic value but also help to mitigate market incentives that compel entrepreneurs to engage in activities that would be unproductive or destructive to social and ecological environments (Pacheco *et al.* 2010).

To bring this into context, Isaak (2002) makes a distinction between two types of Sd-businesses: green business and green-green business. A green business is a business that has "discovered the cost and innovation and marketing advantages, if not the ethical arguments, for greening their

existing enterprise" (Isaak 2002, 82). On the other hand, a green-green business involves those companies that are simultaneously designed to include environmental, social and ethical qualities in their products and processes from the onset and strive to push towards transforming sectors towards sustainability (Jolink and Niesten 2015). These could also be viewed in terms of aiming to improve the present state of the world (green businesses) or to create a better world (green-green businesses) and also achieve their financial goals. The interactive nature of social and environmental circumstances with economic motivations "lead to different approaches to capture value and consequently to different degrees of effectiveness to transform the industry" (Jolink and Niesten 2015, 400). As a result, Isaak (2002) also proposes a learning curve initiated by green-green business that moves society from decadence to reformism, then to creation and untimely sustainable economic growth.

In order to systematically assess the characteristics that distinguish different types of Sd-businesses, Bergset and Fichter (2015) propose dividing them into overarching categories: product/service-related characteristics, entrepreneur-related characteristics and strategy-related characteristics. These categories help to understand how sustainability-related issues impact the most important aspects of a young company, i.e the value proposition (the product/service), the team (the entrepreneurs) and the BM (strategy), and help to clarify the spectrum of opportunities and challenges each type of Sd-business may face. They define five typologies of Sd-start-ups: the alternative start-up, the visionary start-up, the inventive start-up, the ecopreneurial start-up and the unintentionally green start-up. These are illustrated in Table 2-2 along with the extent to which their values relate to more specific characteristics.

The **alternative start-up** can likened to the ethical maverick (Walley and Taylor 2002), the self-employer and non-profit business (Linnanen 2002) as well as Schaltegger's (2002) alternative activist described in Chapter 2.1 of this study. They are motivated by sustainability and their desire to limit their own negative impact. These start-ups typically operate on the boundaries of the market economy and can be seen as part of the slow growth movement[5]. They also strive to retain all decision-making power and as a result are generally distrusting towards external investors.

In the **visionary start-up**, Linnanen's (2002) successful idealist and Walley and Taylor's (2002) visionary champion can be found. They are motivated by the desire to create change in the world and perceive business activity as a means to achieve their end. They are thus growth oriented and aim to achieve a mass-market presence on a global scale but may not be willing to compromise their sustainability principles or yield control in the process.

The **inventive start-up**, like Schaltegger's (2002) bioneers, strive to enter niche markets and the entrepreneurial team behind this start-up are likely highly technically skilled and creative.

[5] A movement trying to reclaim time and slow down the ever-increasing pace of modern life and economy (Bergset and Fichter 2015).

These start-ups may be more socially driven than others yet retain the desire for financial profitability. Here, growth is not necessarily a goal unless the start-up strives to transition to an ecopreneurial start-up (cf. Schaltegger 2002), and in this case, their BM may be along the lines of high risk, high-tech development.

The **ecopreneurial start-up** combines Linnanen's (2002) opportunist, Walley and Taylor's (2002) innovative opportunist and Schaltegger's (2002) ecopreneur in highly motivated and economically driven businesses aiming for mass market integration. These businesses are opportunistic yet try to achieve balance within different sustainability aspects. They also tend to rely heavily on larger networks to achieve rapid growth and success. Their method of working may be the most compatible with current market logic but do not necessarily share the same mindset as conventional entrepreneurs.

Finally, the **unintentionally green start-up** includes Walley and Taylor's (2002) as hoc enviropreneurs as small business owners who may be primarily oriented towards economic profit yet find themselves on the right side of the fence when it comes to sustainability in business. They may not be aware that positive environmental and social effects are resulting from their products or services and thus unintentionally contribute to sustainability. This category of Sd-entrepreneurs matches some findings that sustainability innovation may occur by chance (Gast *et al.* 2017; Walley and Taylor 2002).

Table 2-3 Types and characteristics of Sd-start-up.

	The alternative start-up	The visionary start-up	The inventive start-up	The ecopreneurial start-up	The unintentionally green start-up
Product/service-related characteristics					
Product/service quality	High	High	High	Low-medium	Medium-high
Long-term focus	High	High	High	Low-medium	Medium-high
Need-orientation	High	High	Low-medium	Low-medium	Low-medium
Entrepreneur-related characteristics					
Sustainability-related motivation	High	High	Medium	Low	Low
Use of guiding sustainability principles	High	High	Medium	Low-medium	Low-medium
Level of business qualification	Low	Medium	Low-medium	High	Medium-high
Strategy-related characteristics					
Level of market-orientation	Low	Medium	Medium-high	High	Medium-high
Growth willingness	Low	Medium-high	Medium-high	High	Low-high
Retaining control and decision-making rights	High	Medium-high	Medium	Low	Low-high

(Adapted from Bergset and Fichter 2015)

2.4 Outcomes from sustainability-driven entrepreneurship

Sd-entrepreneurs have been characterised by the value they create both on the organizational and social level (Muñoz and Cohen 2018b). By using their companies as vehicles for contributing to environmental quality and social well-being, as well as their own interests, they show to the rest of the world that achieving a holistic value proposition can be possible. York and Venkataraman (2010) suggest that SdE help institutions achieve their goals and integrate sustainability practices by addressing environmental uncertainty, providing innovation and engaging in resource allocation to address environmental degradation. Moreover, extant literature extends the role of SdE beyond market success to initiating societal change and changing market conditions and regulations, and in some cases, creating large-scale structural shifts towards sustainability (Schaltegger and Wagner 2011). To this end, de Bruin (2016) aligns SdE with agency for social change and offers a conceptual framework to measure the intensity of social innovation by virtue of incremental, institutional and disruptive impact ranging from local to global-systemic change. He argues that the intensity of these outcomes creates the momentum for scalable social change. As a result of its innovative solutions, the outcome of SdE can shape the future markets and society (Gibbs 2009; Schaltegger and Wagner 2011).

The desired outcomes from change-oriented entrepreneurial action reflect the interests of forming new socio-economic structures that support new kinds of wealth and growth that is intentionally patient, organic and inclusive (Muñoz and Cohen 2018a). Value creation in SdE requires SdE to move beyond traditional BMs and includes additional forms of capital and stakeholders. In its attempt to achieve broader value creation, Dyllick and Muff (2016) suggest that SdE not only reduces harmful effects on the environment and society but also seeks new ways to deliver solutions that produce meaningful and positive impacts. For example, the study by Kuckertz *et al.* (2019) revealed that a majority (77%) of ecological start-ups exploit environmental opportunities not only to maximize economic profit but also to create outcomes aligned with their social and environmental values. This steps away from a traditional focus in SdE studies that place the value generated from Sd-entrepreneurial activity along independent constructs of a TBL (e.g. Cohen *et al.* 2008; Young and Tilley 2006). Muñoz and Cohen (2018b) argue that this runs the risk of perpetuating an economic bias by assuming "entrepreneurs as agents of the economy who make intentional decisions about trade-offs amongst economic, social and environmental objectives" (314).

Embracing a broader perspective of value creation requires seeing entrepreneurs as embedded within social and ecological systems, producing complex and interdependent social, ecological and economic value. For example, in developing their businesses, Muñoz and Cohen (2018a) argue that Sd-entrepreneurs "elaborate on new ideals, standards, and responsibilities that operate as the means through which resources and targets are linked" (169). Measuring outcomes from SdE as a result calls for treating the process of entrepreneurial opportunity development as a "holistic analytical unit", rather than independently measurable elements (Muñoz and Cohen 2018b). In this vein, Muñoz and Cohen (2018b) point out that Sd-entrepreneurs seek to balance and not sacrifice conflicting bottom lines which emerge naturally in the process of business development. This embedded view seeks, as McDonough and Braungart (2002) emphasise, to reframe sustainability opportunities and challenges from balancing supposedly competing interests towards "optimizing aggregate outcomes using innovative approaches that can actually restore environmental, social and economic systems" (cited in Muñoz and Cohen 2018b, 318). In sum, SdE leads businesses to look across two logics that have traditionally been seen as incompatible, i.e. opportunistic business and altruism, and attempt to holistically integrate economic, social and environmental goals (Tilley and Young 2009). It can be concluded that SdE represents a process of creative destruction (Schumpeter 1942) whereby Sd-entrepreneurs "destroy existing conventional production methods, products, market structures and consumption patterns and…create the market dynamics of environmental progress" (Schaltegger 2002, 46). As a result, some scholars today are reconsidering the range of possible outcomes that arise from SdE by venturing beyond the TBL and adopting a more inclusive approach that treats the three dimensions of sustainability as fundamentally interdependent constructs.

3 The business model concept

Over the years, many authors have developed several definitions for the BM each one aiming to fine-tune the concept a little more than its predecessor, but still with great overlap. The BM in essence, is defined in simple terms by Osterwalder and Pigneur (2010) as "the rationale of how an organization creates, delivers, and captures value" (14). A seminal work by Teece (2010) also described it as serving to articulate how a firm aims to convert its resources into economic value by outlining the organisational and financial architecture of a business. Drawn from the field of business management, the BM captures into a coherent mix the key areas of successful market introduction for a firm (Boons and Lüdeke-Freund 2013). At a minimum, these elements include (i) the value proposition, (ii) the configuration of value creation, which includes the way in which the firm links itself to its suppliers and customers, and (iii) the revenue model, which is how costs and benefits are divided between economic actors in the system (Boons and Lüdeke-Freund 2013).

Although the literature on BMs remains fragmented and heterogenous, the popularity and development of the BM concept attests to the ever-present need of keeping up with fast evolving markets while aligning with different perspectives on revenue flows, costs and stakeholder relationships. The concept was developed at the end of the 20th century during the years of the internet boom when traditional models for proposing and capturing value no longer capitalized on the new technologies (e.g. e-business or virtual organizations; Schaltegger *et al.* 2016). The need to break away from traditional industrial economist-based strategic concepts and to develop something that was able to evolve with the markets and align with business and stakeholder needs gave birth to the well-known BM concept today. The BM offers a way for firms to visualise, analyse, refine and scale strategic decisions, improving the overall organisational effectiveness of a firm (Biloslavo *et al.* 2018).

In light of overlapping usage among BM definitions and well-known managerial concepts, it is helpful to highlight for what the BM is not used. BMs remain conceptual, they represent the fundamental logic and approach of a company but not at the level of business activities or competition (Biloslavo *et al.* 2018). Biloslavo *et al.* (2018) emphasise that the BM is not a business strategy but may include many strategic elements related to the business aim. Hence, it can be understood as the link between a company's strategy and its operational activities (Richardson 2008). BMs can also be seen as a market device, mediating the relationship between actors and coordinating their actions (Doganova and Eyquem-Renault 2009). They play a significant role in shaping actor networks and, according to Schaltegger *et al.* (2016), stimulate new approaches in corporate sustainability management and SdE by acting as a reference point for communication among actors, and thus reinforcing the "business paradigm of egocentric value creation" (5). Doganova and Eyquem-Renault (2009) similarly consider BMs as narrative and calculation devices used by entrepreneurs to circulate their business idea and penetrate the market. In other words, they enable entrepreneurs to explore markets and bring their innovation into existence.

3.1 The business model framework

Studies by Richardson (2008) and Osterwalder *et al.* (2005) have contributed profoundly to the clarification of BMs. Osterwalder *et al.* (2005) described the components of a BM as a series of nine building blocks, organised into four pillars (Table 3-1). These pillars include (i) the value proposition: the products and services offered, (ii) the customer interface: target customers, customer relationships, distribution channels, (iii) the business infrastructure: key activities, firm resources, key partnerships, and (iiii) the financial model: revenue streams and cost structure (Lüdeke-Freund *et al.* 2016; Osterwalder and Pigneur 2010). Richardson (2008) on the other hand, proposed to consolidate the BM around three major components, (i) the value proposition, (ii) the value creation and delivery system, and (iii) the value capture. These simplified frameworks aim to highlight that the essence of strategic thinking is the creation of value for partners and customers that is in turn captured by the firm. The two frameworks can be said to reflect the logic of strategic thinking that answers the fundamental questions concerning the what, the who and the how to value generation undertaken by firms (Zott and Amit 2010).

Table 3-1 The nine building blocks of a business model and corresponding descriptions.

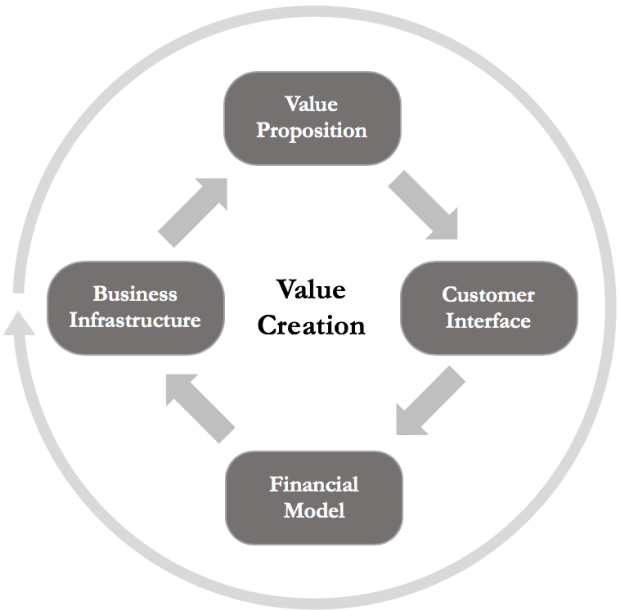
Pillar	Business Model Building Block	Description
Value Proposition	Product or Service	Gives an overall view of a company's bundle of products and services.
Customer Interface	Target Customer	Describes the segments of customers a company wants to offer value to.
	Distribution Channel	Describes the various means of the company to get in touch with its customers.
	Relationship	Explains the kind of links a company establishes between itself and its different customer segments.
Business Infrastructure	Value Configuration	Describes the arrangement of activities and resources.
	Core Competency	Outlines the competencies necessary to execute the company's business model.
	Partner Network	Portrays the network of cooperative agreements with other companies necessary to efficiently offer and commercialize value.
Financial Model	Cost Structure	Sums up the monetary consequences of the means employed in the business model.
	Revenue Model	Describes the way a company makes money through a variety of revenue flows.

(Adapted from Osterwalder et al.2005)

A general consensus throughout the literature has been that the value proposition lies at the centre of the BM. Following Osterwalder *et al.*'s (2005) conceptualisation of the BM, the first pillar of the BM is described as answering the 'what' question by describing the products and services that the firm aims to offer along with the target customers (Osterwalder and Pigneur 2010). The second pillar offers the customer interface through which the customer relationships are established and maintained (Schaltegger *et al.* 2012). It explains the attempts to gather the resources and capabilities

through a selection of activities that will provide value to the stakeholders and the firm (Lüdeke-Freund *et al.* 2016). The value creation and delivery segment represent the value structure of the firm, the "who", and determines the assets available to materialise the value proposed in the previous segment. These assets for value creation and delivery include key activities, resources, distribution channels and partner network (Osterwalder and Pigneur 2010). The third pillar extends the answer to the "how" questions from the second pillar and incorporates the financial model. This element defines the capital and revenue sources that cover costs associated with the other segments and the revenues that create financial profit in order to sustain the business operations.

Figure 3-1 The business model framework for value creation.



(Adapted from Lüdeke-Freund et al. 2016)

The final segment, the business infrastructure, is the element through which all activities go through to create and deliver the value proposition to the customer. It embodies the structure and link between the activities of the firm and how the costs and benefits get distributed across the BM's stakeholders in order to capture value and grow the company (Boons and Lüdeke-Freund 2013). The interplay between the elements represents the governance structure of the business through which it creates value for the different stakeholders considered in the BM such as the customers (within the customer interface), the founders and shareholders (within the financial model) and the suppliers and partners (within the business infrastructure) (Lüdeke-Freund *et al.* 2016). "The value for these stakeholders is delivered through multiple channels (e.g. supply contracts for partners, shops for customers, or dividend payments for shareholders) and captured in diverse forms (e.g. payments for suppliers, use value for customers or profits for shareholders)" (Lüdeke-Freund *et al.* 2016, 23). A visual for this process, offered by Lüdeke-Freund *et al.* (2016) and based on the four BM pillars from Osterwalder and Pigneur (2010), proposes a quasi-circular

value flow that models the relationship between the pillars by embedding the elements within the overall business function of value creation for the different BM stakeholders presented in Figure 3-1.

3.2 Business models for sustainability

As a tool, the BM helps to take a systemic perspective of an organization and highlight the value creating impacts by facilitating "discussion, debate, and exploration of potential innovations to the underlying business model itself" (Joyce and Paquin 2016, 1476; Bocken *et al.* 2014). However, limitations to the BM when examining it with sustainability in mind expose only one stakeholder channel and limited room for innovation. Traditional BMs have been criticised for not proposing, creating or delivering value that goes beyond customers and shareholders nor considering the impact of the firm on non-economic actors (Dyllick and Muff 2016). They are instead argued to be based on two neoclassical economic assumptions: (i) that purchasing something one desires leads to an increase in well-being and (ii) that consumers are never fully satisfied (Biloslavo *et al.* 2018). Modern discourses over BM definitions are however framed around the broader logic for value generation that extends beyond the firm network. Scholars thus agree that incorporating sustainability in the BM requires a new BM design (Bocken *et al.* 2013; Boons and Lüdeke-Freund 2013).

The BMfS represents a form of innovation by aiming to capture the richness of societal contribution of a business (Stubbs and Cocklin 2008). They have received substantial attention in recent literature as the seat of business success in an era of social change towards sustainable development (e.g. Biloslavo *et al.* 2018; Kuckertz *et al.* 2019; Rauter *et al.* 2017; Schaltegger *et al.* 2016). Broadly speaking, the BMfS is aimed to do two things in addition to generating profit: create positive social value and minimize negative environmental impacts (Rauter *et al.* 2017). With rising pressures to incorporate sustainability in businesses, BM innovation for sustainability means to provide the conceptual link between innovation for sustainability and economic performance at a higher systems level (Boons *et al.* 2013). According to Bocken *et al.* (2014), BM innovation implies "re-conceptualising the purpose of the firm and the value creating logic, and rethinking perceptions of value" to incorporate a wide range of stakeholders which includes the environment and society (43). For example, the value proposition segment for a BMfS would imply adding social and/or ecological value that goes beyond the customer (Boons and Lüdeke-Freund 2013), and the value captured segment would consider the non-economic returns on the broad range of value generated by the firm (Bocken *et al.* 2014).

In a BMfS, value is no longer created by firms acting in their self-interest but by taking into account collaborative ties and considering a broad range of resources that yield economic value while benefiting society and the environment (Bocken *et al.* 2014; Schaltegger *et al.* 2016). Innovation for sustainability is thus heavily linked to the concept of shared value discussed in the introduction of this thesis. The shared value created by the BMfS can be defined as "a promise on the economic, environmental and social benefits that a firm's offering delivers to customers and society at large,

considering both short-term profits and long-term sustainability" (Patala *et al.* 2016, 1). Biloslavo *et al.* (2018) echo this view by implying that a BMfS improves people's well-being by incorporating the natural environment or social community in the "business eco-system" (754). In reference to this eco-system, they propose that value is no longer created by firms acting autonomously but is co-created by joint action and alliances which serve them and the greater good (Biloslavo *et al.* 2018). Stubbs and Cocklin's (2008) work, "Conceptualizing a sustainability business model", was one of the first seminal studies published just before the wave of academic BM publications for sustainability. Their study set the foundation for determining an "ideal type" of sustainability-oriented BM and a set of normative principles of organizational development towards this goal. Using a case-based theory building, they advanced propositions for BMfS that include the following set of principles:

1. A sustainable BM defines its purpose from economic, environmental and social aspects simultaneously.
2. A sustainable BM uses a triple bottom line approach in measuring performance.
3. A sustainable BM takes into account the needs of several stakeholders and does not favour shareholders.
4. A sustainable BM treats nature as a stakeholder and promotes environmental stewardship.
5. A sustainable BM encompasses the broader system as well as the narrow firm level perspective.

These propositions represent a more inclusive understanding of a BM and its relationships to the natural environment, society and economy (Lüdeke-Freund *et al.* 2016). According to Stubbs and Cocklin (2008), sustainability is viewed as a driving force for business cases and decision-making processes. They propose BMfS at both a systems and firm-level perspective which builds on a TBL approach to define the company's purpose and measure its organizational performance for creating shared value (Porter and Kramer 2011; Stubbs and Cocklin 2008). In this sense, a firm may only attain sustainability if its internal structure and dominant neoclassical model is transformed, not supplemented by social and environmental priorities. For emerging businesses, this means that incorporating social and environmental aims into the business DNA can offer an avenue to rethink competition and collaboration among actors that are engaged in creating innovation networks (Boons and Lüdeke-Freund 2013). In fact, Schlange (2009) points out that "the amount of freedom entrepreneurs will experience in developing their business depends on the appropriate management of stakeholders" (55). He views that the contradictory nature of sustainability objectives for Sd-start-ups is particularly challenging and requires new ways of interacting with groups of stakeholders. At the heart of this is the start-up's ability to move beyond traditional BMs to activate and market their value creation for sustainability by, for example, anchoring their targets in the SDGs or the nine planetary boundaries (Kuckertz *et al.* 2019).

On the other hand, Parrish (2010) investigates principles of organizational design used by Sd-entrepreneurs to succeed in the mass market and overcome tensions that may arise from contradictory sustainability objectives that challenge the viability of these businesses in the

competitive market context. His study proposes way that Sd-entrepreneurs may "reconcile their sustainability-driven values and motives with the organizational imperatives" to ensure maximum effectiveness of action of sustainable development (Parrish 2010, 510). He defined five design principles: resource perpetuation, benefit stacking, strategic satisficing, qualitative management and worthy contribution. His approach positions people and the natural environmental as not only means of generating wealth but also as ends (Parrish 2010). Additionally, one study by Jolink and Niesten (2015) describes four varieties of BMs used by ecopreneurs operating in the processing and retail of organic food and beverages. They propose that ecopreneurs providing eco-products use these BMs as tools to replace customer disvalue with value and vary based on the environmental scope and the desire for mass market integration and profitability. They denote the income model, the subsistence model, the growth model, and the speculative model (Jolink and Niesten 2015). Their study on BMs is nevertheless narrower than the BMfS in that it pertains solely to customer value creation and BMs for environmentally concerned entrepreneurs entering the mass market (i.e. ecopreneurs) (Jolink and Niesten 2015; Schaltegger 2002).

Bocken *et al.* (2014) provide a comprehensive perspective on types of BMs for sustainability innovation aimed at assisting the process of embedding sustainability into new or existing organisational structures. They help to understand how firms make the change from an economic entity to what scholars consider call the "ideal sustaining corporation" (Stubbs and Cocklin 2008, 104). These BM archetypes *(presented in appendix III)* help clarify the diverse contributions on BMfS in the literature and offer useful "ideal types" by focusing on key distinctive features of BM clusters (Stubbs and Cocklin 2008). Bocken *et al.*'s (2014) archetypes build on an earlier framework proposed by Boons and Lüdeke-Freund (2013) which broadly classify BMs according to technological, organisational and social innovation. Technical innovations mainly relate to BMs introducing environmental technologies that remedy negative externalities, while organizational innovations aim to change the managerial and economic paradigms that underlie business activities, and social innovations address the reconciliation of social issues and behaviour change for social value creation (Boons and Lüdeke-Freund 2013). The relationship between the three categories can be classified according to the TBL perspective and aim to create business cases through their solutions (Lüdeke-Freund *et al.* 2016).

The typology of BMs offered by Bocken *et al.* (2014) provide a starting point for future and current organizations to evolve and de-risk the BM innovation process for sustainability. The archetypes allow firms to easily explore the potential impacts of innovating towards different types of BMs, such as expanding system boundaries or forming unlikely collaborations either across industries or with non-industry actors (Lüdeke-Freund *et al.* 2016). This inspires a form of confrontation or cross-pollination of diverse ideas to deliver greater functionality and maximized efficiency (Bocken *et al.* 2014). The archetypes serve to create new development path and a common language that can be used to accelerate BM innovation for sustainability. In conclusion, BMfS can be argued to represent how social and ecological issues are embedded within the essence of the business and serve as vehicles to coordinate sustainability with technological and social innovations on a systems

level (Bocken *et al.* 2014; Biloslavo *et al.* 2018). They stimulate mindfulness towards social and ecological issues in small and large companies by engaging with alternative methods to measure the value created for and by the business. Still, a key challenge to the design of BMfS rests in ability of small and large companies to capture economic value for itself while delivering social and environmental benefits and keep a competitive edge (Schaltegger *et al.* 2012).

3.2.1 Conditions needed to develop a BMfS

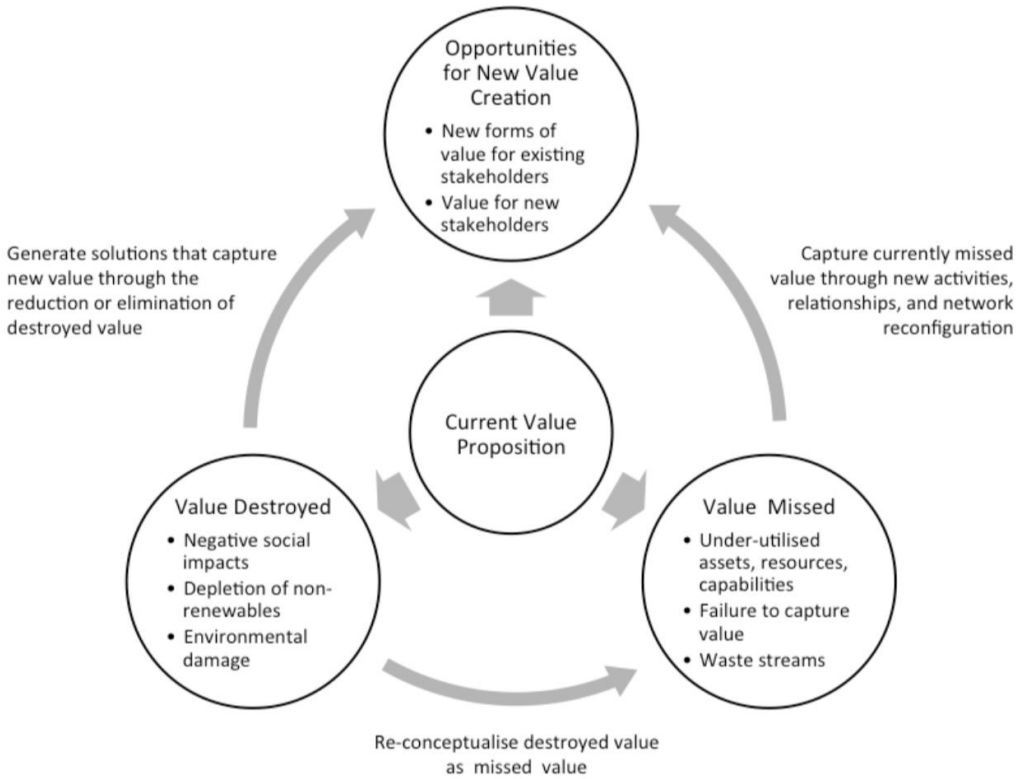
Developing BMfS require taking a number of elements in consideration. As with any systemic change, a holistic perspective is needed to consider the drivers and barriers that are likely to occur and the tools available that may be used to deal with the challenges. As Teece (2010) notes, "a business model cannot be assessed in the abstract; its suitability can only be determined against a particular business environment and context" (191). Assessing a BMfS follows the same logic. Lüdeke-Freund *et al.* (2016) outline three overlapping dimensions found in the external business environment that can influence the feasibility of creating shared value through the BMfS. These are: (i) the micro factors relating to the organization models that underly the BMfS, (ii) meso factors coming from industry structures and value chains, and (iii) macro factors determined by institutional and socio-political dynamics.

Internal organizational methods and company identities form the structures within which a company is run. Stubbs and Cocklin (2008) emphasise that behind every BM is an organizational plan made up of complex social traits and structural values that produce an organizational culture or a way of collective decision-making. These and other organizational traits are what enable information flows and action to be taken and can have a fundamental effect on a company's aptitude for innovation (Stubbs and Cocklin 2008). These "soft" traits, i.e. normative values, identity and strategic orientation of an organization, are argued to play an important role in shared value creation (Lüdeke-Freund *et al.* 2016; Porter and Kramer 2011). However, these alone do not create the conditions for a company to successfully incorporate sustainability initiatives. Micro factors for pursuing business cases for sustainability and forming organizational structures for this purpose are similar to those that constitute a SdE, i.e. the opportunity for greater profitability, competitiveness and legitimacy as well as the moral belief of doing the right thing (Schaltegger *et al.* 2012; Lüdeke-Freund *et al.* 2016). According to Lüdeke-Freund *et al.* (2016), how sustainability is understood and justified within a company relies on one of these three fundamental motivations, which in turn influence the quality and intensity of sustainability initiatives and innovation.

Meso factors rely on slightly broader perspectives such as an industry's value chain and structure. A value chain is made up of the roles, motivations and asset ownership of actors such as suppliers, manufacturers and other institutions. Aligning different actors at the meso level towards creating innovation comes with some level of difficulty as it entails "an alteration in a given equilibrium" (Lüdeke-Freund *et al.* 2016, 67). Assessing the value chain as a result, requires looking at the specific context and environments whose characterises may influence the successful implementation of a BMfS (Lüdeke-Freund *et al.* 2016). For example, during any change process

some industrial actors may benefit more than others and depending on their position along the value chain, those that are worse off may in turn impair the company's ability to reach their sustainability goals (Lüdeke-Freund *et al.* 2016). In order to avoid this, Bocken *et al.* (2013; 2015) propose that firms consider extended stakeholder mapping to illustrate the various actors directly and indirectly involved with the industry's value network. This entails recording the opportunities for new value creation, the value destroyed, and the value missed as presented in Figure 3-2.

Figure 3-2 The different forms of value innovation for a business and its stakeholders.



(Source: Bocken et al. 2013).

At the core of this model is the value proposition of the network which represents the value exchanges between stakeholders. In delivering the value proposition, individual stakeholders and networks may collectively destroy value in various forms. Bocken *et al.* (2013) explain that in the context of sustainability, this mostly concerns environmental damages or negative social impacts from business activities (i.e. negative externalities). Value that is missed refers to situations where stakeholders either "fail to capitalise on existing assets, resources and capabilities" or operate below the industry's best practices thereby failing to receive all possible benefits from their network (Bocken *et al.* 2013, 9). On the other hand, opportunities to create new value are exploited to help the business grow into new markets and offer enhanced benefits to stakeholders. For SdE, this may include moving beyond immediate stakeholders such as customers, partners and suppliers to making positive contributions to their communities or the natural environment (Schlange 2009; York *et al.* 2016). The value mapping tool as a result provides a meso level modelling tool for value

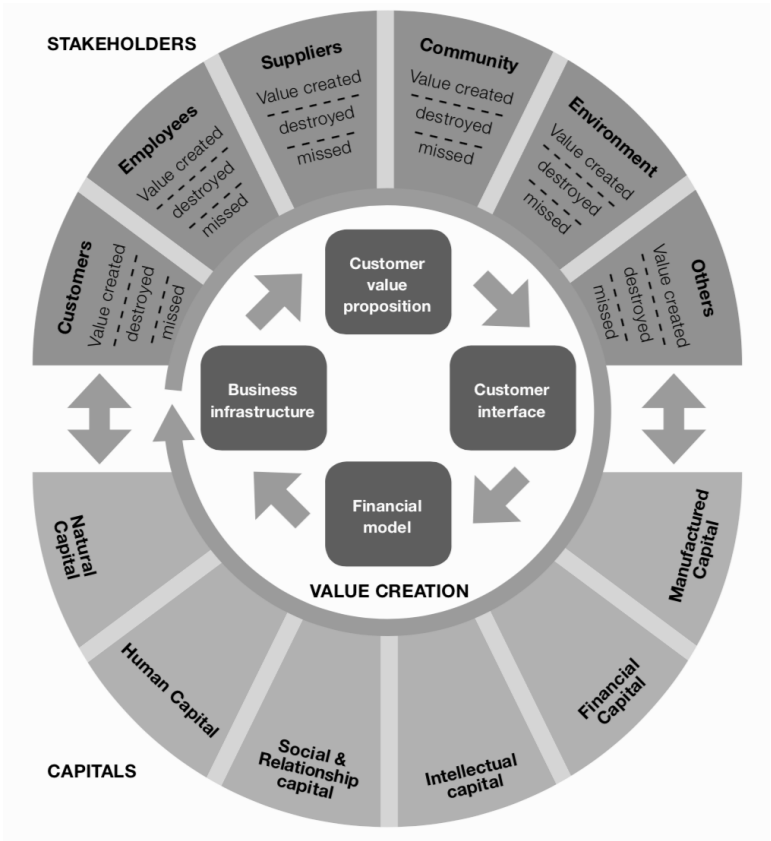
analysis and identification of the areas which can benefits to most from sustainability innovation for the business and in the industry the business aims to impact (Lüdeke-Freund *et al.* 2016).

The third dimension of influence are institutional and socio-political configurations around which a firm operates that cannot be ignored. These refer to the social, political and cultural institutions that are found at the local, regional, national and global level (Lüdeke-Freund *et al.* 2016). These also include international trade laws and intergovernmental organizations, developments and regimes (Boons *et al.* 2013). Understanding the state of these configurations is not only important for determining the influence that market equilibriums, economic developments and societal structures can have on a company's success, in addition to the resulting meso and micro factors, but it is also a determinant of the potential success that innovations for sustainability can have (Lüdeke-Freund *et al.* 2016). For example, Birkin *et al.* (2009) found that in countries where BMfS had particular success, institutional organizations and cultural norms supported sustainable development and resulted in a higher consumer willingness to pay for environmentally friendlier products. To this end, institutional configurations are important in shaping innovative activities and interactions by virtue of external factors acting upon the company which may influence its success or failure. As a result, a BMfS needs to be evaluated against a current business eco-system as well as the larger social or institutional realities, and how these might evolve together and separately (Biloslavo *et al.* 2018; Teece 2010).

3.3 Framing BMfS – The Hourglass Model

To best consolidate the above guidelines for a BMfS, Lüdeke-Freund *et al.* (2016) propose the framework called, The Hourglass Model (Figure 3-3). The hourglass model results from combined concepts in BM research, social innovation and the Integrated Reporting framework developed by the International Integrated Reporting Council (IIRC 2013). The term hourglass used for the visual recalls the upper and lower bowls of an hourglass which are reflected by the shape of the central BM elements. The most consistently emphasised element of BM frameworks concern value creation (what the firm is proposing and how it will deliver and capture this value through the various business functions), customer segments (and the channels through which customer relationships are formed and sustained), the stakeholder network (including customers, partners, suppliers, shareholders), the financial model (costs and revenues) and the firm's capabilities and competences (the various forms of internal and external capital or resources at the firm's disposal) (e.g. Biloslavo *et al.* 2018; Bocken *et al.* 2014; Upward and Jones 2016). The hourglass model systematizes and represents these most important elements described within traditional BM frameworks in a more holistic view and extends beyond them by adding a focus on the different forms of capital and stakeholder perspectives within the overall function of shared value creation (Lüdeke-Freund *et al.* 2016). Thus, the three core components of the hourglass model are the BM, stakeholders and forms of capital.

Figure 3-3 The Hourglass Model framework for developing a BMfS.



(Adapted from Lüdeke-Freund et al. 2016)

At the centre of the hourglass model are the four fundamental pillars of the BM described in Chapter 3.1. The BM element represents the foundation of organizational value creation. It creates the reference point through which the other elements of the framework come together and make sense. Integral to the BM is the customer value proposition, which is delivered through the customer interface, appropriated by the financial model and passes through the business infrastructure (Lüdeke-Freund *et al.* 2016). The hourglass model is conceptualised within a circular value system where emphasis is placed on the mutual dependency of each aspect of the model.

The stakeholder component of the hourglass model is expanded beyond those traditionally included in BMs (i.e. customers, employees, suppliers and others, such as partners and shareholders) which are considered by their degree of impact by and on the firm's activities and its financial model. Firms that create shared value consider all aspects of who and what may be affected by the firm's activities, as well as how they are affected. The framework considers not only customers and the firm itself as key stakeholders but also other relevant actors that may be impacted indirectly by the firm's activities, including nature, communities and future generations (Biloslavo *et al.* 2018). The broad range of stakeholder consideration originates from the value mapping tool designed by Bocken *et al.* (2013) to assist multiple value creation by the BMfS. It allows broader design thinking by considering different forms of value exchanges between

different stakeholders as a result of a firm's BM, i.e. value captured (the positive benefits delivered to stakeholders), value missed (or inadequately captured by stakeholders), value destroyed (externalities that negatively impact stakeholders) and opportunities for new value creation (Bocken *et al.* 2013; 2015). The value mapping tool integrates a systemic approach to BMfS that includes multi-stakeholder perspectives and seeks to identify the positive and negative forms of value creation between stakeholder groups (Bocken *et al.* 2015).

The different forms of capital can be related to Biloslavo *et al.*'s (2018) broad consideration of capital that includes anything with the capacity to benefit the firm, including the environment. The hourglass model draws on six forms of capital: natural, human, social and relationship, intellectual, financial and manufactured capital. They provide the inputs for business activities yet are also vulnerable to being transformed, enhanced or destroyed through these activities (Lüdeke-Freund *et al.* 2016). For instance, shareholders provide the financial capital and employees, the human capital while the environmental essentially provides the natural capital and so forth (Lüdeke-Freund *et al.* 2016). These elements of capital remain in a constant flow as a result of changes within and among the stakeholders. Biloslavo *et al.* (2018) maintain that levels of capital may be enhanced or accumulated, rather that depleted or degraded, as they flow among particular stakeholders. To this end, the hourglass model rejects the linear flow of traditional stakeholder networks by considering possible feedback loops that exist between inputs that are transformed and accumulate with certain stakeholders, represented by the two-sided arrows between the stakeholders and capitals elements in the framework (Lüdeke-Freund *et al.* 2016).

Sustainable business thinking tries to ensure the balance and alignment of all stakeholder interests to deliver shared value (Bocken *et al.* 2015). From the BMfS perspective, firms act in a reciprocal relationship with social actors that each play a role in "co-designing, co-creating and co-delivering" a firm's value proposition (Biloslavo *et al.* 2018). The hourglass model presents a visual representation of a firm's BM that exists in a circular value system where value is co-created and co-evolves with other firms and social actors. This business eco-system (Biloslavo *et al.* 2018) offers a conceptualisation of the complex system whereby an organization must achieve "firm-level sustainability and collaborates with key stakeholders to achieve sustainability for the system that the organization is part of" (Stubbs and Cocklin 2008, 123). In conclusion, the hourglass model represents the extended characteristics of a BMfS that support societal progress and the inclusion of social and environmental values beyond financial value within a systems perspective. This framework is a means to move beyond the narrow-focused and organization-centred understanding of value creation towards what Dyllick and Muff (2016) call "true sustainability". As a result, the framework represents major and recurrent themes related to BMfS and shared value which are also distinctive to the understanding of the Sd-entrepreneurial process relevant to this study.

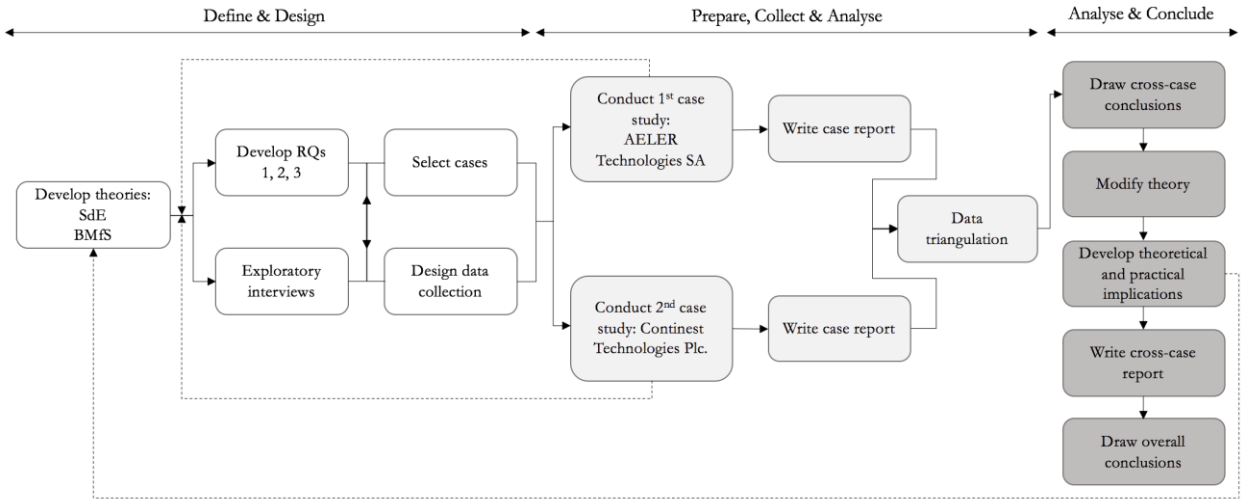
4 Methodology

Considering the novelty of this field of research, the author decided it was best to approach it exploratorily in order to best understand the nature of the phenomena and create new knowledge for the field of SdE. In this regard, the study follows a qualitative methodological choice, taking into consideration the respondents' perspectives and ability to answer questions in their own words and speak freely, as opposed to filling out a questionnaire or survey where each answer is limited (Yin 2009). The use of qualitative data gathered from interview transcriptions and observation notes also allows the author to collect and interpret aspects which may otherwise be difficult to measure (Saunders *et al.* 2019). Furthermore, this methodological choice allows the researcher to ask follow-up questions and contribute to the topic by discovering new aspects or relationships which allow for greater understanding of complex processes (Eisenhardt 1989).

In this thesis, an inductive approach is used to explore the phenomenon of SdE that relies on two major components: a literature review and two case studies. The literature review provides an overview of the emerging field of SdE (Chapter 2) and the concepts of BMs and BMfS (Chapter 3). On the other hand, the findings of the case studies (Chapter 6) provide the empirical knowledge used to make inferences which get expressed as a framework in the outcome of the research (Saunders *et al.* 2019). Although several analytical frameworks were reviewed, i.e. The Hourglass Model, none were found to express a sufficient link between SdE and BMfS. Accordingly, the author used the findings of the case studies to extract a framework for analysis (presented in Chapter 6.5). The case studies were not delineated by a specific business sector but by the nature of the product, the shipping container, and the services offered which fit within the criteria for Sd-innovation through entrepreneurship defined in the literature review and which imply product or service specific sustainability impacts.

To provide suitable data for the analysis and ultimately allow for the fulfilment of the aim of the study, the case studies relied on data from semi-structured interviews with the co-founders of both start-ups as well as external documents provided by them or found online. The overall methodological approach (Figure 4-1) for the thesis is built on Yin's (2009) method to designing a multiple case study research and expanded to accommodate additional steps for this research as well as feedback loops which represent the iterative process of conducting research and testing theory.

Figure 4-1 Diagram for methodological approach.



4.1 Research paradigm

The study is based on the ontology of interpretivism, which takes a subjective stance on the knowledge acquired and believes in the socially constructed nature of perceptions, beliefs and values (Walsham 1995). Social constructionism holds that reality is constructed from social interactions between actors who create shared meanings and realities from these interactions (Saunders *et al.* 2019). The ontological and epistemological assumptions were adopted in conjunction with an inductive inference whereby generalizations are made from data collection in order to explore the phenomenon of SdE and attempt to define the themes or patterns in the direction of a conceptual framework (Eisenhardt 1989). This type of inquiry aims to answer 'how' questions by understanding the ways in which practitioners understand their social roles within the larger context of sustainability and the purpose of their business (Blaikie and Priest 2019, 22).

As a result, the author chose to incorporate the logic of phenomenological inquiry for entrepreneurial research as captured by interpretative phenomenological analysis (IPA) (Cope 2005; 2011). IPA seeks "to understand the subjective nature of lived experience from the perspective of those who experience it, by exploring the meanings and explanations that individuals attribute to their experiences" (Cope 2005, 168). Emerging from the fields of phenomenology and hermeneutics, IPA is a popular approach in qualitative research because of its focus on individual accounts by combining interpretative, idiographic and psychological focus geared towards understanding specific and unique narratives while maintaining the integrity of the informant (Larking and Thompson 2012). Due to the fact that SdE is not as prevalent and easily identifiable as one of its counterparts, i.e. conventional, social and environmental entrepreneurship, studying and identifying the phenomenon of SdE presents some challenges in terms of defining "sampling frames and selecting cases" (Muñoz and Cohen 2018b, 315). For this reason, an interpretative approach presents the best opportunity to truly understand individual "lived" experiences (Cope 2005). By means of "retrospective self-report" (Reynolds *et al.* 2018), IPA allows for examining relatively underexplored area of experiences, actions and circumstances

to capture the meaningful ways in which sustainability is experienced and enacted during the entrepreneurial approach to business development (Berglund 2007). In addition, by examining SdE as emerging from how the entrepreneur experiences their position within the wider social and ecological context, this study maintains the centrality of the individual experience amidst the holistic nature of entrepreneurial phenomena (Cope 2005).

In this study, it is assumed that sustainability issues are not only linked to issues of rational consideration but are strongly linked to values, norms and beliefs (Rauter *et al.* 2017). IPA is relevant to this study as it seeks to understand particular motives and values from the perception of the entrepreneur and how they may generate impact through the business strategies and the BMfS. Motives and values are socially constructed and revealing them requires analysing the individual's narratives and contextualised relations to factors surrounding the development of their entrepreneurial business (Cope 2005). The subjective nature of this inquiry thus calls for an analytic approach that moves beyond description and engages with the entrepreneur's reflections and narratives (Muñoz and Cohen 2018a). A distinctive feature of this approach is also that it produces fine-grained interpretative accounts through detailed interviews (Eatough and Smith 2017). In accordance, just two case studies were chosen and conducted in order to keep the sample size small, purposive and yielding rich and in-depth data.

4.2 Case study approach and selection

> *The essence of a case study, the central tendency among all types of case study, is that it tries to illuminate a decision or a set of decisions: why they were taken, how they were implemented, and with what result. (Schramm 1971, 6)*

Case studies are separate from other types of research because they capture distinctive characteristics and allow the researcher to draw holistic and meaningful conclusions from real-life events (Yin 2009). They are ideal for small group behaviours, business and managerial practices and individual decision-making processes. Yin (2009) considers the appropriateness of cases studies as a preferred method for research to depend on three conditions: (i) the types questions being posed begin with "how" or "why", (ii) the researcher has little to no control over the events and (iii) the research is focused on contemporary phenomena in a real-life context, as opposed to historical phenomena. In this study's research questions, the "how" questions are useful to trace operational decisions over time as methods of gathering data are less likely to rely on surveys or questionnaires and instead necessitate narratives from individuals and focused exploratory questions (Yin 2009). Case studies therefore differ from other research approaches in that they investigate phenomena and produce in-depth accounts of technically distinctive situations where the boundaries between the phenomena and context is not obvious (Schramm 1971). In this case, entrepreneurial motives and values are investigated for how they are incorporated into and influence the development of the business through the BMfS. However, the context of the BMfS development and execution may not be overtly connected to entrepreneurial motives and values.

For this reason, a case study approach is useful and preferred to understand the link between the two elements and this complex social phenomenon.

Because the research questions proposed for this study can be relevant in a wide number of cases and context, a set of criteria were applied to locate the case studies that presented the best prospects of answering the research questions, while keeping in mind that many other similar businesses can also be found. Firstly, the shipping container was chosen as a starting point through which to identify suitable case studies because it itself represents decades of innovative use and an effective illustration of disruptive innovation that radically changed industry practices (Christensen *et al.* 2006). Today, shipping containers are used in various industries and for a variety of purposes that extend far beyond their initial intended usage. For this reason, the author believed that shipping containers provide an excellent starting point through which to explore the role that entrepreneurial activities can have in extending innovation towards greater sustainability in business practices. With the shipping containers as a focal point, the author chose a 'two-case' design in hopes to produce more complete and robust findings (Yin 2009). In this case, the two case studies were chosen according to three main criteria:

i. The start-up presents real and feasible prospects for scalability with potential to impact larger business sectors.
ii. One or more aims of the business is to produce incremental environmental and/or social benefits.
iii. The start-up intends to be financially profitable and enter into the mass market.

Accordingly, two case studies were selected[6]: AELER Technologies SA and Continest Technologies Plc. It is important to note that the selection of the case studies was not reliant on geographical nor socio-political boundaries. Instead, the emphasis was placed on the company context and its capacity to mirror the principles of SdE detailed in chapter 2. Both businesses target different industries (cargo shipping and events) and are based in different countries (Switzerland and Hungary), which enhances the credibility of the study. In this vain, the unit of analysis is the Sd-start-up and the entrepreneurs as key informants who are inherently familiar and embedded in the entrepreneurial journey from the initial idea to the business development.

4.3 Data collection

A major strength of a case study data collection is the use of multiple sources of evidence because it allows the researcher to address a broader range of issues (Yin 2009). Case study research can rely on a multitude of data sources such as documents, artefacts, observations and interviews which can then be analysed using a variety of techniques for greater data validity and reliability (Yin 2009). In line with the inductive approach of this study, exploratory and in-depth semi-structured interviews were the primary source of data. Secondary data were collected through

[6] The author would like to point out that initial contact with both case studies was made possible via personal connections.

publicly available information such as company websites, journal or blog articles, as well as internal company documents such as business plans and pitch decks sent by the founders. Alternatively, previous academic research was also drawn upon to provide a frame for the research and contribute to the findings.

4.3.1 Literature review

A systematic literature review usually involves a series of iterative steps. In this case, five steps were used in line with Fink's (2013) approach:

1. Selecting research questions
2. Selecting bibliographic databases
3. Choosing and screening search terms
4. Reviewing the literature
5. Synthesizing the results

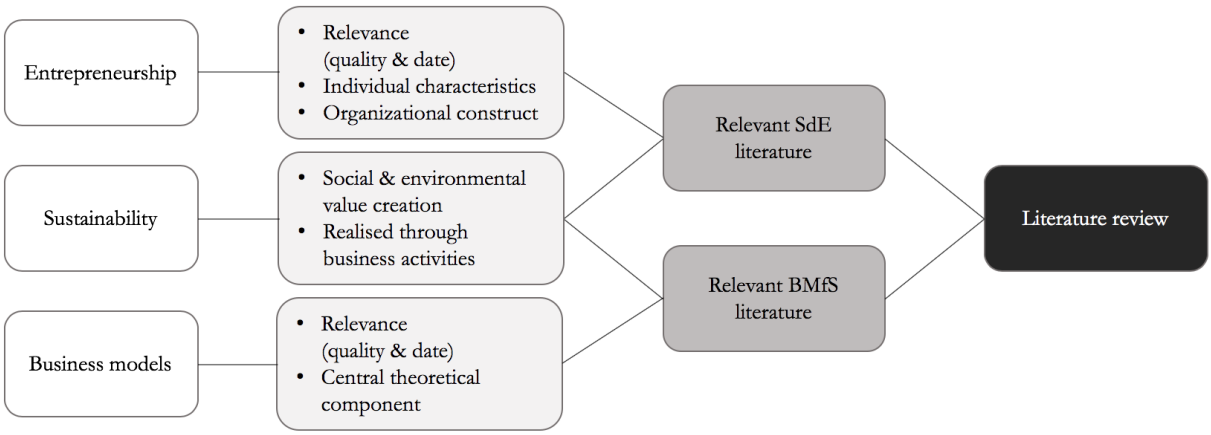
Data collection methods for the literature review and the case context included the use of search engines like Google Scholar and Web of Science database through the VPN of the Central European University which consolidates all major academic databased such as EBSCO, Elsevier, Springer and Taylor & Francis. In addition to these, regular Google searches were conducted to find relevant working papers, reports and articles from companies, organizations and other websites which provided up-to-date facts or statistics not readily available in academic journals.

Key papers were identified in special issues and reviews on SdE (e.g. Gast *et al.* 2017; Hall *et al.* 2010; Markman *et al.* 2016; Muñoz and Cohen 2018b) from varying journals such as *Business Strategy and Environment*, *Journal of Cleaner Production, Journal of Business Venturing* and *Journal of Management Studies*. As a primary search attempt, publications containing the key terms "sustainability", "entrepreneurship" and "innovation" were gathered and reviewed in detail. The combination or order of the terms were not important since many publications incorporate these terms without necessarily combining them in paired word constructs. The initial search allowed to gather a wide range of publications is diverse fields such as management, political science, environmental science, psychology, social sciences, economics etc. A second search was later conducted using more precise key terms and with various pairing such as "sustainable entrepreneurship", "sustainable start-ups", "entrepreneurial sustainable innovation", "triple bottom line", "sustainability-driven entrepreneurship" and "sustainable business value creation through entrepreneurship". The selected articles explicitly investigated sustainable entrepreneurship or SdE that made reference either directly or indirectly to the pursuit to economic, social and/or environmental value. The author considered important to keep the range of entrepreneurship literature broad in order to capture a comprehensive overview of this diverse and ever-evolving field, and more specifically, to understand the ways in which SdE is articulated in BMs and organizational processes vis-a-vis new and established businesses (Muñoz and Cohen 2018a). These included publications on entrepreneurship that placed a central role on individual

characteristics of the entrepreneurial process as well as those focusing on the organizational construct of a young business. Additionally, publications which did not address issues of social or ecological value creation as a result of business activities were also left out. From this cross-pollination emerged richer theorizing on SdE but also highlighted the tensions between disciplines although recent studies show attempts to find common ground by focusing on socio-ecological underpinnings of the field with potential to create impact that fosters sustainable development, beyond competitive and market-oriented strategic factors (e.g. Muñoz and Dimov 2015; Belz and Binder 2017; Reynolds *et al.* 2018).

Slightly different set of criteria were used initially to select BM literature by virtue of a differing evolution compared to the field of SdE. In the past decade, an increasing number of contributions on BMfS have been published in a variety of journals. It was important as a result, not to filter publications by discipline but instead by using key terms found in the titles, abstracts or keywords. The broad foundation of sources containing words such as "business model", "business model framework", "sustainability", "innovation" and "shared value" were compiled and further filtered and selected based on a set of criteria that was similarly used by Biloslavo *et al.* (2018). The first was a superficial assessment of the quality of the publication based on the number of relevant citations either shown by the search engine or mentioned in related literature. The second was a selected cut-off date for publication in order to avoid outdated material. With the exception of foundational works, articles published earlier than 1998, the year the first recognizable BMs were published, were disregarded. Finally, publications which did not provide an understanding on BMs as its central theoretical component, either through modification of other's definitions or by providing an original definition were excluded from the analysis. With that said, publications needed to focus on both business creation and sustainability.

Figure 4-2 Criteria used to identify literature for review.



4.3.2 Exploratory practitioner interviews

As one of the most important sources of information of a case study, interviews revolve around human events or behavioural factors. In order to make a well-informed decision on the topic of

this study, exploratory interviews were essential steppingstones to gather expert opinion and challenge the research questions with practitioners and academics. Six exploratory interviews were conducted between the months of February and March and in conjunction with theoretical developments resulting from the literature review. The results benefited the author by narrowing down the field of research and identifying suitable companies for case studies.

4.3.3 Document analysis

Before and after the interviews with the co-founders, archival data was collected from websites, journal articles, social media, press releases as well as internal documents concerning the BM and current projects. The documents were analysed using the same coding procedure developed for the practitioner interviews and their relevance to the research questions. The findings from the document analysis were incorporated into the clusters identified during the analysis of the semi-structured interviews to ensure greater reliability and credibility of the data.

4.3.4 Semi-structured practitioner interviews

As a major source of information, face-to-face interviews with the co-founders were conducted in a semi-structured format. Four interviews in total were conducted, two initial interviews of around one hour and a half to two hours each and two thirty-minute follow-up interviews with one of the co-founders from each start-up. The interviews took place over video call or by phone[7] and were recorded with the permission of the interviewees. The preferred IPA format for interviews is exploratory in nature and calls for open-ended inquires as opposed to a rigid structured approach (Cope 2005). Therefore, each interview session was organized and aimed for an open-ended dialogue with the co-founder to stimulate narratives about what sustainability means in the pursuit of opportunities and intended value creation or impact on the industry. Because some concepts used in the interviews were open to interpretation, guiding questions were used in a semi-structured manner to stay close to the research themes *(see Appendix V for the interview guide)*. Additionally, both interviewees were sent a one-page document detailing the research topic and questions to allow them to frame the nature of inquiry prior to being interviewed *(see Appendix IV)*. The interview questions were divided into three sections based on the key aspects of each research question and the dominant concepts of SdE and BM creation processes identified during the literature review:

Key aspects of RQ1: the personal background of the entrepreneur, perceptions of sustainability, motivations and intentions for creating a business, process of idea creation into business concept → *Personal process*

[7] In person interviews were not possible at the time of the study due to confinement regulations as a result of COVID-19.

Key aspects of RQ2: business and personal principles, concept development in a frame of logic, business foundation process (BM), link to business experience and/or existing knowledge, stakeholder consideration (who are they creating value for?) → *Internal process*

Key aspects of RQ3: impact generation, process of value capture and measurement, stakeholder engagement, approaching investors and costumers, business growth and long-term vision for the company → *External process*

4.4 Data analysis

The data collection process was carefully organised and documented in a database in Microsoft Excel. The interviews were recorded and transcribed, totalling 90 pages, and then manually coded in a standardized format to enhance the reliability and validity of the study. The author followed an inductive coding approach using grounded theory methods consistent with IPA which codes from the bottom up and in an iterative and cyclical process (Cope 2005). Four cyclical stages were undertaken during the coding process. Cycle one consisted of reading the transcripts, taking notes of first impressions and examining the data thoroughly. The second cycle served to create first order codes and the third cycle, second order codes by means of collapsing or expanding on existing codes following a clustering technique (Yin 2009). Finally, in the fourth cycle the data was analysed carefully to understand any patterns, similarities, differences and relevance to the research questions. Subsequently after each coding cycle, memos were recorded in diary form noting the author's impressions, surprises, questions and other interpretations of the data and entered into the database. This allowed the author to better organize and clean up the content and maintain a chain of evidence for a more effective and reliable analysis (Yin 2009). In all, eighteen second order codes *(presented in Appendix VI)* were developed and organised into four theoretical clusters: perceptions of sustainability for the entrepreneur, experience in business development, value creation and vision for a future towards sustainability in business.

This process was fundamentally inductive and based on the method and process for building theory from cases that is "highly iterative" and "tightly linked to data" (Eisenhardt 1989, 532). This necessarily involved the author's interpretation of the entrepreneurial stories and perceptions (Blaikie and Priest 2019). The detailed description of key activities and cluster analysis proved helpful for the process of pattern recognition and supported the interpretative process of data analysis (Cope 2005). The data was triangulated across the various data sources to ultimately create theoretical explanations for the patterns perceived (Yin 2009). The use of multiple sources of evidence offers a way of developing converging lines of inquiry which reduces the potential problems of validity and retrospective bias (Yin 2009). To enhance the external validity of the study, to stay close to the data and to offer a degree of transparency (Eatough and Smith 2017), the co-founders were asked to review the draft of their case study report.

4.5 Ethical considerations

The research was conducted without collaboration or financial support from any organization. Communications and support from the supervisor did not influence the outcome of the study but rather supported the process. No other person is foreseen to have unduly influenced the results of the study. Additionally, the author attempted to retain integrity and honesty with any person affiliated with the research and throughout the analyses and interpretations of the findings. The data was collected through public sources, conducted interviews and privately shared documents. The interviews conducted were based on full voluntary participation and discretion of the interviewees. Furthermore, all interviewees were fully informed of the nature of the research and purpose for the interview through the one-page proposal that was provided to them upon initial email contact and by answering any questions they had during the interviews. Any confidential information was and will continue to be stored securely and handled with care. Neither interviewee requested to be anonymized and gave consent to being quoted for this study. No aspect of the research is expected to produce any harm to the reputation, dignity or privacy of the participants or their company as a result. Special attention will be given if any doubts arise to ensure no negative outcomes from this work.

5 Case context: the shipping container

5.1 Background

The origins of the container dates back to the late 18th century and until the 1950s, various types of containers were used to ship loosely packed goods called "break-bulk shipping" that included packaged boxes, bags, barrels or other early forms of containers (Tomlinson 2009). The loading and unloading of goods were very labor and time intensive as it happened item by item, were vulnerable to theft and damage, and often resulted in some vessels spending more time in seaports than they did at sea (Tomlinson 2009; Kaya 2017). This type of shipping was the norm until the U.S military began using standardized metal shipping containers during World War II. After this, commercial shipping companies began using the same technology and soon revolutionized the transport of goods by making shipping more efficient and cheaper (Akdag 2012). In 1955 however, an American trucking entrepreneur named Malcom P. McLean bought a steamship company and began shipping entire truck trailers on boats without switching out the cargo. This new technique was simpler, faster and much more time efficient. It gave birth to what is called today "intermodalism" (WSC 2020). Intermodal transport is defined as the movement of goods in the same unit using two or more modes of transport in a single transportation chain (Kuzmicz and Pesch 2019). This may include for example a container shipped by sea and then moved onto a truck until its final destination. The advantage of using intermodal shipping is that the goods are packed together into a standardized container instead of individual parcels and can be stacked on top of each other for more efficient road, rail or sea transport. By filling whole containers, products can be placed from trucks, trains and ships quickly, efficiently, cheaply and more securely (Kaya 2017).

By the 1960s, the International Organization for Standardization (ISO) set standard sizes for the container units and they became the preferred way of shipping ocean freight (WSC 2020) WSC 2020. Standardizing container sizes allowed for investments in larger ships and container-handling equipment that could be used for a greater variety of goods (Tomlinson 2009). Uncertainty was also reduced because it was easier for shipping companies to control logistics. Additionally, increased container traffic and larger ships called for larger docking and storage areas in ports, and many cities experienced infrastructure developments in addition to the relocation of some industries. In 1980s in California for example, the competition for container traffic between the ports of Los Angeles and Long Beach resulted in greater development in coordinating logistics between them (Tomlinson 2009). It is safe to say that intermodalism revolutionized the logistics of container shipping by making international commerce significantly cheaper and faster.

The greatest impact from the modern shipping containers has been on the global economy. The freight shipping industry contributed greatly to globalization with the expansion of interaction commerce and global manufacturing systems (Koksal 2015). The cost of shipping raw materials and finished goods dropped dramatically since the modern container was introduced. In the early days of cargo shipments, ocean freight costs could make up to 25% of the commodity's value, making it too expensive and not worthwhile for many manufacturers (Levinson 2006). Today, however shipping is known to be the most effective mode of transporting goods across long distances, supported by the fact that over 80% of goods are transported worldwide by sea (UNCTAD 2019). The influence on the global economy has thus been exponential. A decade after containers became standardized by ISO in the 1960s, the growth in volume of international trade doubled faster compared to the volume of global manufacturing and 2.5 times faster than the global economic output (Levinson 2006). Combined with the computer and developments in logistic management, containers can be argued to have played a major role in the coordination and integration of global economies (Levinson 2006). As a simple technology, the shipping container continues to play a significant role in environmental, political, cultural, social and economic changes (Tomlinson 2009).

5.1.1 Container units

Container units form an integral part of trade and transport. It is estimated that over 20 million containers are being transported worldwide at any given time (Bilogistik S.A. 2016). Depending on the type of products shipped, containers vary in size, dimension, weight, materials, construction etc. There are generally 12 types of ISO containers and two of the most common are the twenty-foot (6.09 meters) equivalent units (TEU) and the forty-foot (12.18 meters) equivalent units (FEU). The FEU, which has 2400 cubic feet and is able to carry 22 tons (20,000kg) of cargo, has become the most frequently used container today. Although, the TEU is used as the standard unit of measurement to indicate a ship's carrying capacity and the size of container terminals (Kuzmicz and Pesch 2019). For example, the largest container ship in the world, the MSC Gülsün, can carry up to 23,756 TEUs (TME 2019) and Shanghai, the world's busiest container port, has the capacity

to handle roughly 43 million TEUs a year (SRD 2020). Containers are usually built from aluminum or steel, have two large doors at one end and are equipped with individual unit numbers which serve to identify the owner or user, and in some cases track the container around the world (WSC 2020).

The number of containers handled in container ports worldwide has grown from 28.7 million TEU in 1990 to more than 153 million TEU in 2010 and to an estimated 793.26 million TEU in 2018 (UNCTAD 2019; Van den Berg and De Langen 2017). However, it is not the value of this utilitarian object that makes the shipping container interesting for this study, it is the complex network which surrounds it's intermodalism and which continues to impact almost all aspect of global business, environment and society. In 2019, the United Nations Conference on Trade and Development (UNCTAD) estimated that 89.5% of global trade is carried by sea. This figure represents almost 11 billion tons of cargo and is expected to rise by 3.4% for the period of 2019-2024[8] (UNCTAD 2019). This growth and volume make the maritime shipping industry one of the most globalized industries in the world in terms of ownership and operations, with an estimated employment of over 1.65 million seafarers[9] globally (Manaadiar 2018). These figures, as a result, represent tremendous implications for social and environmental issues.

5.1.2 Social and environmental consequences

Since the advent of container shipping, the size of ships, ports, docks, trucks and trains have expanded significantly to allow for the growing use of containers. With the growth of the industry, the positive impact on global commerce has been immense. However, although the use of standardized shipping containers revolutionized the practice of shipping goods long distance, it has had profound social, environmental impacts as a result. The transport of goods makes up one of the primary sources of greenhouse gas emissions (GHG) and energy consumption (Kumar and Anbanandam 2020; Van den Berg and De Langen 2017). The total transport sector accounts for around 25% of global CO_2 emissions (Van den Berg and De Langen 2017), and approximately 70% of these emissions happen at sea (Gonzalez-Aregall and Bergqvist 2020). Although maritime transport is environmentally friendlier per ton per kilometer than road transport, the distance of shipments and heavy fuel consumption results in over 70% of total door-to-door emissions (Lai *et al.* 2011; Van den Berg and De Langen 2017). Additionally, ships alone account for 3.3% of global CO_2 emissions and around 2% of black carbon emissions from the ships' gas and diesel engines (Gonzalez-Aregall and Bergqvist 2020). The shipping sector has generally not yet been included in international carbon emissions abatement targets or emissions offset/trading programs, nor has it been covered by the Kyoto Protocol or the Copenhagen Accord (IMO 2015).

There has been a surge in recent years on addressing environmental impacts of the shipping industry (Lai *et al.* 2011). Many shipping firms have begun to pay attention to environmental

[8] These projections were estimated pre-COVID-19 and may now be subject to change.

[9] Workers that operate global merchant fleet.

concerns and began adopting green shipping practices (Van den Berg and De Langen 2017). Examples of such practices include calculating their carbon footprint and investing in alternative transportation equipment that result in lower environmental impacts (UNCTAD 2019). Recently, the International Maritime Organization (IMO) has implemented initiatives to control various pollutants in specific regions of the sea (Gonzalez-Aregall and Bergqvist 2020). For example, as of January 1st, 2020, the IMO introduced a new regulation requiring ships to reduce their Sulphur cap in fuel oil down from 3.50% to 0.50%, which is expected to bring significant benefits for human health and the environment (UNCTAD 2019, xxii). Nevertheless, significant environmental efforts in the industry are still uncommon as many industry actors are slow to adopt innovative practices in this direction and published research is lacking in this area (Van den Berg and De Langen 2017; Lai *et al.* 2011).

The impact of the shipping containers affects not only the oceans but also the developments on land. The freight transport industry holds a lot of importance in the economic development of a nation along with its environmental and social welfare. Almost 50% of the world's urban population lives along coastlines and rivers, making them venerable to atmospheric and noise pollution from ships in port cities, causing adverse effects on human and marine health (Kumar and Anbanandam 2020). Social sustainability analysis of freight transport is less explored in the literature. For this reason, Kumar and Anbanandam (2020) argue that it is necessary to pay attention to the social implications of the industry as well, calling for policy developments and participation of various supply chain actors to reduce their environmental and social impacts. They propose four main pillars to assess social issues in freight industry such as (i) internal human resources practices, (ii) external population, (iii) stakeholder participation and (iiii) macro-social performance (Kumar and Anbanandam 2020). From a stakeholder perspective, intermodal system includes many actors: shippers, receivers, drayage operators, terminal operators, network operators, policymakers and analysts, and customers (Winebrake *et al.* 2008). Implementing sustainability innovation as a result provides a promising avenue for generating large impact (Labuschagne *et al.* 2005).

5.1.3 Logistical challenges

Repositioning empty containers make up an estimated 20% of maritime transportation and 40-50% of land transportation (Kuzmicz and Pesch 2019). Kuzmicz and Pesch (2019) estimate that containers spend about 56% of their 10 to 15 year life either repositioned or stored empty. Repositioning empty containers require a lot of space, time and their own supply chain including a systems port, terminal facilities and transport means that result in their own environmental impacts and risks of loss (Kuzmicz and Pesch 2019). In 2016, 24% of global container volumes that were handled were empty containers (Drewry 2017) and according to the Boston Consulting Group, the repositioning of empty containers cost the industry as much as 20 billion USD annually, which represented 5 to 8% of the operating costs in 2015 (Sanders *et al.* 2015). These repositioning costs are a consequence of an unbalanced global trade which typically results in a surplus of empty containers in import regions or shortage of empty containers in export regions

(Akca 2013). By affecting multiple actors in the supply chains such as liner operators and cargo owners, this container management issue significantly decreases the efficiency of commercial trade (Akca 2013). This is not only an issue for the shipping industry, however. Containers used in other industries such as for construction or events are similarly often transported to and from their locations empty, causing adverse externalities and logistical inefficiencies.

Additionally, it is common for containers be at risk of damage and loss during transport. According to the last survey of the World Shipping Council (2017), weight misdeclarations, improper stowage or securing aboard the ship, or poor packing inside the container result in around of 1,582 containers are lost at sea each year. Additionally, 64% are lost during a catastrophic event such as a shipwreck or extreme weather (Manaadiar 2018). Containers getting lost at sea do not only represent problems for logistics. Some of the cargo within the containers may be costly, contain critical components or contain toxic content with the potential to cause significant damage to ocean life (Manaadiar 2018). A study conducted by scientists from the Monterey Bay Aquarium Research Institute (MBARI) in California found that a standard container of approximately a 30 meters squared footprint with a 10 meter halo produces approximately 600 meters squared of disturbance which is 20 times its footprint (Taylor *et al.* 2014). This may generate profound effects on deep-sea biodiversity, causing anomalies in nearby macrofaunal community patterns (Taylor *et al.* 2014).

5.2 Innovative developments for shipping containers

The industry as it is today is over 60 years old and has experienced significant development in logistics and transportation. There have been two breakthrough events in the development of containers since their first use. The first one was the development of the standard size and latching system by the International Organization for Standardization (ISO) 17712 and 668 standards. This unification of size and security system facilitated the speed, space needed and handling of intermodal transportation, compared to other types of shipments (Akdag 2012; Lam and Gu 2016). The second important milestone was the development of the double-stacked rail services, optimizing further the productivity of inland container transportation (Lam and Gu 2016). More recently however, and perhaps with greater speed, improvements in digitalization and atomization of container shipping are revolutionizing the logistics industry and the policies associated with it. According to the 2019 UNCTAD report, a new normal had appeared to be taking hold in the sector. Growth in the global economy and trade were increasing trends such as "supply chain restructuring in favour of more regionalized trade flows, a continued rebalancing in the economy of China, a larger role played by technology and services in value chains and logistics, intensified and more frequent natural disasters and climate-related disruptions, and an accelerated environmental sustainability agenda with an increased awareness of the impact of global warming" (UNCTAD 2019, xi). This is further represented by vision set by the IMO to reduce greenhouse gas emissions from international shipping by at least 50% by 2050 compared to 2008 levels (IMO 2015). It should be noted however, that as a result of the current global situation due to COVID-19, these targets and trends may be altered.

5.2.1 Sustainability

The international maritime industry is one of the key stakeholders in global sustainability (Wang *et al.* 2020). By facilitating world trade and supporting global economies, the maritime industry can be argued to be associated with each SDG. The industry not only affects the conservation and sustainable use of marine resources (SDG 14), it also influences the health and well-being of coastal residents through shipping-related pollution (SDG 3 + 12), and is responsible for providing decent working conditions of seafarers and port workers (SDG 8), all in all affecting the sustainable development of cities and communities (SDG 11) and with tremendous potential for industry innovation and infrastructure development towards sustainability (SDG 9) (IMO 2020). To this end, the development of the shipping industry towards sustainability is highly relevant for the successful implementation of the UN's 2030 agenda and the SDGs (Wang *et al.* 2020).

Wang *et al.* (2020) apply the concept of corporate social entrepreneurship to the maritime industry in looking at how they go through multiple transition stages in developing a BMfS. They propose that meeting the SDGs require wider participation and collaboration at the organisational level, involving intrapreneurs and entrepreneurs working towards innovative solutions as a direct reflection of SDG 17 which calls for collaborations across business sectors and throughout the value chain (Wang *et al.* 2020). Wang *et al.* (2020) further point out that some marine firms are cherry-picking which SDGs to focus on and place the firm's financial performance as a priority by choosing SDGs that return short-term benefits over long-term goals. Similarly, a study evaluating green shipping practices in the industry found that little is known behind the intentions of environmental management initiatives by firms as they are still uncommon and often secretive (Ng *et al.* 2020). Others have proposed that firms fear that adoption of green practices would slow down their productivity and hurt their competition, which may in turn slow the economic development of port cities which are highly dependent on the affluence of the industry (Berti 2019; Wang *et al.* 2020).

Nevertheless, several studies have been conducted to better integrate sustainability in the industry. Kumar and Anbanandam (2020) assessed the quality of environmental and social sustainability practices in the freight transportation industry and developed an index-based approach for a performance assessment model for economic and non-economic activities of a transport system. A study by Van den Berg and De Langen (2017) looked at the perspectives of both shippers and forwarders with regards to sustainability, concluding that shippers tend to focus more on sustainability issues than freight forwarders[10]. Their research provided a basis for initiatives that aim to increase the environmental performance of freight transport with regards to shippers and forwards as different actors with varying interests. Furthermore, Wang *et al.* (2020) theorized that SDG implementation reflects the process of social entrepreneurial thinking by searching for "innovative use of sustainability resources to create economic, social and environmental goals as

[10] A freight forwarder is a person or company that acts as an intermediary between the manufacturer or producer and a market, customer or final point of distribution. They are responsible for the transportation of goods between destinations.

specified in the 17 SDGs" (3). In this vain, entrepreneurial processes would facilitate the creation of shared value to a certain extent by overlapping business activities with SDG implementation. More research nevertheless needs to be done for the ecological modernization of shipping firms, which would improve their productivity while contributing to the protection of the environment.

5.2.2 Logistics

Companies today are under pressure to reduce disruptions and inefficiencies in their supply chains (Reyhan 2015). Logistic innovations for freight transport are changing rapidly as a result and are responding to opportunities for digital services embedded in new BMs (Tavasszy 2020). Product-service system innovations are supporting the on-demand economy through, for instance, crowdsourced shipping models and modularization of loading units (Tavasszy 2020). These are expected to produce profound economic impacts with a social value estimation of several trillion US dollars in 2025[11] according to the World Economic Forum (WEF 2016). Defective materials, labor disputes and transportation issues have devastating effects on a company's bottom-line and visibility over their supply chain (Reyhan 2015). There is, as a result, a growing need for more effective optimization designs for containers and network integration that would not only increase transparency and efficiency in supply chains but also impact the industry's synchronization, digitalization, technological innovation and mass-individualized logistics services (Lam and Gu 2016). However, the external cost from logistic innovations may also produce negative effects and there is still little clarity on which stakeholders and sectors will benefit (Tavasszy 2020).

5.2.3 Container characteristics

Other developments in the field are aimed at optimizing these aspects of the industry by addressing container characteristics such as weight, size, material manufacturing, design and repairability. For example, several studies reveal that lightweight containers, such as those made from composite materials, could reduce the weight of empty FEUs by 20% which would result in around $28 billion USD in fuel saving and a 17% reduction in energy and emissions over the container's 15-year lifetime (Buchanan *et al.* 2018). Yildiz (2019) also suggests that using composite materials can bring the weight of the containers down to 822kg from 3750kg without compromising the strength, durability and function compared to a traditional steel container of equivalent size. Building from composite materials may also cut the container maintenance cost because these materials do not corrode like a steel does (Akca 2013).

Additionally, foldable or collapsible containers have also been proposed as a response to the issue of transporting empty containers. The benefits of foldable shipping containers are said to lower transportation costs, alleviate space constraints and reduce carbon footprint (Goh 2019). Foldable shipping containers can occupy as little as 1/5 of the volume of traditional containers and by stacking as many as 4 or 5 containers on one truck, they can significantly reduce the number of trips and reduce carbon emissions (Akca 2013). Compared to the standard containers however,

[11] Pre-COVID-19.

they may cost as much as 3 times more but with prevailing costs reductions in other areas such as transportation (Akca 2013). In 2010, a study proposed that using foldable containers could result in as much as a 50% reduction in the total annual volume of empty containers that are repositioned globally, equating to savings to over $1000 USD per empty container (Boile *et al.* 2004). According to Goh (2019) if foldable containers are adopted worldwide, they would disrupt industry practices towards widespread technological and policy development and would trigger industry actors to take equivalent actions (Akca 2013).

5.3 Container use beyond the industry

Just as the containers were catalysts for global trade and economic development, they have presented transformative potential for other industries as well. Containers have a wide range of usages beyond transporting goods. Their size and durability have made them ideal for building shelters, offices, swimming pools, hospitals, schools, restaurants, food trucks, stores, homes, green houses and much more. Shipping containers that have served their purpose in freight exports and imports cost generally too much to be transported back to their origins. They result in being left in ports waiting to be recycled or reused. Although, it is possible to recover almost 90% of the steel through recycling, the transportation, dismantling and shredding required to do so are costly and energy and carbon intensive (Buchanan *et al.* 2018). A recent study comparing the total energy needed to melt down a container to reusing it for a home calculated that a 3.63 ton (3293kg) shipping container requires around 8000 kWh of electrical energy to convert it into steel blocks, while converting that entire container for housing would need roughly 400 kWh of energy, i.e. 5% of the energy required to melt it (Islam *et al.* 2016). The surplus of containers waiting in ports are thus in many ways ideal for architects. Using containers for building is not only cheaper than using raw materials, but their availability, modular design and durability make them attractive for efficient, eco-friendly and low-cost building (Yazarı *et al.* 2015). New developments in insulating technologies also improve the energy efficiency of the container housing have contributed to their popularity (Islam *et al.* 2016).

The flexible modular design and strength of containers also makes them useful for temporary housing situations such as in the case of natural disasters, for refugee housing or military training camps. Shelters made from used shipping containers may prove to be a faster, cost-effective and more sustainable solution to traditional shelters, especially those with modern designs such as composite materials or foldable technologies. A study looking at containers used for post-disaster reconstruction found that the multi-storey constructability of shipping containers allowed for almost twice as much space as conventional shelters by expanding vertically and freeing up land to be used as a common area (Tan and Ling 2018). Container manufacturers using standard elements with some built in properties make them ideal for modular structures and may substitute traditional timber frame in some areas (Islam *et al.* 2016). The use of the container can thus be an affordable and environmentally friendly solution to long or short-term housing due its strength such as self-supporting beans and metal sheets, as well as modular design allowing for adaptability and customary needs (Islam *et al.* 2016). Container usage is also being explored by the military and

organisations such as NASA for building self-sustaining structures, equipped with food producing units which can support people in remote and extreme conditions (Hadim 2018). With the help of entrepreneurs, containers may supply the world with constant innovation in response to growing social, environmental, political and economic demands and challenges.

5.4 Case studies

5.4.1 AELER Technologies SA

Thinking the box out
21st century tools for digital-era logistics (AELER, Website)

AELER is a young company based in Lausanne, Switzerland. It was founded in 2018 by Naïk Londono and David Baur and has 9 full-time employees as of 2020 and a total of 13 working remotely or part-time. AELER provides smart containers and aspires to reinvent the logistics associated with shipping containers. They aim to develop a next-generation shipping container with built-in digital hardware enabling more visibility and efficiency along with a reduced environmental footprint during transport. Their unique selling proposition (USP) is the reduction of operating costs during transport, increased security and safety, reduced fuel consumption and related emissions, and the implementation of internet of things (IoT) traceability and visibility services at the level of the intermodal container. Their container, made from composite materials, is predicted to reduce around 20% of CO_2 emissions from transportation or 5 tons of CO_2 emissions per container per year in its 10 to 15 year lifespan. This also allows for an additional 16% carrying capacity. Using this container over traditional steel ones additionally results in a 14% reduction of shipping cost for the shipper and 4% of road fuel reduction for trucks. Their customers are freight forwarders who may be small fleet owners who own their containers. They also operate on a service-based model whereby the containers are leased to the users and returned to AELER depot centres for maintenance.

The motto of AELER is: "We envision a world where logistics operations are efficient, clean and intelligent." For this, they provide end-to-end visibility and traceability through artificial intelligence (AI) technology, allowing to monitor what is happening inside and around the shipping container in real-time as the goods travel to their destination. The data is continuously fed into the AELER cloud for prompt decision making, visibility and, most importantly, traceability which will prevent theft, smuggling and container loss. There are two fundamental innovations in the AELER smart container. The first is its built from composite materials making them lighter and sturdier than traditional containers and the second, is the onboard intelligence which enables 3D monitoring of temperature, humidity, impact, pressure, GPS, altitude, security and measurement of light and volatile organic compounds (VOCs). This information is further stored in a secure and auto-updating manner. The Smart Container can also be insulated for the transport of temperature sensitive goods.

Following three years of development, they are now concluding specifications and ISO certifications of the prototype and preparing for commercial pilots with market-leading transportation companies that ship Flexitanks[12] internationally. They hope that entering this niche market, will enable them to increase their visibility and strategically move their way into the larger 200 billion USD cargo shipping industry. The higher carrying capacity of their containers are also estimated to result in around 200kg less polypropylene (i.e. plastic) usage for the Flexitank bags per use, resulting in up to a 700 thousand tonnes reduction per year. The publicity surrounding them calls their smart container disruptive and innovative with the potential to transform the immense industry towards improving its environmental impact, transparency, visibility and efficiency.

5.4.2 Continest Technologies Plc.

Never stop innovating!
The most innovative foldable container technology (Continest, Website)

Continest is a Hungarian company, based in Szentendre near Budapest. It was founded in 2017 by Vidor Kis-Márton and Daniel Tegzes as a spinoff of an earlier concept. Continest as the entity it is today was officially founded in 2019. Currently, the company employs 14 people and is represented by an entity in the United-Kingdom, Switzerland and Finland. Operating outside the shipping industry, the global start-up produces foldable containers especially designed for temporary accommodation, office or meeting room, first aid, command post, guard post, storage, service area and cooling and heating purposes. Their USP is that the units can be easily deployed and transported and, because they are foldable, the containers can save up to 80% on logistic costs as well as cut 80% from GHG emissions from transportation. In a recent project, Continest was able to reduce the need for trucks from 40 to just 8 trucks for the transport of 122 containers. On average, one truck can carry 24 10-foot units and each container takes as little as two people and a few minutes to set up. The size and weight of the 10-foot units also allows greater manoeuvrability than regular containers and requires smaller and lighter machinery to handle, leaving minimal impact on the site where it is installed. As of today, they have sent over 664 units to 18 countries and 64 cities around the world. Continest has provided foldable containers to music festivals run by Sziget Zrt., Line Nation and Eventim, as well as several sporting events around Europe. In 2019, they provided the entire service facility (1200m^2) for The FIS Alpine Ski World Championship in Åre, Sweden and were selected as the FIS Preferred Supplier.

In addition to working with the events industry, Continest has also begun developing advanced mobile defence infrastructure with ballistic protection for military operations in Israel, Lithuania and the Netherlands. The special security-purposed containers are designed for the mobility and interoperability of field camps. Some of these containers are also being built from composite

[12] The transport of bulk liquids such as shampoo, oil, juice, wine and nontoxic paint in a large sac inside the container.

materials and include the possibility of adding solar panels for greater autonomous usage and a lower environmental footprint. In light of the coronavirus (COVID-19) crisis, the start-up has been busy developing mobile molecular diagnostic laboratories to treat COVID-19 and other pandemics, called ContiLab. ContiLab uses the base concept of the foldable container that will be adapted for the public and private health sector and critical infrastructure companies. It will be designed for rapidly deployable, scalable, customizable and self-sustainable sampling, screening and molecular diagnostics purposes. ContiLab responds to the need for multi-functional and modular structure that can relieve overburdened hospitals and endangered staff with minimal resources and environmental footprint left behind. In the near future, Continest hopes to explore the opportunity to enter the humanitarian industry to supply their containers for refugee camps in Germany and the agriculture industry for seasonal framing solutions.

6 Findings and analysis

The analysis triangulated through website materials, social media, online articles, additional documents and interviews with the founders revealed the vision behind the business idea and the strategies each business employs to reach their targets. It was found that these strategies rely on each founder's perception on sustainability and an understanding of their role within the larger movement towards sustainability in business. The results suggest that an approach to incorporating sustainability-driven objectives into the business development involves four phases characterised by reflective and strategic decisions-making: (i) 6.1 Forming of a perception on sustainability in business, (ii) 6.2 Incorporating sustainability in business development, (iii) 6.3 Achieving sustainability through business value creation and (iiii) 6.4 Delivering sustainability for business transition. Chapter 6.1 is representative of the entrepreneur's perception or orientation towards sustainability and its place in business. Chapter 6.2 follows by illustrating the motivations for incorporating sustainability in business and strategies used to overcome some challenges associated with the business development. Subsequently, Chapter 6.3 represents the start-up's broader value consideration through the BM. Finally, as a result of the iteration and validation that takes place throughout the three previous phases, Chapter 6.4 illustrates their vision for the future, the role they intend to have in moving industry practices forward and the desired outcomes from their business to society at large. A summary of the findings along with the framework depicting this approach, The Framework for Sustainability-driven Business Creation, Development and Transition (Figure 6-1), are presented in Chapter 6.5 and discussed in the following Chapter 7.

6.1 Forming a perception on sustainability in business

Data from the two co-founders in this study affirmed that sustainability is a popular topic at the moment. Vidor, the co-founder of Continest, emphasised: *"If we don't talk about COVID then we talk about sustainability, these are the two things."* This idea was extended by Naïk, the co-founded of AELER, in stating that sustainability is anyways in the back of the mind of every millennial today, especially entrepreneurs. According to both, the words "sustainability" and "sustainable" are used very often in business at the moment, almost to the detriment of the concept itself. Vidor pointed

out that the misuse use of the term by some people or organizations has turned it into somewhat of a fancy logo with a shade of hypocrisy. Nevertheless, both entrepreneurs conveyed that incorporating principles of sustainability for themselves and their business is essential to be successful and impactful in the future.

Both entrepreneurs expressed that a core principle of a sustainability-driven mindset is the notion of long-term thinking:

> *How would I define somebody, a sustainable entrepreneur? I think long-term planning. That's one of the keys. (Vidor Kis-Márton)*

Adopting a forward-thinking mindset is not only important in terms of creating sustenance and ensuring the survival of a company but was also expressed to result from personal morals on the right way to act. Vidor connected sustainability thinking to *"trying not to do things that I would not feel comfortable [with] tomorrow or the day after tomorrow"*. Similarly, Naïk connected this level of thinking with having with a mindset that drives people in the right direction and in a way that may benefit a future member of society. Naïk expressed an additional notion of sustainability thinking which embodies *"thinking a bit more holistically about the impact of what you're doing"*. Acting sustainably thus represents an attempt to create balance and harmony with surrounding environments where needs can be met without taking from those of others. These perceptions are aligned with the principles of sustainable development from the Brundtland report (WCED 1987).

In addition to long-term thinking, a key aspect of acting sustainably was also defined by Vidor as achieving personal satisfaction with his actions knowing that what he is doing is making a positive difference. In fact, he described this as one of his core visions and personal drivers for what he does:

> *That's, I think, one of the core visions. That I'm really happy that I'm doing something that actually makes a difference and will make a difference. (Vidor Kis-Márton)*

Accordingly, both founders view sustainability as resulting from actions done with the belief of making a difference and pushing society in the right direction. Naïk also emphasised that sustainability is not a zero-sum game and should be measured in order to understand and minimize the impact business has on ecosystems by asking a fundamental question:

> *How do we make sure that we can both continue to grow [and] expand and…not in a cancerous way? (Naïk Londono)*

Naïk pointed out that growth with sustainability importantly involves taking into consideration the broader impact that results from actions:

> *Expanding our needs or independence from these base needs that we have in the pyramid but at the same time, making sure that we're not doing so at the expense of another ecosystem. Whichever ecosystem*

> *it is right? It's a natural ecosystem that maybe doesn't have a way to fight back or it's even other communities. (Naïk Londono)*

Long-term and holistic thinking, and the internal gratification of doing something that benefits others can be understood as what constitutes the perception of sustainability for both entrepreneurs, but while they both clearly embody this mindset, neither expressed the desire to call themselves a "sustainable entrepreneur". The reasons for this however seem to differ in accordance with their perceptions of the term.

In Naïk's view, sustainability is inherently subjective and can vary significantly between people. He argued that it is not something that people can be separated by, nor should sustainability be seen only as an end goal. Instead, it should be an underlining quality that drives ongoing action and represented more by a gradient in people rather than a threshold. He sees sustainability as being present at varying degrees in everybody and can be recognised through little changes that are starting to appear in society that reflect the degree of sustainability in people's thinking. Examples of these changes for some include choosing to not eat meat anymore or opting to ride the bike. As a result of this, his views are understood as meaning that sustainability cannot be used as a label for people and that separating people based on this word would create competition:

> *I don't think there's anything that separates me from other people or people that might value a bit more sustainability for others, because then that would mean it's us against them, right? (Naïk Londono)*

Vidor also attached a negative meaning to the label "sustainable entrepreneur". He made allusion to two recent incidents which made him distrust the label in business and reluctant to call himself "sustainable", although he believes he fits the essence of the term. Someone who embodies principles of sustainability for him is reliant on two aspects. The first is in reference to the sustaining qualities of the concept such as ensuring financial sustenance. For a business this implies generating profits so that it can grow and prosper. Without the survival of the business financially, Vidor argued that the ecological and social aspects of sustainability from business cannot thrive. The second part of sustainability includes the activities performed in order to decrease one's negative impact, i.e. using less or cleaner resources. He explained that this can be recognized by the way one answers to the "how" and the "why" of their actions. This aspect is also interwoven into business decisions and the relationships formed between partners, employees and customers. This second aspect of sustainability refers back to the importance of feeling good for doing the right thing. He explained that for him and his co-founder Daniel, treating others with respect is a core characteristic of sustainability that arises from their personal values and one that guides a lot of their business decisions.

In this vein, based on the definitions given by both entrepreneurs, sustainability can be understood as a core variable in their decision-making processes, stemming from what they believe should be the correct way to do business and, as a result, influences their vision of the future. Naïk acknowledged that a way sustainability gets merged into business functions of AELER derives

from the worldview of the founders and how they define sustainability. He described the process of decision-making for AELER to be:

> *If it passes the filter of who we are. If it serves the purpose of growing who we are as well then it will serve the purpose of this sustainability in the back. (Naïk Londono)*

Sustainability in the individual is understood as portraying altruistic values and long-term thinking. That is, the willingness to do something good for others, respecting those with whom they work and exchanging values that increase people's well-being in addition to the survival of their business. Vidor importantly noted however that it is not always possible for young businesses to act sustainably all the time. He highlighted the often-contradictory nature of thinking for sustainability while fighting to keep the business alive in the present and explains that while long-term thinking is a core characteristic of sustainability, start-ups are usually living day-to-day. Many times, acting in a sustainable manner is threatened due to the business or financial constraints. He points to the importance of balancing the two aspects of sustainability because:

> *If you're not sustainable from that [financial] point of view, then you can be sustainable from an eco[logical] point of view but it's not going to make any difference. (Vidor Kis-Márton)*

One way he and his team confront this challenge is not only by providing competitive pricing but also by creating direct environmental impact that adds value to the end users and the local communities which host their containers. Vidor emphasised that this also importantly serves the purpose of "*demolishing the illusion of sustainability*" by being able to demonstrate exactly how Continest is making a difference at the location of their business activities.

On the other hand, Naïk noted that sustainability has become a trend among entrepreneurial businesses and is difficult to distinguish between those who appear to be following the dominant "*crowd incentive*" of creating ecological value for profit and those that are driven by purpose and leading a change according to their personal objectives. While they can be differentiated by the degree of contribution between those that are taking advantage of the trends and those that are actively pursuing a particular worldview, regardless of the orientation, he believes that both cases are contributing towards sustainable development

Nevertheless, both agree that economic, ecological and social sustainability should and are very much supporting each other in business. In the end, both consider the goal to be the exchange of values and the betterment of society through sustainability-driven actions. It is about finding an equilibrium between profitability and positive intentions, which evolve together:

> *Economic sustainability with ecological and social sustainability are, I believe, very closely related. (Vidor Kis-Márton)*

6.2 Incorporating sustainability in business development

The motivations for developing a sustainability-driven business were encountered, in both cases, primarily through commercial reasoning. As such, the opportunity they both saw for creating a business was profit oriented at first. According to Vidor, sustainability as a financial strategy always comes first. He insisted that most businesses acting in a sustainable way do so primarily because it makes sense economically and secondly because it makes sense ecologically. He related this to his own professional experience in general and noted that this does not include businesses with a primary focus on sustainability (such as an ethical coffee shop or eco-friendly store) or those that are not-for-profit.

Vidor described his journey to Continest as having developed from the personal drive to settle down and to be his own boss. He explained: "*I did so much for others that now it's time that I do something that is much more related to me than to somebody else."* He came across the company from which Continest became a spinoff of, bought the intellectual property (IP) and contracted the Dutch engineer who invented the concept. Vidor explained that upon being presented with the opportunity to lead the development of the company, he was aware of the potential for success inherent in the idea and the benefits it can have on a larger scale. In early 2017, they began developing the prototype and from that moment on he was fully involved with the company development and become the CEO after its restructuring. At the time of developing the business, he saw inefficiencies in the cost and logistics of short-term housing provisions. He explained that roughly three-quarter of the price of renting the units came from the transportation costs alone:

> *We realized that due to the lack of innovation in this type of containers that we're in, the end user is actually paying more for added services like transport than it's actually paying for getting the service. (Vidor Kis-Márton)*

In the beginning, him and his team first saw the economic benefits in their innovation, and that from achieving this, the positive environmental impacts became part of the core strategy. An important reason for this, he explained, is that in general, customers are not willing to pay a higher price to receive a more sustainable product or service. In order to remain competitive, they had to find a way to lower the environmental footprint of their containers without increasing the price:

> *Sustainability is always convenient when it doesn't cost more. (Vidor Kis-Márton)*

In fact, neither founder began their business development with the primary intention of providing an environmentally or socially beneficial product. Naïk and David similarly sought to correct the large systemic issues within the shipping industry which produced important redundancies in

logistics. They observed a lack of significant innovation in the shipping container industry over the past decades and a fragmentation among actors in the supply chain caused by sea blindness[13]:

> *It's an endemic problem of the visibility or efficiency, transparency, clarity and waste management. (Naïk Londono)*

According to Naïk, fixing this problem would have large positive ramifications technologically, socially, environmentally, and most importantly economically.

> *Trade facilitation is one of the main drivers of economic growth in certain regions. (Naïk Londono)*

Naïk and David arrived at the creation of AELER after completing their master's degrees at EPFL in engineering and spending one year developing the idea, where Naïk went to Singapore to learn about logistics and David started developing the idea in the laboratory to see if it was technically possible and if it made sense. Naïk explained that the results were positive and more so that there was a need for their idea. They realized that the *"container itself is the central element of this entire flow and that it's the element that is most viewed as like garbage"*. Targeting the container as a tool for change allows the co-founders to not only get people's attention as it has *"the most influence on how things are moved and how current waste can be can be measured or even prevented"* but to also present a solution with their new technology for the systemic issues described above.

> *We believe that through trade, humankind progresses and improves itself, and are persuaded the time is ripe for the right technologies to bring transformational advances in the way our global supply chain network works. Our vision is to build the optimal tools to enable an efficient and [near] zero-waste trade system while making the exchange of goods ever more accessible and simpler for everyone. (AELER, Website)*

A central element to providing sustainable change is through using the shipping container as an initial tool without changing how people work with it. To this end, they aim to fit within the system while generating new social, economic and environmental value to the industry. This can be referred back to the notion of sustainability as thinking holistically while attempting to change *"the rules of the game",* the game being the neoclassical business culture.

The analysis from both founders made clear that a major drive for developing their businesses is the potential profitability from providing innovative and efficient solutions for industries that are in dire need of modernization. Vidor declared several times that large corporations should be more

[13] Sea blindness refers to a lack of awareness among consumers on shipping practices and how much trade is dependent on maritime shipping. Ocean shipping is allegedly responsible for 90% of the goods consumers buy (Cambel 2017). Naïk argues that many people are not aware of the problem because they are benefiting from the low cost and efficiency of shipping: *"when you know the system exists and assume that it works because it gets you what you wanted but that's it" (Naïk Londono).*

active in trying to find sustainable solutions for moving the industries forward in the right direction:

> *The reason why the standard containers, our main competitors, are still in business is that…corporations and large entities are too slow and too lazy to focus on change. If something works, it doesn't matter if it's sustainable or not, it works. That's the only thing that matters. And there's no way that this is going to last. I mean, it might take a hundred years or maybe five years, but it's going to change. And we see this change. (Vidor Kis-Márton)*

Naïk echoed this opinion in relating to the challenge of getting people in the industry to jump on board with their ideas. As a core aim for entrepreneurs, Naïk reported that finding the right levers to get people to share their ideas and subscribe to their product is the most challenging:

> *It's like, can the idea we made be constructed in a way that is simple enough for people to understand and to relate to and then it can start to become an idea that spreads in itself. And that's, I think one of the most difficult things of that entrepreneurial process. (Naïk Londono)*

That fact that operational processes have not changed for a long time in the shipping industry has created barriers to integrating innovation and a passive ownership for the need for change among industry actors. Naïk conveyed that the difficulty in providing this kind of technical and logistical innovation to an industry that is not used to change is that they have to do all the thinking, planning and processing to provide a smooth and friction-less transition. This is also leading them to create new types of BMs because "*the current business models that people are used to and want to think within are not meant for the type of disruption that we have*", which is also giving their business an opportunity to lead business innovation.

> *So as long as we present them an option that they can embed in an easy way in their thinking, I think there is a way basically to change, but you have to do all the effort. That's the difficulty. (Naïk Londono)*

On the other hand, Vidor also expressed a key challenge for his business, that sets him apart from other technical start-ups, is the difficulty to systemize their business functions. Issues of allocating and matching resources to an unlimited number of tasks is, for Vidor, an essential hurdle that they need to overcome in order to grow sustainably:

> *I, as a founder, have to be a research and development person, I have to be a finance person, I have to be a legal person…a salesperson, a social person, a father, a friend and a kid. (Vidor Kis-Márton)*

Moreover, he explained the current process of business development as a roller-coaster of achieving something, feeling a sense of success and soon after facing the challenges that comes with the newfound success. He noted that their product maturity and technical readiness is struggling to keep up with their rapid success:

> *The practical experience is not meeting the theoretical expertise, and that is actually what we are still facing today. (Vidor Kis-Márton)*

It can be concluded that while both start-ups experience different obstacles to reaching their objectives, both share the same process of business development as a continuous cycle of successes and challenges which in turn solidify their mission and desire for change.

6.3 Achieving sustainability through business value creation

> *Not having a business model doesn't mean that you don't have a certain mindset, [that] you don't have a certain chain of values that are driving you, driving your decision-making process and influencing the way you are running your business. (Vidor Kis-Márton)*

Applying sustainability in the BM is, for both start-ups, largely reliant of the personal values and motivations of the founders. While Vidor admitted in the beginning of the interview that Continest has not yet developed a BM on paper, he strongly believes that personal values play an important role in all aspects of the business, from the types of company projects they decide on, to the quality of employee relations and even in their pay. In particular, he noted that his and Daniel's roles as fathers and husbands have a significant influence on the way they view sustainability, engage with business projects and develop their long-term strategies.

For Naïk on the other hand, he found that developing a BM from the very beginning was integral to the validation of their ideas. Having a few propositions to test against experts or potential investors or customers means that they can quickly measure reactions and gage future responses to their product and service. Even in the conceptual phase of their business development, iteratively returning to the BM and making changes enables them to develop a concept proof and make aligned decisions to correctly capture the value they intend to create.

> *A wrong business model, even a wrong proposition of how it would be in the future, will just put the wrong assumptions or expectations on the side of people. It doesn't mean that it cannot be changed. But thinking correctly from the beginning on how to capture that value is actually more important than even I realized from the beginning. (Naïk Londono)*

This fits in with the common view from both entrepreneurs that sustainability in business necessarily involves long-term thinking and acting in the way that a future company should. For Naïk this is *"driving changes by including social aspects around you and changing the work environments in a way that is sustainable with how the work environment might be in the future."* He envisions the future of the shipping industry to be more automated, digitalised and on a social level, having less rigid working hours where people enjoy a better work-leisure balance and hopefully, where value is no longer only quantified monetarily.

Vidor also describes the vision for Continest more in terms of additional social and partner value that they are able to generate:

> *Growing the business in a sustainable way. And for us, that means that, for example, we are not growing organically but we are growing always with local partners. So, in Switzerland, I have a Swiss guy who's working with us. In Finland, I have a Finish guy who's working with us. And basically, I think that's it. The vision is that we should enjoy doing the business, that's one important part but we are enjoying it even if sometimes it's very difficult, and grow it, as I said, in a sustainable way. (Vidor Kis-Márton)*

A central goal of both is to bring greater efficiency to thier industries in addition to the benefits of doing ethical business, socially and environmentally.

> *I want to make something that makes a difference in people's lives. (Vidor Kis-Márton)*

In terms of stakeholder value, Vidor believes that, both for him and Daniel, their families are the most important stakeholders, stating that their wives and kids have had a significant influence on the company development and success as a whole. Second to them he places their colleagues and partners as important stakeholders:

> *I could be the most skilled sales guy in the world and the most motivated guy but without some of these guys around myself, I would probably not, not probably, I would definitely not be where I am today. (Vidor Kis-Márton)*

In fact, the motto of the company can also be understood to reference this social solidarity between the partners, founders and employees:

> *The common work is important. (Continest, Website)*

To the list of important stakeholders Vidor adds their customers, communities and the natural environment.

On a similar note, in the process of creating systemic value for the industry, Naïk also views the value that they create for their stakeholders as an essential pillar to their success, which includes ecological and community value produced as a result of their business activities. He additionally points to internal values as particularly important and refers to the quality of the experience people get from working with AELER, either as an employee or a partner. This experience is not only important for generating financial value but is also a source of innovation and growth for them through the exchanges of ideas, creativity and business efficiency. Naïk emphasised this point by expressing that they aim to create a good working environment where talented people can expand their ideas and nurture their talents to reach bigger potential. Naïk and David also strive to allow moments where employees can transcend their roles, by for instance, cooking together which removes the feeling of hierarchy for a greater exchange of values and the possibility to learn from each other:

> *The more we are able to make that leverage possible, the more also each of the people that are contained within our own ecosystem can gain value and also bring value to the ecosystem. (Naïk Londono)*

In growing the business, he sees these values as a core structure and are preserved by asking themselves essential questions:

> *Do we exchange the correct set of ideas with partners and customers? Are we driving basically the world in the right direction or are we bringing that same economical value to someone that is trading human organs?... Can our own growth and value grow the value of other companies that we value as valuable? (Naïk Londono)*

While both founders expressed that at the moment, neither business is large enough to require them to develop metrics or strategies to solidify these values for business growth, both strongly believe that cycling these types of questions and thinking through the intended impacts are essential to being successful and ensuring the growth of the company in a sustainability-driven manner. According to Vidor, economic sustainability primarily enables, and gets reinforced by, the development of social and environmental sustainability. In other words, the success of the company unavoidably includes drivers towards social and environmental sustainability and further incentivises them:

> *To invest even more into this kind of R&D [and] to support maybe academic research by working with academia or just going into areas where we would not go if we would not be successful. (Vidor Kis-Márton)*

In addition to this, Vidor admits that developing a BM is a prerequisite to entering the international market and to scale-up:

> *As soon as you're starting to have investors who are interested and who judge you based on your performance indicators and your policies,… then it's a must. It's not a choice of like it or not but it's when are you going to do it, and we are reaching this point right now as we speak. (Vidor Kis-Márton)*

Though both entrepreneurs believe that sustainability lies in the mindset, which also determines how sustainability will be incorporated into the BM, Vidor emphasises the importance of the BM for navigating through the different development phases of the company. He connected developing the BM to approaching the end of one's teenage years, when some things may no longer be permitted as one ages. Similarly, developing a BM becomes essential in order for the company to grow and navigate the different mindsets on the international market, something that Vidor and his team are presently working on developing.

6.4 Delivering sustainability for business transition

Perhaps the aspect that both start-ups have the most in common is their desire to positively impact the industries in which they operate. Throughout the interviews, both Naïk and Vidor expressed several times that they are already seeing this change happening in the industries:

Everything is changing and should change. (Naïk Londono)

It's going to change. And we see this change. (Vidor Kis-Márton)

This, both argue, leaves the role of being agents for change in hands of entrepreneurs like Naïk and Vidor and their co-founders. Naïk in particular, pointed out that the role of business in the context of sustainability is to drive exchanges and activities in a way that enables a strong direction and link to where they, as businessmen, want to be. As an entrepreneur, he chose *"to use business is an engine for growth or for change"* towards a more sustainable future. He remarked that there are several ways for an entrepreneur to be an activist for change while also being profitable. This implies playing by the rules of the game while also trying to change the rules for the better. While this is very challenging, he strongly believes that the role of business is to incentivise people to consume consciously while creating and exchanging values for reasonable and sustainable growth:

I see businesses as a way really to power up these exchanges and to set a precedent in how they should be done. (Naïk Londono)

And in Vidor's opinion:

I believe that the economic sustainability and ecological sustainability are very much supporting each other or should be supporting each other…So what I think is this: organizations, companies, they have to think out of the box and get out of their comfort zone. (Vidor Kis-Márton)

The role of sustainability-driven business is thus seen as creating win-win scenarios where growth and profit enable the adoption of environmentally friendlier business activity and positive social change. For Continest, bringing about this change means that they are able to create large-scale social and ecological benefits:

What I'm looking at long term is the times when we would be able to work with FEMA[14], for example, or work with USAID or work with the United Nations or when the product and the concept becomes globally accepted and globally available. That's when the social impact will be very, very significant. (Vidor Kis-Márton)

Vidor expressed that it is very important to him and his team to be able to contribute to social welfare as result of pursuing new business opportunities. To illustrate this, he described one of their current projects for building laboratories with their foldable containers to treat COVID patients as having been an important moral decision. He argued in response to potential criticism accusing them of trying to profit while others are suffering that *"as long as you're adding value, as long as you're delivering something that makes a real difference"* and keeping a reasonable margin on the profits, then he sees no problem in pursuing business opportunities that arise from times of crisis:

[14] The Federal Emergency Management Agency for disaster relief in the United States.

> *I have no moral issues with making profit as long as we are delivering real values and values that are making the difference in somebody's life, either on a corporate or personal level. (Vidor Kis-Márton)*

He stressed that this is also a way for his business to be resilient in times when their other projects are postponed or cancelled:

> *We are opportunity driven. So, I think one of our skills is that we can identify and we can react very quickly on opportunities that are arising, good or bad. (Vidor Kis-Márton)*

An important aim nevertheless for both start-ups is to produce change within their respective industries, especially in the logistical operations of the industries. They see their businesses as having the potential to disrupt the industries by providing more efficient and effective products, which also have lower environmental footprints. Naïk for example sees disruption as *"moving from something that was totally impossible before to doing something that becomes almost the base"*. He hopes that their containers will change the way things are done systemically in the long run, however it is important to them not to be initially disruptive to how people work within the system. Fast forward five years, Naïk sees their containers as having been a disruption compared to the old way of moving goods and having created a centralized information network.

On the other hand, Vidor explained that aside from the clear environmental benefits of using foldable containers, adopting a different point of view on how these kinds of containers can be useful for and benefit society can create significant disruption for the better. For example, due to the easy transport and set-up of the containers, they could be quickly shipped to areas where people are affected by natural or manmade disasters and influence people's lives in potential life-threatening situations. Similarly, by having qualified as a reliable partner for the defence industry, they are developing a dual-purpose product that can be used for civilian and military applications as well as being more proactive and flexible towards different industry areas and potential markets.

> *It is definitely disruptive…We are delivering the same added value that the global market was using and is using for the past six decades but we cut 80% of the financial resources, the logistical resources and, recently it becomes also relevant, of ecological footprint related to containers. (Vidor Kis-Márton)*

Vidor and Naïk both view their start-ups as role models for influencing new business thinking:

> *Hopefully one day we can share these experiences and ideas with others if they think that they also want to move in the same direction. Now, in that sense, we're more like leading by example…Being entrepreneurs, is to be able to use those leverages, you know, to induce this sort of change, sustainable change, and the fact that we make AELER a success will be one of the triggers that enables the idea that we had to make it a success become interesting for people to emulate and to understand. (Naïk Londono)*

> *We are getting a lot of positive feedback from partners and from customers, and I do believe that one way or another we are influencing them, and one is this way of thinking that you should really think*

> *out of the box. Don't take anything for granted. Don't think that just because it's been done like that, it should be done like that tomorrow as well. (Vidor Kis-Márton)*

Vidor's wish is for larger companies to stop making excuses on why they are not taking action on doing the right thing and are instead worrying about their brand image and being politically correct. He argued that decisionmakers and especially companies with larger financial freedom should be working on more solutions towards developing sustainability and acting on them, like Continest is:

> *An example is that we donated I don't know, 700 euros to a company who is raising money for the plastic shields for the medical personnel. Although we are not making money. We are not profitable at the moment. But we still did it. And knowing me and my co-founder, I know for a fact that once we are profitable, our social sensitiveness and our impact fund will not have to wait as long as it had to wait with BlackRock to get their stupid act together. And actually, we are aiming for BlackRock to be one of the investors for ContiLab, to make up for their sins a little bit. (Vidor Kis-Márton)*

In fact, Vidor mentioned that their exit may be when the leading companies in the industry start to view Continest as a threat and decide to buy them out. At this point, Vidor hopes that their product and strategy of doing business will get implemented on a global scale and create widespread benefits, either with or without him as the CEO. "*My personality is built for this disruptive operational mode*". However, at the moment he believes:

> *There's quite a lot to do for us and there's a lot to do for the world, if you want to look at it more philosophically, in order to keep ourselves busy for the coming few years. (Vidor Kis-Márton)*

On a similar note, Naïk views his and his co-founder's role in the company as integral to its ability to impact the industry at the moment. He explained that they have many ambitions for their company and that following an exit strategy would be against their personal values at the moment. He commented that if they left the company now, their product would become merely another tool:

> *Societal change does not come with the tool, it's a combination of everything that is built and right now, it's still a combination of something that I think needs us to be pushed in a certain direction. (Naïk Londono)*

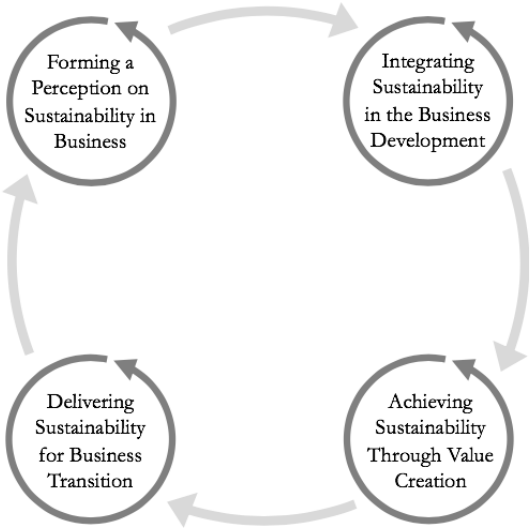
With that said, both founders expressed the hope that someday their business and values will become widespread enough that they may no longer need them to be at the forefront. As a result, one of the essential messages conveyed throughout the interviews with regards to business and sustainability was captured nicely by Vidor:

> *If you're not acting in a sustainable manner, you're not going to be able to succeed. Simple as that. (Vidor Kis-Márton)*

6.5 Summary

The inductive analysis has signalled in both case studies that the entrepreneurs coupled together aspects of commercial and ecological logics as motivations for creating and growing their business. This insight has led to the conclusion that for each founder, personal values linked to both logics were salient to the entrepreneurial process. Although it could be said that economic profitability is a main driver for pursuing the business opportunity, both Vidor and Naïk have conveyed that having a product that is more efficient and better for the environment is giving them an edge over their competitors and a lead into reaching their goals and generating disruptive and sustainable innovation. Both entrepreneurs also embody the heterogeneity and ambiguity of the concept of sustainability, which results in a unique understanding of the term based on their own experiences and worldview. As a result, the interviews provided important insights into how sustainability is understood by the co-founders and gets integrated into the business development to generate value. It can be concluded from both interviews that sustainability in business largely results from applying personal values and long-term thinking with the recognition of systemic interconnections, risks and opportunities. This combination also drives their desires to create a positive and impactful change in their respective industries and armours the companies for success.

Figure 6-1 The Framework for Sustainability-driven Business Creation, Development and Transition.



With a clearer understanding of how sustainable business growth is connected to the entrepreneur, the analysis unpacks how these understandings lead to creating impact and positive social and environmental change. The findings from the two case studies imply that creating a BMfS embodies a nexus of direct and indirect decisions and actions that create complex inter-relations between the products, processes and the people involved. Starting with the unique perception on sustainability developed by the entrepreneur, the framework to the right (Figure 6-1) provides a simplified arrangement for analysing sustainability-driven business creation and development with four stages of thought and action which lead to the ultimate goal of sustainable business transition. The circular structures of the framework represent the iterative, reflective and ongoing processes that the entrepreneurs necessarily engage with when making decisions about their business and their intended direction. This process starts over as every new decision passes through a filter of personal (i.e. forming a perception), internal (i.e. integration into the business development) and external (i.e. creating and delivering value) validation. The entrepreneurial approach for sustainable business creation can be understood as a series of feed-back loops where knowledge, values and vision are cycled and tested against the BM during the business development. To this end, each of

the phases incorporate the core components of the entrepreneurial experience and interpretations of sustainability for business development.

7 Discussion

In this chapter, the four phases of the Framework for Sustainability-driven Business Creation, Development and Transition (Figure 6-1) are discussed further against the background of extant literature on SdE and BMfS. The aim is to provide theoretical clarity and development towards a modern and holistic understanding of the SdE phenomenon.

7.1 The entrepreneurial approach to sustainable business development

The approach to entrepreneurial business creation described above depicts the complex and diverse narratives of SdE. The findings illustrate the role that motives and values play in how the co-founders perceive, think and incorporate sustainability into their business. Most importantly, the framework attempts to propose a general yet holistic representation of decision-making for Sd-entrepreneurial business development. While other scholars such as Belz and Binder (2017) have also explored the processes of SdE, little attention has been paid to the ongoing influence of individual attributes like identity, values and perceptions (cf. Brieger and De Clercq 2019; Kirkwood and Walton 2010; Vuorio *et al.*2018) beyond opportunity recognition and in the overall development of the BM. Other works also often constrain entrepreneurial endeavours to the fulfilment of a TBL value creation derived from economic theory (cf. Dean and McMullen 2007; Dixon and Clifford 2007; Elkington 1998). The findings in this study suggest that while these attributes do play an integral part in the Sd-entrepreneurial approach to business development, they are also interwoven with complex ethical and moral cognitions. Therefore, a comprehensive study of SdE requires an understanding of how entrepreneurs make sense of their business and incorporate aspects of their identity into the BM and envision the future of business. This further enables a better understanding of Sd-entrepreneurs as agents of change that create a "new normal" in business for sustainable development. Examining this approach as it pertains to innovation for the shipping container is particularly interesting for this study because the shipping container is part of many value chains and either directly or indirectly influences the lives of all individuals globally. Thus, an entrepreneurial approach towards business and sustainability can influence the future of logistics for many industries, their externalities and become a significant lever for positive impact on a global scale.

To this end, the Framework for Sustainability-driven Business Creation, Development and Transition considers as a prerequisite to sustainability embedded entrepreneurial business development the recognition of how the entrepreneur's identity, motives and values are articulated throughout the business narrative. It should be noted however, that this framework pertains to a decision-making process and integration that is future-oriented and rational. Instances were rash, spur-of-the-moment or emotional decisions are needed may not undergo the approach described

by this framework. Nevertheless, this framework sets the tone for understanding entrepreneurial action towards shared value creation for sustainable development and business transition.

7.1.1 Forming a perception on sustainability in business

The data gathered suggests that first-hand experiences are important in developing a perception on sustainability and for recognizing particular problems as a potential starting point for Sd-business. The findings from both case studies resonate with extant literature which highlight how Sd-entrepreneurs enact their values (e.g. Vuorio *et al.* 2018) and past experiences (e.g. Patzelt and Shepherd 2011) into the pursuit of sustainability in business. The perceptions on sustainability or termed as "sustainability orientation" by some scholars (e.g. Hörisch *et al.* 2017; Reynolds *et al.* 2018), includes the passions, values, beliefs and ethics of the entrepreneurs which embody principles of sustainability. This orientation is what guides their decision-making and keeps them on track towards their goals (Reynolds *et al.* 2018). Values such as long-term and holistic thinking, respect for others, efficiency, achieving personal satisfaction and positive intentions are among the values described by both entrepreneurs which embody the core of sustainability. According to Vuorio *et al.* (2018), such altruistic values are also enhanced and driven by intrinsic (innovation, problem solving) and extrinsic rewards (personal gain, market success). Relevant to this assumption, both co-founders interviewed engage with pro-environmental behaviour because the expectations of gaining extrinsic rewards such as a competitive edge and market success was a primary objective. They embody the meaning of SdE that strives to create market success that results from providing products and services that contribute positively to society and to the environment. Although not the primary drive for their business, sustainability is perceived by both start-ups as an essential component to future business success.

In fact, it can be said that in both cases, the meaning of sustainability is strongly linked to their personal values and worldview. The findings suggest that self-efficacy (Shepherd and Patzelt 2011) and moral cognition (Schaltegger and Wagner 2011) shape the entrepreneur's perception of sustainability and their business orientation. For Vidor, his experience of being a father and provide for a future generation was said to significantly influence sustainability in his business decisions. Vidor's vision of sustainability can be equated to one of the three value-laden narratives defined by Muñoz and Cohen (2018a) as *a new responsibility for entrepreneurship* and driven by what he believes is the right thing to do (Stubbs and Cocklin 2008). In a similar way, Naïk also embodies this consideration for the way business should be done in addition to the desire to pioneer this change. His perceptions can be understood to arise from a particular belief in the role that entrepreneurship has in the future of business and thus falls within the narrative defined as *the new path forward* (Muñoz and Cohen 2018a). Furthermore, sustainability is also a choice of business strategy for both. It is treated as an "ethical code for human survival and progress" and therefore relates to the third narrative, *a new business ideology*, that views all aspect of social, ecological and economic sustainability as interconnected within the complex nexus of business activity (Muñoz and Cohen 2018a, 168). In both cases, merging the perception of sustainability with their business ideas involves creating business cases for sustainability that develop win-win scenarios where their

personal values and those of their counterparts can be met in a way that simultaneously legitimizes their vision (Schaltegger *et al.* 2012).

O'Neil and Ucbasara (2016) describe the legitimization process of a start-up to rely on an intricate balance of the entrepreneur's awareness of the interests and perspectives of others and reflexivity in evaluating their own personal and business aims. How entrepreneurs enact their motives and values during the legitimization process of their business can help to understand their decision-making processes later on (O'Neil and Ucbasaran 2016). In this vein, long-term or forward thinking as well as holistic and systemic thinking form the core of the sustainable business mindset and influence "the value that sustainable entrepreneurs aim to create both for their business and for society" (Muñoz and Dimov 2015). Holistic and systemic thinking here are understood to refer to the all-inclusive configuration of sustainable development that considers equity within and between generations (Shepherd and Patzelt 2011). Both Naïk and Vidor represent Young and Tilley's (2006) definition of the Sd-entrepreneur "who holistically [and systemically] integrates the goals of economic, social, and environmental entrepreneurship into an organization that is sustainable in its goal and sustainable in its form of wealth generation" (88). They also confirm extant literature on SdE theory that prescribes these types of businesses as viewing economic goals as both means and ends in their own right (Schaltegger and Wagner 2011).

The interdisciplinary nature of SdE studies has led to a wide array of terminology usage and configuration to describe altruistic action in the business setting (cf. Thompson *et al.* 2011). The findings confirm that the popularity of the term can cause misunderstandings and the reluctance to use it as a label, which is also reflected by a continued requestioning of the concept itself in the theoretical realm (Schlange 2009). Thus, the heterogeneity of entrepreneurial narratives that recognize a capitalistic relationship between profit making and ecological value creation are often conflicting and can cloud the understandings of the core motivations and visions for developing Sd-businesses. An important question is at what point do sustainability perspectives change if the business suddenly accrues negative externalities during its growth process? In other words, where does profit end and social or ecological sustainability begin in SdE? The idea of strategic returns of sustainability show to affect the perception of aspiring entrepreneurs and may attract rent-seeking businessmen with less regard for the moral, social and environmental impediments of their business activities (Muñoz and Cohen 2018b). Forming a perception of sustainability in business as a result, relies on how the entrepreneur perceives the integration of these three objectives to achieve sustainable development systemically and holistically (Tilley and Young 2009). According to the findings, sustainability objectives are not viewed as independent goals but are interwoven into the meanings the entrepreneurs give to their decisions and the resulting consequences. This particular type of entrepreneurial, transformative mind-set drives sustainable decisions and actions that envisages hard structural change (Walley and Taylor 2002) and serves as a mechanism through which these entrepreneurs elaborate their vision of a sustainable future.

7.1.2 Incorporating sustainability in business development

Extant models suggest that the recognition of business opportunities vary based on the understanding and prior knowledge of social and ecological environments (e.g. Patzelt and Shepherd 2011; Parrish 2010; Shane and Venkataraman 2000). Venkataraman (1997) holds that cognition, incentives and creative processing strongly influence the search and exploitation of an opportunity for business. According to the late Peter Drucker (1973) "every single social and global issue of our day is a business opportunity in disguise" (cited in Cooperrider 2008, 38). Cohen and Winn (2007) similarly believe that the socio-ecological problems created by market imperfections entice Sd-entrepreneurs to translate sustainability challenges into business cases. Recognizing the opportunity for business creation was predominantly profit oriented in both start-ups and surfaced as a result of the inherent issues both entrepreneurs noticed in their respective industries. Perhaps the market failure that stood out the most were systemic inefficiencies that create negative environmental externalities and redundancies in logistics concerning the shipping containers. In effort to provide solutions to these business challenges and simultaneously introduce benefits to areas beyond the industry, the start-ups of this study incorporate the strategic approach described by Dyllick and Hockerts (2002) of moving beyond eco-efficiency, i.e. the linear, one-way, cradle-to-grave manufacturing system, and to eco-effectiveness, which considers real sustainability issues that affect social and ecological equity. It is also important to note that in the case of Continest, incorporating sustainability into their USP resulted from perceived shifts in customer and partner preferences, which increasingly call for products and services of higher environmental quality. This, as a result, enables "business to operate in a manner that allows nature and business to succeed" (Young and Tilley 2006, 406). In fact, the objective for both start-ups can be assumed not to support what they believe to be an obsolete way of doing business but to create a new way of doing business (Young and Tilley 2006), evidenced by Naïk's desire to "change the rules of the game".

Patzelt and Shepherd (2011) find that individuals with prior knowledge of markets, technology and business in general are more likely to recognize business opportunities that are paired with such interests. The empirical findings confirm this and depict a variance in thinking from the standpoint of sustainability by virtue of the entrepreneur's prior personal and professional experiences (cf. Kuckertz and Wagner 2010). For example, both entrepreneurs vary greatly in their organizational design and approaches for business development, which can be understood as a result of coming from different backgrounds and generations. AELER portrays the characteristics of the visionary start-up described by Bergset and Fichter (2015). They have a "change the world" mentality and "serve the pioneer function to open new paths of environmental development in markets" (Schaltegger and Wagner 2011, 230). In relation to the other typologies of Sd-entrepreneurs, Naïk and David, his co-founder, can be considered as visionary champions (Walley and Taylor 2002) or bioneers (Schaltegger 2002) who's USP is strongly connected to their vision of the future. They are characterised as inventors and engineers who are growth-oriented with the ultimate aim of creating large-scale changes founded on the basis of sustainability (Walley and Taylor 2002). Both Naïk and David can thus be considered as products of the Sd-start-up culture

of today that is highly ambitious and purpose-driven. According to Schaltegger (2002), bioneers aim to test their innovation in a niche market with the ultimate aim of capturing the mass market. They envision growth as a primary means to achieve their ends and consider their contribution to a sustainable market as vital to their success.

On the other hand, Continest can be viewed in the light of the ecopreneurial start-up (Bergset and Fichter 2015) who is primarily economically and opportunity-driven and secondly with the desire to create large-scale social and environmental benefits. This can be perceived by the rapid success and growth experienced by the start-up. In line with this typology, their aim is to achieve global market success with positive environmental externalities by offering a flexible and simple product that has interfaces to many industries. In this view, Vidor and Daniel, his co-founder, also fit with the typology of the ad hoc enviropreneurs (Walley and Taylor 2002) or ecopreneurs (Schaltegger 2002). Their method of working does not deviate considerably from that of current, conventional market logic but offers direct social and environmental benefits. Sustainability is thus incorporated as a business strategy that is visionary yet realistic and pragmatic. As a result of this mentality, the long-term thinking required for sustainability can be at times paradoxical to the short-term reality of a start-up and requires balancing sometimes divergent demands and aspirations. This recalls Pacheco *et al.*'s (2010) caution of "the green prison" that may compel environmentally degrading behaviour in Sd-entrepreneurs as a result of attempting to remain competitive and integrate a diverse set of requirements necessary for sustainable development (Schlange 2009).

Accordingly, the complex and polycentric nature of SdE may require sometimes difficult trade-offs between altruistic attitudes and the opportunity for profit maximization (Parrish 2010; Young and Tilley 2006). The findings recall some of the studies from the literature where sustainability orientation is not always positively correlated with business experience (cf. Kuckertz and Wagner 2010), especially when customers or investors do not see the need for a sustainable product or service and are not willing to pay for it. Challenges to incorporating sustainability principles into the business development were similar to the rather traditional challenges of conventional start-ups, such as convincing people of their ideas, acquiring sufficient funds and achieving a competitive edge (cf. Linnanen 2002). However, the main difference with SdE is a motivation to contribute to solving social and ecological problems through the pursuit of business success (Schaltegger and Wagner 2011). Although arriving from different journeys, both founders portray strong altruistic values and a predominant desire to make a difference in the world. They both portray all five of the motivating factors for ecopreneurs described by Kirkwood and Walton (2010) as green values, identifying a gap in the market, making a living, being one's own boss and passion. Aside from the green values, these motivating factors are again very similar to those relevant to conventional entrepreneurs. One key difference between Kirkwood and Walton's (2010) study and this one however is the link to profit-seeking motives that both start-ups consider as a prerequisite to supporting and fulfilling the above-mentioned motivations. Incorporating sustainability in the business development is, according to both start-ups, part of their strategies for market success and mirror their personal values.

7.1.3 Achieving sustainability through business value creation

In line with recent literature, the concept of BMfS can provide the link between sustainable innovation and economic performance at a higher systems level (Boons *et al.* 2013). Joyce and Paquin (2016) propose that developing a BMfS enables new pathways to create, deliver and capture value by developing horizonal and vertical coherence through the integration of economic, environmental and social objectives. Additionally, Doganova and Eyquem-Renault (2009) suggest BMs as market devices that enable entrepreneurs to explore markets and bring their innovation into existence. These perspectives resonate with those of both co-founders who consider the BM as a vital tool for communicating their ideas to investors and stakeholders, and to grow their business. However, because both businesses in this study are in different stages of their business development, defining the BM was approached differently. According to Naïk, having a clear and defined BM from the very beginning and periodically adapting it as the business evolves, has been critical to articulate their business strategy and mission in order to capture the trust of investors and belief in their long-term vision. This is different for Continest who have experienced rapid success on the market without a defined or structured BM. According to Vidor, this is the missing link for their business development at the moment. An understanding for this is attributed to the nature of the innovation proposed by both start-ups which require different pathways for implementation in the industries. Instead, Continest's BM was described to rely on developing add-ons to the base product characteristics, such as adding solar panels or ballistic projection to their containers, and engaging in projects that are aligned with their personal guidelines. Nonetheless, both co-founders agree that developing a BM is the essential tool for gaining recognition and credibility, followed by attracting investors to scale-up their business and enter international markets.

The empirical data from the case studies also acknowledge that achieving sustainability through business value creation entails adopting a multi-stakeholder perspective rooted in co-operative and co-evolving networks. This can be related to the notion of the business "eco-system" which forms the backbone of the BMfS by creating collaborative ties between stakeholders and the start-up (Biloslavo *et al.* 2018). According to the findings, both start-ups perceive the value they are creating internally and externally with their stakeholders as an essential asset to their success. For instance, Naïk mentioned an aim of AELER to be to develop "a [near] zero-waste, automated and fair horizontal system" that engages with the world as if it were a giant village. Their approach can be understood to rely on a redefinition of value creation that broadens conventional business logic to adjust to the requirements of sustainable development (Rauter *et al.* 2017). Continest similarly put a lot of emphasis on finding the right partners that will share their success. This is also a core factor in creating shared value defined by Porter and Kramer (2011) who similarly argue that no company is self-contained and is thus affected by their supporting companies and the health of the communities around it. In fact, it has been previously noted among innovation scholars that "lone firms or individuals are extremely limited in their ability to sustain innovation and growth over time" and that "entrepreneurial leadership is about designing, cultivating and refining (including paring back and augmenting) these networks of relationships with other firms and

individuals who come to see their own visions and economic aspirations achieved through union with a team of like-minded people and organizations" (Larson 2000, 307; Markman *et al.* 2016). This implies that at the core of SdE, is a network that includes creating value for a broad range of stakeholders in a circular and regenerative system characterised by mutual dependency.

To this end, building strong network connections is an intangible and critical resource for the successful pursuit of social and ecological goals, in addition to economic profitability (Brieger and De Clercq 2019). From a management perspective, in order to benefit society and achieve positive change, organizations must view internal stakeholders such partners and employees as sources of value, which both entrepreneurs evidently do. According to Meynhardt *et al.* (2014), an organization has not only to be good for business, but more importantly good for society by contributing positively to society and its functioning. In this view, coordinating and organizing social actors in an organization influences how individuals acquire status, build trust and gain legitimacy in the organization and society (Meynhardt 2015; Drucker 1955). Among the types of value mentioned by the founders, generating internal value such as positive partner relations and forming good working environments for their employees were found to be particularly important for the success of the company and its wider positive impact in the future. The importance of creating a good working environment was also considered by Parrish (2010) as a principle of qualitative management. This also resonates with Shepherd (2015) who observes the entrepreneurial domain today to be increasingly expanding towards more compassionate, pro-social behaviour beginning with efforts to start the "right" kind of business for the "right" reasons.

Since sustainable business research has emerged however, management scholars have focused on the financial commitment to adopting a sustainability paradigm and highlight the dualistic divide between "opportunistic business and altruistic charity" (Muñoz and Cohen 2018b, 311). This divide has often been understood by scholars to require sacrifices between sustainability objectives within conflicting TBL objectives (Elkington 1998). However, the findings suggest that this notion tends to be more complex and ranges widely based on how they make sense of their business and incorporate aspects of their identity into its development. The analysis of the findings reveal that the entrepreneurs operate in a "moral space" (Muñoz and Cohen 2018a) where this divide is understood not necessarily as conflicting but as an integrated component of the day-to-day reality of a start-up. This dualistic divide according to the two co-founders of this study is portrayed as an opportunity to create comprehensive forms of value (Cohen *et al.* 2008) by means of R&D and iterative thinking. In this sense, the pressures between altruistic values and the broader economic and social requirements of business development is a source of creative tension which leads to innovation (Schaltegger 2002). This broader perspective of sustainability implies a complex understanding of a TBL that considers the interconnectedness and interdependence of social, ecological and economic systems in which the entrepreneurs are embedded (Muñoz and Cohen 2018b). Accordingly, Muñoz and Cohen (2018b) propose to reframe this sustainability challenge from "balancing the supposedly competing interests of the 3BL towards optimizing aggregate

outcomes using innovative approaches that can actually restore environmental, social and economic systems" (Muñoz and Cohen 2018b, 318).

The findings also importantly reveal the role of the BMfS as a mechanism for addressing the dual goal of sustainable development, that is to sustain natural and social environments while providing economic and non-economic development for entrepreneurs, their stakeholders and the wider global community (Shepherd and Patzelt 2011). Achieving sustainability through business value creation as a result requires iteration and flexibility of the BMfS to create and verify inclusive links between the business and its relationship to the natural environment, society and economy (Lüdeke-Freund *et al.* 2016), as well as the long-term survival of the business, its stakeholders, society and humanity as a whole (Schlange 2009). Schlange (2009) in fact extends the characterisation of sustainable development to SdE as value creation that is "based on the principle of meeting the needs of present stakeholders without compromising the ability to meet the needs of future stakeholders" (Schlange 2009, 18).

7.1.4 Delivering sustainability for business transition

The results from the empirical study offer a unique point of view from two Sd-entrepreneurs motivated to change industry practices based on a 60-year-old and once disruptive innovation. Although arriving from very different journeys and business approaches, the two case studies exemplify Schumpeter's (1934) "gale of creative destruction". The innovative roles of the entrepreneurs propose a reassessment of the relationship between business and nature towards business practices that "create a significant positive impact in critical and relevant areas for society and the planet" (Dyllick and Muff 2016, 166). According to Shepherd and Patzelt (2011), Sd-entrepreneurs also seek to facilitate change in existing institutions through navigating tensions between individual and collective interest and changing the status-quo by bringing into existence future processes that work towards achieving the desired goals. By providing new products which mitigate environmental problems and offer solutions to existing issues in logistics, both start-ups exemplify the focus of many entrepreneurial theories that view the role of the Sd-entrepreneur as bringing technological and environmental innovation to the world (York and Venkataraman 2010; Larson 2000; Gibbs 2009). To "reform or revolutionize industries by exploiting an invention or an untried technological possibility" (Schumpeter 1942) which simultaneously brings economic, environmental and social benefits can be considered as the essence of Sd-entrepreneurial innovation.

The start-ups aim to be a disruption to old ways of doing business by embodying the broader notions of value creation and personal values. This calls back to one of Hardin's (1968) core arguments in his article "The tragedy of the commons" that environmental problems cannot be solved by a technical solution that "requires a change only in the techniques of the natural sciences, demanding little or nothing in the way of change in human values or ideas of morality" (1243). Naïk emphasised this in saying that social change cannot only come via their smart containers but rather results from a combination of socio-technical solutions that they advocate. At the

intersection of environmental concerns, technological developments, policy action and changing customer preferences, the entrepreneurs in this study are applying new and existing knowledge from different industries to their products and services to disrupt the common way of doing business. This entails for example, integrating IoT traceability and visibility into shipping containers or applying folding techniques to large-scale container infrastructure. These approaches reveal that the motives and values of the Sd-entrepreneurs support contributions to sustainable innovation as "a process where sustainability considerations (environmental, social, and financial) are integrated into company systems from idea generation through to R&D and commercialization" (Charter and Clark 2007). Sd-entrepreneurs in this sense are in fact agents of change by the very nature of balancing diverse priorities of present and future environmental or social issues while attempting to achieve market success (Jolink and Niesten 2015). Delivering sustainability for business transition is often regarded as the point in time when the product or service enters a market and provides added value to an industry and its stakeholders. However, according to this study, it can be argued that delivering sustainability for business transition is the point in time when the decision to start a Sd-business is made. By virtue of fostering and sharing new ideas and generating interests for change, both start-ups can be argued to already play an important role in "the overall transition towards a more sustainable business paradigm" (Schaper 2002 27) driven by business, ethics and the environment (Markman *et al.* 2016).

7.2 Implications on theory and practice

While the phenomenon of SdE is well studied, current theory falls short of capturing the complex nature of how and why processes of Sd-business creation unfold in practice. One of the major implications from the findings and theorization of this thesis is a greater understanding of the motives, values and visions that are embedded in the approach to SdE. So far, attempts to explain this approach have relied on the pursuit of social, environmental and economic benefits grounded in economic theory (Muñoz and Cohen 2018b). By using an inductive approach to entrepreneurial experiences based in sustainability science, this study offers a deeper understanding of how sustainability is captured in the entrepreneurial approach and contributes to the ongoing research to create, refine and validate the systemic and value-laden nature of the phenomenon (Muñoz and Cohen 2018a). This study also has implications beyond the academic community by attempting to narrow the gap between academic knowledge and practical experience that was highlighted during the case studies.

Furthermore, this study answers the call for a more structured research agenda that treats SdE as an ever-evolving and holistic analytical unit (Muñoz and Cohen 2018b). Shepherd and Patzelt (2011) stress the need to focus on the dual characteristics of SdE that include what needs to be sustained (i.e. society and environment) and what needs to be developed (i.e. economic gains). Therefore, a study of SdE should describe the diverse priorities given to environmental and social issues in addition to the market effect of the business (Jolink and Niesten 2015). This thesis has responded to this call by exploring how entrepreneurial motives and values are matched with sustainability in the BM. In practice however, BMs appear to be much vaguer entities than they

are made out to be in theory (Rauter *et al.* 2017). It seems that the two entrepreneurs in this study do not perceive BMfS in the same way, nor as researchers do. BMfS thus remain contested as they apply to the early stages of business development and are in need to be reconceptualised away from a linear thinking found in traditional management theories and towards a holistic integration of the perceptions, motives and values of the entrepreneurs for realistic contributions towards sustainability in business and society as a whole. As a result, this study contributes to the continued development of the field by offering an alternative framework that attempts to embrace the diversity of SdE and increase its validity.

8 Conclusions

A holistic treatment of entrepreneurs and their social, economic and ecological impacts requires a broader perspective of value creation that measures the interdependence of these social, economic and environmental systems (cf. Muñoz and Cohen 2018b). It can be argued that all businesspeople are needed as environmentalists now. Debates over recycling, nutrition and modes of transportation indicate that environmental issues are moving into the mainstream of public and political interests. Concerns over climate change and resource scarcity are also beginning to make their way into the organizational structures of businesses and becoming an important variable for long-term profitability and business survival. New ways of delivering and capturing value are changing the nature of competition and opening up opportunities for Sd-entrepreneurial activity to move into the mainstream of economic development (Gibbs 2009). What seemed marginal 10 to 15 years ago has at last the potential to change BAU and the competitive dynamics of some industries and markets. The task with this thesis has been to explore how this move forward is understood by those embedded at the very heart of it, i.e. Sd-entrepreneurs, and what this can mean for society at large as businesses expand their role in the era of sustainability. To fulfill this task, this study chose to adopt a more integrative conceptualization of entrepreneurial action that builds on three research questions:

Main conceptual RQ: What is the role of sustainability-driven entrepreneurship in the transition towards sustainability in business?

RQ1: How do entrepreneurs understand sustainability and where do they place their business within the wider context of sustainable development?

RQ2: How are entrepreneurial motives and values matched with sustainability in the business model?

RQ3: How are these motives and values represented in the daily business functions and generate value?

8.1 Main findings

In the process of answering the main conceptual question, the findings resulted in the Framework for Sustainability-driven Business Creation, Development and Transition that describes the essential stages of the entrepreneurial approach to sustainability in business that are interwoven with their motives and values. These personal aspects in the context of this study were considered as essential variables to determine the role that SdE can have in changing business practices. To this end, the model exemplifies the general phases of iterative thinking that happens during business creation and development. It suggests how sustainability is embedded in entrepreneurial action that is taken before and during the business development, and how it is interconnected among the various business goals. The findings reveal that the perception of sustainability is embedded in all areas of life, taking into consideration past experiences, social norms and prior knowledge that influence the approach and meaning entrepreneurs give to their role in the wider context of sustainability. Consequently, Sd-entrepreneurs think differently in the kind of value they are creating through their business. A defining aspect of a Sd-entrepreneur is the awareness of the potential for larger positive impact at the core of their vision for their business.

In the context of the shipping containers, the findings propose that the motives and values of Sd-entrepreneurs can stimulate disruptive sustainability innovation. As acknowledged by both start-ups, this transition is already in progress and, fast-forward some years, there will be a new market for these types of Sd-driven innovations in industries concerning shipping containers. There are just 10 years left to implement the SGDs and it can be agreed that the shipping container sector has a long road ahead to reach these targets. By providing better solutions to key players in the industry, start-ups like AELER and Continest are less likely to be caught in a specific technological mindset of an established firm and can inspire firms to follow up with corporate sustainability or intrapreneurship on their own by proving the feasibility and profitability of sustainability in business. Sd-innovation brought on by start-ups like the two in this study can serve to accelerate the adoption of sustainable practices and help to significantly reduce the environmental footprint and inefficiencies in logistics.

The good news is that today's businesses are already beginning to show signs of moving away from the Friedman (1970) fallacy and towards an integration of sustainable values as a result of public policies, customer preferences and perceptions of risks from not doing so. This means that many businesses are feeling the pressure to incorporate aspects of sustainability into their BM whether it is coming from their own motives and values or the primary motivation to be successful and profitable in the future. While this contributes to bringing sustainability into the mainstream, there may be caveats to ensuring these values remain during the challenging phases of business growth. Sustainability in entrepreneurship as a result, should be rooted "in the ambition to change the system it is part of instead of settling for compliance with or surrendering to market mechanisms" (Moratis and Melissen 2017, 7).

As a result, together with creating economic development, SdE activities can have a major impact on larger-scale structural shifts toward a more sustainable society (Muñoz and Cohen 2018a). They possess the agency to develop the necessary institutions that will improve the competitiveness of sustainable behaviours (Pacheco et al. 2010). By virtue of trying to change industry practices, they are also changing society because there are affecting everybody that they are working with, including the industry players with whom they are in contact and the natural environment. Accordingly, Sd-entrepreneurs are positioned uniquely to set the right precedents for business practices in the future, if they can successfully balance and optimise the, at times, conflicting economic, social and ecological objectives. The findings demonstrate that the founders must provide leadership and integrate sustainability into the very core of their business strategy if sustainability is to become part of corporate ethos and practices. Sustainability should thus be a non-negotiable foundation of the BM. That is, value creation and the BM must be aligned during the different levels of the business development in order to challenge mainstream business practices and develop sufficient capabilities and resiliencies to ensure the survival of their activities, including retaining the legitimacy and trust of stakeholders (Vickers and Lyon 2014).

SdE is an exciting field of study with a lot of potential, great relevance and profound complexity. Its future is only limited by the extent of creativity and cumulative knowledge. The difficulty in addressing its specific issues however lays in the unusual theoretical structures used to explain entrepreneurship and its derivatives. This study is one of many which took on the task of further clarifying the phenomenon of creating a business aligned with a personal and sustainable worldview. It branches out from similar ones through the focus on the holistic and iterative approaches inherent in SdE that yield shared value.

8.2 Methodological reflections

The methodological choices had a significant impact on the results of this study. As with any research method there are caveats to consider and it is important to reflect on them (Cope 2005). The use of IPA allowed the study to move beyond description and engage with the co-founders' reflections (Cope 2011). The logic of phenomenology led to uncover how the entrepreneurs think, perceive and engage with sustainability, and a greater contextualization of the multiple variables that surround the development of the business. Through this lens, the author was able to observe the meanings and explanations that the entrepreneurs attribute to sustainability and how they make moral sense of their business. The use of multiple cases studies also produced stronger results and increased the reliability of the entire study (Yin 2009). While the nature of case study research does not allow for much generalization beyond the sample and is rather limited to the chosen landscape, it does enable expansion of underlying theory and a context for theory discovery from the rich description of the phenomenological approach (Cope 2005). In this sense, the findings of the case studies in this study are not representative of a sample but provide an "analytical generalisation", that expands on and generalises theoretical propositions (Yin 2009, 15). The development of the theoretical framework was thus an important step in order to provide the conditions under which a similar context may be found and replicate the results.

Some limitations to methodological choices and circumstances of the research do apply, however. For example, the study may have benefited from interviews with a wider range of stakeholders, such as employees, investors and customers. This would have allowed for alternative viewpoints to the same phenomenon which may provide a more holistic representation of entrepreneurial business development and value creation. This would nevertheless, entail stepping away from the purposive and small sampling involved with IPA and move towards a different research paradigm. The use of a case study approach with IPA also helped the author to create detailed accounts of the businesses and the co-founders' values and beliefs which may have not been possible otherwise. Additionally, questions of morality and values would not have been easily identified through surveys or experiments which produce limited recordings and measurements of individual behaviour (Munoz and Cohen 2018a; Yin 2009). While this study rests on a small sample of individuals engaging with sustainability in their business practices, the author acknowledges that not all entrepreneurs striving for sustainability in business share similar traits or are driven by the same values.

The aim was to generate a theoretical understanding of sustainability for the entrepreneurs and its application via the BM for generating shared value. As such, the analytical framework in Chapter 5 was developed to produce a theoretical proposition which may be further tested. Furthermore, the author is aware that the limited time spent with each company cannot give a full representation of the perceptions of the activities performed. The time budget and circumstantial limitations of the research as a result of COVID-19 did not allow for the inclusion of more case studies. The chosen scope left out alternative worldviews and broader level perspectives as well as the use of quantitative data or objective measures of impact that would substantiate the qualitative statements of the founders and affect the types of conclusions drawn from the research.

Furthermore, a noted limitation with a phenomenological inquiry is the risk of merging the researcher's own values and interests with interpretations of the interviewee's perceptions and narratives, which may negatively affect the validity of the findings and subjects the findings to investigator's bias (Yin 2009). From a phenomenological standpoint, "it is impossible to divide one's experience from what it is that is experienced" (Cope 2005, 166). Nevertheless, efforts to avoid this were to stay as close to the data as possible and periodically return to the raw material for verification. In addition, the author used multiple sources of evidence and the data collection process was carefully documented. Under different circumstances, collaborating with a second researcher for interpreting the results of the analysis would rectify this. Another limitation to this research includes the reliance on a "retrospective self-report" by the entrepreneurs as a primary data source which may leave out influential factors that may have been treated as exogenous (Reynolds *et al.*2018; Schlange 2009).

There is also the issue of temporality in dealing with the ongoing process of business creation and development of a start-up. Including a longitudinal approach to the entrepreneurial business creation could enable a documentation of how perceptions of and approaches to sustainability change with the evolution of the start-ups over a period of time. Additionally, this can also explore

how maturing BMs verify sustainability practices as part of the management system and produce quantifiable impacts. This type of research would however necessitate a longer period of time than allotted for this thesis due to the development and maintenance of a longitudinal database of Sd-start-ups and their founders, but would provide greater validity and reliability of the research in the end (Reynolds *et al.*2018). Herein lies an interesting opportunity for further research.

8.3 Suggestions for further research

An opportunity to take this research forward lies in continuing the challenge of reframing sustainability. Extending the broader perspective of value creation observed in this study to larger socio-political discourses as well as multiple economies including the informal and sharing economy can further push the field forward by encouraging researchers to embrace the complexity and interrelatedness of the SdE phenomenon. The insights found through the case studies may also be tested using different approaches to show how various aspects of the Sd-entrepreneurial approach differ or relate to the overall vision of the future. This study has been largely descriptive as the framework focuses on the nature of the SdE process. Future research investigating the influence of various attributes such as socio-political issues as well as micro and macro environments on different phases along the framework may provide interesting insights. This would imply exploring policy and government action on Sd-entrepreneurial activities as well as customer preferences that affect entrepreneurial businesses. According to recent research, the entrepreneur's perception of institutions and government structures may profoundly influence their activities (Demirel *et al.* 2019). Further research may, as a result, benefit from exploring the relationship between policy implications, evolving customer preferences and Sd-entrepreneurial values.

Additionally, is it suggested that governments play a key role in nudging Sd-entrepreneurial endeavours to achieve sustainable development goals (Bansal *et al.* 2019). Governments may facilitate conditions where entrepreneurship can simultaneously create economic growth and advance socio-ecological objectives in low- and high-income countries. However, since social pressures can create major environmental hindrances, addressing this matter with entrepreneurship in developing economies or impoverished communities merits a case for attention. It is important to recognize that social and environmental pressures form a key foundation for sustainable development and that Sd-entrepreneurs who embrace this notion of sustainability have the potential to produce significant impact towards this cause, however there is a lack of empirical research on this topic. Furthermore, this thesis has shown that there is a need to better understand the nature of BMfS and how they are linked with theories of SdE. Further research in this area may expand on the reconceptualization of the BM begun by this study by investigating how elements within the BMfS are embedded in the circular processes inherent in sustainability theory.

Finally, using a broader sample of case studies in future research could explore contrasting narratives of Sd-entrepreneurs and start-ups as they emerge across different industries and

geographical locations. A similar methodology could be applied to Sd-intrapreneurship in multinational corporations, large organization or government agencies to compare the kinds of motives and values that drive innovation within these areas compared to start-ups. On the other hand, it would also be interesting to produce a comparative study examining how the varying narratives and values that drive conventional entrepreneurs differ from Sd-entrepreneurs, and also how these are perceived by investors. The chosen methodology and sample for this study did not allow for this, however the result from the IPA may provide a suitable foundation to begin such a study. It has been made clear through a lack of empirical studies concerning SdE that more research is needed to "explore the role of entrepreneurial action as a mechanism for sustaining nature and ecosystems while providing economic and non-economic gains for investors, entrepreneurs and societies" (Shepherd and Patzelt 2011, 138). The author hopes that this thesis has successfully begun to address this need and stimulates future research in this area to bring this promising field forward.

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Appendices

Appendix I. Definitions of entrepreneurship with a sustainability orientation in the literature

Authors	Definition
Cohen & Winn (2007)	Sustainable entrepreneurship as the examination of how opportunities to bring into existence future goods and services are discovered, created, and exploited, by whom, and with what economic, psychological, social, and environmental consequences. (35)
Dean & McMullen (2007)	Sustainable entrepreneurship is the process of discovering, evaluating, and exploiting economic opportunities that are present in market failures, which detract from sustainability, including those that are environmentally relevant. (58)
Tilley & Young (2009)	Sustainability entrepreneur is the individual who holistically integrates the goals of economic, social, and environmental entrepreneurship into an organization that is sustainable in its goal and sustainable in its form of wealth generation. (88).
O'Neill, Hershauer, & Golden (2009)	Sustainability-oriented entrepreneurship is a process of venture creation that links the activities of entrepreneurs to the emergence of value-creating enterprises that contribute to the sustainable development of the social–ecological system. (34)
Hockerts & Wüstenhagen (2010)	Sustainable entrepreneurship is the discovery and exploitation of economic opportunities through the generation of market disequilibria that initiate the transformation of a sector towards an environmentally and socially more sustainable state. (482)
Pacheco, Dean, & Payne (2010)	Sustainable entrepreneurship is the discovery, creation, evaluation, and exploitation of opportunities to create future goods and services that is consistent with sustainable development goals. (471)
Kuckertz & Wagner (2010)	Sustainable development-oriented entrepreneurs are those individuals with entrepreneurial intentions who aim to manage a triple bottom line. (527)
Patzelt & Shepherd (2010)	Sustainable entrepreneurship is the discovery, creation, and exploitation of opportunities to create future goods and services that sustain the natural and/or communal environment and provide development gain for others. (2)
Shepherd & Patzelt (2011)	Sustainable entrepreneurship is focused on the preservation of nature, life support, and community in the pursuit of perceived opportunities to bring into existence future products, processes, and services for gain, where gain is broadly construed to include economic and non-economic gains to individuals, the economy, and society. (137)
Schaltegger & Wagner (2011)	Sustainable entrepreneurship can be described as an innovative, market-oriented and personality driven form of creating economic and societal value by means of break-through environmentally or socially beneficial market or institutional innovations. (226)
Munoz & Dimov (2015)	Sustainable entrepreneurship refers to the development of commercially viable ventures that advance the causes of environmental protection and social justice. (634)

Appendix II. Definitions of business models for sustainability in the literature

Authors	Definition
Stubbs & Cocklin (2008)	An organization adopting a sustainable business model develops internal structural and cultural capabilities to achieve firm-level sustainability and collaborates with key stakeholders to achieve sustainability for the system that the organization is part of. (123)
Lüdeke-Freund (2009)	A business model for sustainability is the activity system of a firm which allocates resources and co-ordinates activities in a value creation process which overcomes the public/private benefit discrepancy. That is, a business model for sustainability is the structural template of a business logic which creates the business case for sustainability. (56)
Schaltegger, Lüdeke-Freund & Hansen, (2012)	A business model for sustainability can be defined as supporting voluntary, or mainly voluntary, activities which solve or moderate social and/or environmental problems. By doing so, it creates positive business effects, which can be measured or at least argued for. A business model for sustainability is actively managed in order to create customer and social value by integrating social, environmental, and business activities. (112)
Bocken, Short, Rana, & Evans (2014)	Business model innovations for sustainability are defined as: innovations that create significant positive and/or significantly reduced negative impacts for the environment and/or society, through changes in the way the organization and its value-network create, deliver value and capture value (i.e. create economic value) or change their value propositions. (44)
Joyce, Paquin, & Pigneur (2015)	Sustainable business models are the rationale of how an organization creates, delivers and captures economic, environmental, and social forms of value simultaneously. (3)
Boons, Montalvo, Quist, & Wagner 2013	Sustainable business models provide the conceptual link between sustainable innovation and economic performance at higher system levels. (2)
Schaltegger, Hansen, & Lüdeke-Freund (2016)	A business model for sustainability helps describing, analysing, 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. (6)

Appendix III. Archetypes of business models for sustainability

Lüdeke-Freund *et al.* (2016) adds to Bocken *et al.*'s (2014) list a ninth archetype, seeking inclusive value creation, which is aimed at "sharing resources, knowledge, ownership, and wealth creation" (Lüdeke-Freund *et al.* 2016, 48). They are presented as follows:

MAJOR INNOVATION TYPES	ENVIRONMENTAL			SOCIAL			ECONOMICAL		
DOMINANT ARCHETYPES	MAXIMIZE MATERIAL AND ENERGY EFFICIENCY	CLOSING RESOURCE LOOPS	SUBSTITUTE WITH RENEWABLES AND NATURAL PROCESSES	DELIVER FUNCTIONALITY RATHER THAN OWNERSHIP	ADOPT A STEWARDSHIP ROLE	ENCOURAGE SUFFICIENCY	REPURPOSE FOR SOCIETY/ ENVIRONMENT	INCLUSIVE VALUE CREATION	DEVELOP SCALE UP SOLUTIONS
INNOVATION THAT FITS THE ARCHETYPES	Low-carbon manufacturing	Circular economy, closed loop	Move from non-renewable to renewable energy sources	Product-oriented PSS — maintenance, extended warranty	Biodiversity protection	Consumer education, communication	Not for profit	Collaborative approaches (sourcing, production, lobbying)	Incubators and entrepreneur-support models
	Lean manufacturing	Cradle-2-Cradle	Solar- and wind-power-based energy innovations	Use oriented PSS — Rental, lease, shared	Consumer care — promote consumer health and well-being	Demand management	Hybrid businesses, social enterprise (for profit)	Peer-to-peer sharing	Open innovation
	Additive manufacturing	Industrial symbiosis	Zero-emissions initiative	Result-oriented PSS — Pay per use	Ethical trade (fair trade)	Slow fashion	Alternative ownership: co-operative, mutual, collectives	Inclusive innovation	Patient/slow capital
	Low-carbon solutions	Reuse, recycle, remanufacture	Slow manufacturing		Choice editing by retailers	Product Longevity	Social and biodiversity regeneration initiatives	Base of pyramid (BoP) solutions	Impact investing/ capital
	Dematerialization (of products/ packaging)	Take back management			Radical transparency about environmental/ societal impacts	Premium branding/ limited availability			Crowdfunding/ sourcing
	Increased functionality					Frugal business			Peer-to-peer lending

(Source: Lüdeke-Freund et al. 2016).

Appendix IV. One-page thesis proposal for the case studies

CENTRAL EUROPEAN UNIVERSITY

MESPOM Masters in Environmental Sciences, Policy and Management

by Christelle ROCOFFORT DE VINNIÈRE

Title: Investigating sustainable entrepreneurship as a disruptive approach for sustainable business transition – the case of shipping containers.

Overview: The goal of this empirical study is to gain a deeper understanding of how the sustainable entrepreneurial mindset is placed within the larger context of sustainable business and social change. Many authors argue that entrepreneurship can be the solution to remedy social and environmental problems by integrating new mindsets and solutions into business activities. Compared to established firms that may be bound by shareholder structure and company culture, entrepreneurship embodies the freedom to innovate and design new business DNA from the start. This study will examine the potential of the sustainable entrepreneurial mindset to change industry structures through disruptive innovation and lead business towards sustainability.

Introduction: Worldwide challenges such as global epidemics, climate change and economic fragilities highlight the pressing need to devise sustainable solutions for the future. In the context of businesses, sustainability can be defined as "the adoption of business strategies and activities that meet the needs of the enterprise and its stakeholder today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future" (IISD 1992, p.11). Depending on their mission and structure, companies may act as catalysts for sustainable conduct and pave the way for the much-needed acceleration towards a sustainable future. Entrepreneurship especially, represents the potential to offer business solutions to global problems by creating value that mitigates those problems (Kuckertz *et al.* 2019). The business model (BM) is the seat of the business's strategies, missions and value creation (Rauter *et al.* 2017), and often considered to be more important than a good business idea (Chesbrough 2007). The BM has several components to it, broken down into three major areas: value proposition, value creation and delivery, and value capture (Richardson, 2008). Extant literature suggests that the value created by sustainable BMs, particularly in young enterprises, mirror the entrepreneur's personal motives and values (Shepherd & Patzelt 2011), yet in practice, this may depend on various stakeholder decisions and the industry structure. Understanding how entrepreneurs place their businesses within the wider context of sustainable development, respond to internal or external pressures, and engage with sustainability in practice can enable a greater understanding of sustainable entrepreneurship as its own field and the potential impacts it can have on society, the environment and business culture.

Research questions

The study relies on three research questions, each one representative of one major area of the traditional BM framework highlighted in the introduction. When taken together, they demonstrate the sustainable entrepreneurial decision-making process for generating value.

RQ1: How do sustainable entrepreneurs understand sustainability and where do they place their business within the wider context of social change?

RQ2: How and in which areas are entrepreneurial motives and values represented in the sustainable business model?

RQ3: How are these motives and values integrated into the daily business functions and generate value?

Methodology: One of the main points of departure for this research is the adoption of a transdisciplinary approach to sustainability science. Merging the interdisciplinary field of entrepreneurial phenomena with sustainability science allows the researcher to embrace different forms of knowledge and methods to achieve their motives. The unit of analysis for this study is the BM as a tool for interweaving sustainability into the business's values, decisions and culture (Biloslavo *et al.* 2018). The nature of the study requires an in-depth analysis of the company and its founders' values and goals. For this reason, the thesis relies on a case study approach to conducting research which allows the researcher to draw holistic and meaningful conclusions from real-life events (Yin 2009). Since the research questions posed for this study can be relevant in a wide number of cases and context, they were kept broad and the focus was set on choosing an industry that meets certain criteria such as one that currently has a large environmental footprint yet possesses significant potential for innovation and adoption of more sustainable practices. As a result, the shipping container industry was chosen not only because of its international presence and essentiality for efficient transport and trade of goods but also because innovation in this field has the potential to create significant impact for environmental, political, cultural, social and economic challenges (Tomlinson 2009). To answer the RQs, the research will draw from literature review, document analysis and focused interviews with the companies' founder(s). The results will be contrasted with the framework for sustainable BMs and value creation proposed by Biloslavo *et al.* (2018) to better visualise the correlation between theory and practice. The thesis is subject to the ethical research policy of the Central European University (CEU).

Expected results

The results will serve to advance the fields of sustainable BMs and sustainable entrepreneurship by providing examples of sustainable value creation and disruptive innovation in practice. Through the case studies, the research aims to strengthen theory with practice.

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Appendix V. Interview guide for the case studies

RQ1: How do entrepreneurs understand sustainability and where do they place their business within the wider context of social change?

Key aspects of the Q: the entrepreneur, story of change (personal transformation), motivations, perceptions on sustainability, process of idea creation into business concept → *Personal process*

Entrepreneur's story:

1. Can you tell me a little about your background and work before founding this company?
2. How did you come to start this company? Why this industry or business sector?
    a. When was it founded?/How many employees does the company have?
3. What was the concrete problem or potential that you saw and wanted to solve or realize in your industry?

Perception on sustainability and sustainable entrepreneurship:

4. What does sustainability mean to you?
5. What role and responsibility do you consider business to have in the context of sustainability?
6. Do you consider yourself an entrepreneur or sustainable entrepreneur? Is the wording important for you?
    a. How would you describe your core principles (factors/ characteristic) as an entrepreneur or working with sustainability?

RQ2: How are entrepreneurial motives and values matched with sustainability in the business model?

Key aspects of the Q: business and personal principles, concept development in a frame of logic, business foundation process (BM), link to business experience and/or existing knowledge, stakeholder consideration (who are they creating value for?) → *Internal process*

Concept development:

7. Can you tell me about the process through which you transformed your idea into a business? What was your biggest challenge during this process?
8. Where did you find the knowledge to back up your business idea? (consulting with experts, your own experience, research?)
    a. And how has the original idea changed as a result?
9. In a few sentences can you tell me what your core vision for your company is?

10. Did you have an interest in sustainability before you found the opportunity for your business or did you first realize the business opportunity and then recognize sustainability as a potential or key added value?

Business foundation:

11. What is your unique selling proposition (USP)? And how is it linked to sustainability (or which areas of sustainability is the USP linked to?)
12. Do you consider your product or service as having the potential to disrupt the industry? Why or why not?
13. What has been the biggest challenge in integrating your company into the existing industry structure? (process of integration).

RQ3: How are these motives and values integrated into the daily business functions and generate value?

Key aspects of the Q: impact generation, process of value capture and measurement, stakeholder engagement, approaching investors and costumers, business growth and long-term vision for the company → *External process*

Value capture and measurement:

14. When you think of the value your company creates, which types of value does it include?
    a. How is this value different from the types of value (or broader resources) you gain or search for to make your business function?
15. How would you say your profit is connected to the non-economic value you create? (Do you see it as dependent on each other for example does one enhance the other or do they increase independently through separated actions?)
16. Who benefits from the company's activities (directly or indirectly) and how? Who are your stakeholders?
    a. How do you consider the value created by your company connected to creating value for society?
17. Do you use tools or methods to measure your value generated? If so, which ones and do they cover these non-economic values?

Growth:

18. And as your business grows (when more people are coming into the company - investors, employees), how would you make sure that your core values (which make you strong and unique) remain intact? Can you give me an example?
19. In creating new business cases or transforming the business model, are there principal questions that you ask yourselves to keep the direction of sustainability? Is there a set of

criteria that you use, either conceptual or practical that help to answer these principle questions in? (e.g. SDGs)

20. Do you see yourself or your company as a role model for other entrepreneurs and do you feel that you have influence in creating social change and/or being part of a movement for more sustainable business thinking? If so, how?
21. What is your long-term goal for your company and as founders? (For example, are you following an exit strategy to sell your company to the industry after some time or lead the innovation process of the industry from within?)
22. What would you say is missing to multiply the potential of your company? (e.g. funding, strategic partners etc.) and if you had one free wish for your business or your industry, what would it be?

On theory vs. practice:

23. When you think back to the first time you had the idea for your business until today, how helpful were theories about sustainable business and entrepreneurship for your business development? Do you see scientific knowledge and practical experience going into the same direction or is there a noticeable gap between the two?

Appendix VI. Codes and theoretical clusters derived from the interviews