SUSTAINABILITY STARTUPS AND WHERE TO FIND THEM

HOW ENTREPRENEURIAL
ECOSYSTEMS IMPACT THEIR
SUSTAINABILITY STARTUPS

SARAH TIBA

Sustainability startups and where to find them

How entrepreneurial ecosystems impact their
sustainability startups

Duurzaamheidsstart-ups en waar ze te vinden

Hoe ondernemerschapsecosystemen hun duurzaamheidsstart-ups
beïnvloeden

(met een samenvatting in het Nederlands)

Proefschrift

ter verkrijging van de graad van doctor aan de
Universiteit Utrecht
op gezag van de
rector magnificus, prof.dr. H.R.B.M. Kummeling,
ingevolge het besluit van het college voor promoties
in het openbaar te verdedigen op

vrijdag 25 september 2020 in de morgen te 9.15 uur

door

Sarah Tiba

geboren op 3 december 1986
te Düsseldorf, Duitsland

Promotor:

Prof. dr. M.P. Hekkert

Copromotor:

Dr. F.J. Van Rijnsoever

Sustainability Startups and where to find them

How entrepreneurial
ecosystems impact their
sustainability startups

Sarah Tiba

Table of Contents

1	General Introduction	7
2	Firms with Benefits: A Systematic Review of Responsible Entrepreneurship and Corporate Social Responsibility Literature	18
3	Sustainability Startups and Where to Find Them: Investigating the Share of Sustainability Startups across Entrepreneurial Ecosystems and the Causal Drivers of Differences	40
4	The Lighthouse Effect: How Successful Entrepreneurs Influence the Sustainability-Orientation of Startup Ecosystems	64
5	Goodfellas: On the Motivations of Sustainability Entrepreneurs Evidence from Germany and Nigeria	84
6	General Conclusions	114
	References	127
	Appendix to the chapters	152
	Addenda	162

1

General Introduction

1 Sustainability Startups and their Entrepreneurial Ecosystems

With increasingly extreme weather conditions, plastic-filled oceans, a globally widening gap between rich and poor and international outbreaks of deadly diseases it is clear that addressing sustainability challenges is today more pressing than ever. This idea was also recognised by the United Nations who formulated the Sustainable Development Goals (SDGs) in 2017. Rather than the kind of incremental change that is the hallmark of large corporations and bureaucracies, today's sustainability challenges call for a paradigm shift in the global economic systems of production, transportation and consumption. To achieve such a shift requires radical innovation – especially in those industries that directly touch upon one of the SDGs.

Such innovation frequently comes out of so-called sustainability startups that develop novel and more sustainable approaches to issues like energy, waste, health or education (Dees, 1998; Dacin, Dacin and Tracey, 2011; Schaltegger and Wagner, 2011). Unlike larger enterprises, startups are highly flexible in the way they operate and have a higher propensity to experiment in new untapped fields without the constraints of paths previously taken (Remneland-Wikhamn, 2011; Kohler, 2016). Building on the work of Schumpeter (1934) startups are understood to be young innovative ventures that aim for high growth. When writing about sustainability I mean both social and environmental

sustainability as outlined by the United Nations' Sustainable Development Goals (2017). Sustainability startups are accordingly startups which address at least one of the SDGs through innovation.¹

An example of such a sustainability startup is Wecyclers, which taps into Nigeria's large pool of unemployed young people to collect recyclable materials, such as plastics, from Lagos' streets. This waste is then sold as raw material to recycling plants, generating both an income for its employees and a profit for the company. Wecyclers thus addresses the challenge of youth unemployment as well as the waste problem in Nigeria (<http://wecyclers.com/>). With such novel approaches sustainability startups have become promising actors in the global pursuit of achieving greater sustainability and policy-makers are keen to have such startups develop in their regions (Saxenian, 1983; Buchanan, 2014). These regions in turn are an important factor influencing the kind of startup that develops within them (Stam, 2015).

Regions of entrepreneurial activity are called entrepreneurial ecosystems (EEs). They can be defined as a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship within a particular territory, most commonly a large city (Stam and Spiegel, 2018). EEs play an important role in startup development as this rarely takes place in isolation. Rather, startups are embedded in networks of other startups, incubators, investors and regulatory frameworks in their regions which influence the way in which they develop.

These different contextual factors are important because they have been shown to influence the kind of entrepreneurship that emerges within them (Stam, 2014; Stam and Spiegel, 2018; Malecki, 2018). For example, regulation that favours startups in the health-tech sector by providing easier access to funding or reduced bureaucratic hurdles will have a positive impact on health-tech development. Furthermore, the presence of the right kind of talent to found and operate such enterprises will be important as are other support institutions, private investors and a market that has a demand for the corresponding health-tech products. In this way the different attributes of an EE interplay to create an environment that fosters or hinders different kinds of sustainability entrepreneurship (Hoogendoorn, 2016; Spiegel, 2017).

This notion is supported by findings that suggest that the share of sustainability startups varies between EEs (Hoogendoorn, 2016). This raises the question where such sustainability-oriented EEs, that boast a particularly high concentration of sustainability startups, can be found and under which conditions they flourish. Those are the questions that the thesis at hand addresses.

On the following pages I give an overview of the literature that forms the foundation of this thesis, namely responsible entrepreneurship, entrepreneurial ecosystems and entrepreneurial motivations literature, and identify some gaps therein. I then briefly outline how the theoretical ideas presented in the different bodies of scholarship relate to each other in the context of this thesis. Finally, an overview of the four main chapters and corresponding research questions is given.

¹ The wording 'sustainability' instead of 'sustainable' is employed to indicate that the way in which a company operates, e.g. if it uses renewable energy, is not the primary focus but rather that we are looking at the core business activities and products or services a company provides.

2 Studying sustainability startups and their entrepreneurial ecosystems

2.1 Responsible entrepreneurship: a fragmented research field

The body of literature around sustainability startups, which is collectively called “responsible entrepreneurship literature”² in this thesis, while still relatively young is rather fragmented. “Social entrepreneurship” (Dees, 1998; Zahra *et al.*, 2009), “ecological sustainability entrepreneurship” (Dixon and Clifford, 2007; Gast, Gundolf and Cesinger, 2017), and “responsible entrepreneurship” (Fuller and Tian, 2006; Azmat and Samaratunge, 2009a) are just some of the names given to closely related phenomena. Social entrepreneurship focuses primarily on enterprises with a social mission at the core of their business model (Dees, 1998; Zahra *et al.*, 2009). Ecological sustainability entrepreneurship looks explicitly at enterprises with an environmental focus (Dixon and Clifford, 2007; Gast, Gundolf and Cesinger, 2017). Responsible entrepreneurship, in turn, investigates CSR practices in small and medium enterprises (Fuller and Tian, 2006; Azmat and Samaratunge, 2009a). Collectively these streams are referred to as responsible entrepreneurship literature in this thesis for lack of an existing umbrella term. All of these fields are in turn fragmented into smaller sub-streams which has led to calls for greater consolidation across responsible entrepreneurship research (Bacq and Janssen, 2011; Gast, Gundolf and Cesinger, 2017). However, they may benefit from adopting an even broader perspective going beyond the realm of entrepreneurship research and reaching into more established fields such as corporate social responsibility or sustainability studies that are strongly related. This sort of discourse is currently lacking and could help establish a common language and research agenda for these fields.

Corresponding to the research field’s fragmentation, one preoccupation in the field has been to offer a definition of the thing under study (Dees, 1998; Austin, Stevenson and Wei-Skillern, 2006; Mair and Martí, 2006; Peredo and McLean, 2006; Sharir and Lerner, 2006; Zahra *et al.*, 2009; Bacq and Janssen, 2011). The primary characteristic that most definitions agree upon is the pre-eminence of social value creation. This in turn can, but need not, include environmental value, though, with social entrepreneurship making up the majority of the responsible entrepreneurship literature, the focus is largely on people rather than planet (Elkington, 1997). Based on the seminal paper by Dees (1998) sustainability entrepreneurship can be defined as the pursuit of new opportunities to serve a mission to create and sustain social value through a process of continuous innovation, adaptation and learning. Sustainability entrepreneurs are change agents that apply entrepreneurial principles of innovation and clever use of resources to social challenges.

One point of contention though is the extent to which economic value creation can also play a role or should be sacrificed at the altar of social value creation. Thus, different authors have considered a myriad of different organisational forms to be the proper subject of responsible entrepreneurship research. These could include NGOs or their for-profit spin-outs, private businesses, cooperatives, as well as other forms not for-profit-ventures (El Ebrashi, 2013). While definitional variation abounds in the field, a large part of the responsible entrepreneurship literature engages

² The term ‘responsible’ was chosen as an umbrella term as that was considered the most comprehensive word

more strongly with not-for-profit ventures arguing that the social and economic value are in inherent conflict (Peredo and McLean, 2006; Santos, 2012; Hörisch, 2015). This, however, leaves out of view those for-profit enterprises that also create some social or environmental value (Gast, Gundolf and Cesinger, 2017). Furthermore, creating economic value may also be an important factor in securing the survival of an enterprise, as even in the non-profit sector wages and rents need to be paid (Haugh, 2005). “Consequently, avoiding the discussion of outcomes other than social value creation may result in ignoring critical outcomes that play an essential role in social entrepreneurial success” (Dacin, Dacin and Matear, 2010).

Following the advice of Zahra *et al.* (2009) that “any definition, measurement or evaluation of [sustainability] entrepreneurship should reflect both social and economic considerations”, I thus diverge from the tradition of focusing primarily on not-for-profit enterprises. Rather, this thesis looks explicitly at both for-profit and not-for-profit enterprises which may provide some social (or environmental) value by addressing one or more of the sustainable development goals (The United Nations, 2017) through innovation. I call such enterprises sustainability startups in order to emphasise that social value creation need not be the primary goal but may also be just one of the goals of the startup. Here what is of central importance is the business model rather than the operations of the startup. The wording startup is employed in order to signify that I am looking at young innovative enterprises and not sustainability divisions of larger corporations or NGOs.

2.2 Sustainability-oriented entrepreneurial ecosystems

Based on this definition this thesis contributes to the sub-field of entrepreneurship research that looks at predictors of sustainability entrepreneurship and here specifically contextual factors. While much of the literature on the antecedents of sustainability entrepreneurship has considered micro-level factors, looking at individual companies and founders (Dees, 1998; Austin, Stevenson and Wei-Skillern, 2006; Mair, Robinson and Hockerts, 2006; Hechavarría, 2016b), these enterprises do not emerge in isolation but are rather strongly influenced by their contexts (Ács, Autio and Szerb, 2014; Autio *et al.*, 2014). In order to elucidate the important role that such contexts play for sustainability startups I draw strongly on the literature of entrepreneurial ecosystems (EEs) (Pitelis, 2012; Stam, 2015; Alvedalen and Boschma, 2017).

Numerous frameworks have been developed to describe what makes up EEs (Malecki, 2018), many of which have been criticised for being ‘laundry lists’ of attributes rather than frameworks (Stam and Spigel, 2018). A framework that does consider how attributes of an EE interact is that by Spigel (2017). It captures the attributes commonly mentioned in other EE frameworks (e.g. Isenberg, 2011) while also recognising that they are in constant interaction. Within this framework there are three primary subdimensions: cultural, social and material factors. These three interact with and support or reinforce each other and can be split into a number of sub-factors (see *Figure 1*). As the three groups of attributes are in constant interaction with each other (as shown in the results presented by Spigel (2017)) we represent them as a circle of interacting factors. They are in turn made up of a number of sub-attributes.

FIGURE 1: ENTREPRENEURIAL ECOSYSTEM ATTRIBUTES

Cultural EE attributes encompass histories of entrepreneurship as well as cultural attitudes and thus form the cultural foundation for the acceptance of entrepreneurial activities. These cultural attitudes encompass what institutions literature calls “cultural-cognitive institutions” and “normative institutions” (Scott, 2008; Valdez and Richardson, 2013). Cultural-cognitive institutions reflect the values, beliefs and culture that are embedded in a social context, while normative institutions consist of the norms and customs that a society agrees upon. Social EE attributes consist of the investors, social networks and mentors that are active in an EE and are thus crucial to the dissemination of knowledge and capital (Spigel, 2017; van Rijnsoever, 2020). Material EE attributes include the policies and laws as well as market opportunities actors encounter in an EE (Nissan and Castañ, 2012; Hoogendoorn, 2016; Spigel, 2017). They are the more formal conditions that can enable and hinder startups. Policies and laws are called “regulative institutions” in the institutions literature (Scott, 2008). As opposed to the other two institutional pillars mentioned above, regulative institutions provide a more formal framework for human (inter)action.

When turning to the issue of sustainability startups and the EEs in which they are located there is little extant scholarship on where EEs might be located that show a high share of sustainability startups. EE rankings like the Genome Startup Ecosystem Ranking, which is released annually, consider factors such as funding rates and number of startups as parameters along which to assess the success of an ecosystem rather than the actual activities of the startups therein (Startup Genome Project, 2017). The SocEntCity report which looks at how preferable different EEs are for social entrepreneurs has an exclusive focus on the United States and thus offers little in terms of international comparison. Within the academic community, too, the topic has thus far received little attention. Research in the relatively nascent field of EE (Stam, 2015; Van Weele *et al.*, 2016; Alvedalen and Boschma, 2017; Erina, Shatrevich and Gaile-Sarkane, 2017; Spigel, 2017) has focused primarily on

traditional startups and not sustainability startups. Indeed, a large part of EE scholarship so far has been preoccupied with defining EEs and the different attributes they are made up of. With regards to sustainability-oriented EEs this poses the question how they are different from other EEs and which attributes of an EE foster the development of sustainability startups. This question remains largely unaddressed.

One exception is offered by Hoogendoorn (2016) who considers drivers for differences in the share of sustainability startups on a country level. She finds evidence for the institutional support perspective which posits that sustainability startups will benefit from favourable institutional conditions such as social expenditure or a regulatory environment that is helpful to sustainability startups. While valuable, the study does not consider that EEs within the same country may differ widely in their attributes and share of sustainability startups. The most common unit of analysis for an EE is a city such as New York, Berlin or London, though smaller countries such as Estonia or Sri Lanka are sometimes also used (Stam, 2015; Audretsch and Belitski, 2017; Startup Genome Project, 2017). Thus, an international study which looks at EEs (usually cities or small countries) in terms of their sustainability-orientation and tries to deduct drivers for differences is currently lacking.

Neither do existing studies consider potential interactions between the attributes of the sustainability-oriented EEs. In order to gain a deeper understanding of the mechanisms that help foster or hinder the development of sustainability startups in some regions rather than others the field may also benefit from more qualitative analyses which are better suited to fostering detailed understanding of processes and mechanisms that bring about an outcome (Gough and Langevang, 2016). Furthermore, much of the research around sustainability startups has focused on EEs in highly developed countries. Thus, a widening of the view to include also EEs in developing countries would be beneficial to gain a more complete understanding of aforementioned mechanisms.

2.3 Motivations of sustainability startup founders across EEs

Going beyond the attributes of an EE and the way they help sustainability startups that have already been created, it is finally important to understand what motivates people to found sustainability startups in the first place. These motivations can be seen as internal drivers of sustainability startup creation as opposed to the external drivers previously discussed in the context of EEs. Researchers have long tried to figure out what it is that propels people to action. Scholarly ideas about human motivation are so omnipresent that they have penetrated into the wider consciousness, with constructs such as Maslow's (1943) pyramid of human motivation being widely recognised.

While substantial theoretical and empirical work exists on the motivation of commercial entrepreneurs (Germak and Robinson, 2014; Ghalwash, Tolba and Ismail, 2017b), the motivations of sustainability entrepreneurs remain underexplored (Corner and Ho, 2010; Ruskin, Seymour and Webster, 2016; Yitshaki and Kropp, 2016; Ghalwash, Tolba and Ismail, 2017b). A significant fraction of the research that does exist is occupied with showing how conventional and social entrepreneurs differ (Clark, Newbert and Quigley, 2017). For example, social entrepreneurs are often shown to have higher levels of prosocial motivation (Branzei *et al.*, 2018), but lower need for achievement (De Hoogh *et al.*, 2005).

However, context, as provided by an EE, will greatly impact the motivations of entrepreneurs. An EE's regulative, normative and cultural-cognitive institutions, 'the rules of the game' (North, 1990, p. 3) have a great influence on individual behaviour and the motives that precede it (Scott, 2008). Especially cultural-cognitive belief systems are known to shape our feelings and urge us into action. Normative institutions, the norms and informal rules of social interaction, and regulative institutions, the formal rules and laws, here provide boundaries for action. EE attributes and motivational drivers of entrepreneurs thus strongly interact. Since institutions vary widely between regions across the globe (Kostova, 1997), one may expect motivations of sustainability entrepreneurs to vary accordingly between EEs. Yet, this idea has found little consideration in research so far. While researchers have in the past suggested that context plays an important role in motivating (sustainability) entrepreneurs, even those studies that do consider people in different regions do not present different lists of motivations for entrepreneurs within those (Boluk and Mottiar, 2014). An exploration of this factor is, however, essential to fully understand which factors help foster the founding rates of sustainability startups across different ecosystems. This is particularly relevant if we consider not only established but also emerging economies, where the motivations of sustainability entrepreneurs' motivations remain understudied (Bruton, Ahlstrom and Li, 2010; Langevang, Namatovu and Dawa, 2012; Yitshaki and Kropp, 2016; Ghalwash, Tolba and Ismail, 2017a). This is regrettable as it appears plausible that a sustainability entrepreneur in Berlin may be motivated by different factors than one in Bangalore. An understanding of the factors that influence the motivation of sustainability entrepreneurs will be particularly interesting to policy-makers hoping to stimulate sustainability entrepreneurship in their respective EE.

3 Research question and research model

To fill the aforementioned gaps this thesis aims to further our understanding of which factors help to foster the development of sustainability startups in different EEs. Accordingly, the work is guided by the following research question:

How and why does the share of sustainability startups differ between EEs?

The answer to this question can be broken down into several different components. The way in which this is done in this thesis is outlined in the research model below. Building on the this model the structure of the thesis is the expanded upon in the next section.

3.1 Research model for the thesis

Building on the theoretical perspectives discussed in the previous section, an overarching research model that forms the basis of this thesis can be formulated. The dependent variable of this thesis, as outlined in the main research question, is the share of sustainability startups in an entrepreneurial ecosystem. Influencing this share there are principally two different forces that are considered in this thesis: First, the different social, cultural and material attributes of an EE (EE attributes) can help or hinder the development of a young sustainability startup. Second, the initial founding of this startup is driven by the motivations of the founder. Evidently, the two cannot be entirely separated as expectations of success will undoubtedly also influence the motivation an individual has to engage in an activity and EE attributes will also impact founding directly. These motivations will in turn also be influenced by the EE attributes and particularly the institutions

embedded therein and thus differ from EE to EE. As the cultural-cognitive, normative and regulative institutions form part of the EE attributes (cultural-cognitive as well as normative institutions are part of the cultural attitudes in an EE while regulative institutions are part of the policy and governance that are part of an EEs material attributes), EEs and their attributes can have a twofold effect: EE attributes that support sustainability startups and motivations of founders to launch such startups (as influenced by institutions) will determine the level of sustainability entrepreneurship in an EE. This relationship is illustrated in Figure 2 where the main connections studied in this thesis are highlighted.

FIGURE 2: RESEARCH MODEL

4 Structure of the thesis

Building on the research model presented above the answer to the main research question should consider several different aspects. First, there is the question, addressed in chapter 2, of how sustainability startups should be conceptualised and which elements are important in their consideration. Second, we have the question *whether* the levels of such sustainability startups do indeed vary between EEs that is the main subject of chapter 3. And finally, we must consider *why* this is the case (if this is the case). This final question in turn has two main elements: the support of existing sustainability startups and the creation of new sustainability startups. These two are considered in chapter 4 and 5 respectively. Thus, these two papers discuss the two different routes, development and founding, outlined in the research model.

Together these individual chapters answer the overarching research question. Below I briefly outline each individual chapter and relate them to the larger research question as well as the literature gaps outlined in the previous section.

4.1 Chapter 2

The current literature around sustainability entrepreneurship is highly fragmented as outlined above and may benefit from being supplemented by research that bridges the gaps between its

individual sub-streams. Further, it leaves out of view most new ventures, which need to generate profits (e.g. to fulfil commitments towards investors) but may still want to support some social goal. If entrepreneurship literature on responsibility is to move out of its niche and follow calls for greater consolidation (Bacq and Janssen, 2011; Gast, Gundolf and Cesinger, 2017), it needs to widen its view and venture into territories where being responsible is not the primary defining feature of a company but part of the business model. In a search for corresponding research topics, the CSR literature, having a long-standing tradition writing about responsibility by companies, which are geared primarily toward the generation of profits rather than doing good, offers valuable avenues for exploration. Extant entrepreneurship research does not yet appear to have taken advantage of the CSR literature as a resource for such insights.

The following aim is thus pursued in chapter 2:

To provide an overview of the literature and to uncover prominent topics in CSR, which have thus far received comparatively little attention by entrepreneurship scholars, by comparing and contrasting extant Responsible Entrepreneurship and CSR research with each other

In order to do this the abstracts of 11,260 papers from the fields of responsible entrepreneurship and corporate social responsibility are analysed. These were collected from Thompson Reuters' Web of Science, which has a large interdisciplinary database of academic texts. Abstracts were chosen as appropriate data for our analysis as they generally provide a summary of the main subject of a paper.

This chapter offers the theoretical foundation on which the other chapters are built. Particularly, it emphasises that for-profit sustainability startups remain under-researched in the wider sustainability entrepreneurship literature. The scope of subsequent chapters was thus adjusted to include those enterprises that pursue profit goals as well as developing products that can potentially contribute to the sustainable development goals.

4.2 Chapter 3

While such sustainability enterprises are increasingly seen as potentially important contributors to the sustainable development goals, we currently have a limited understanding of where in the world we find a particularly high concentration of those and in which conditions they flourish. International studies of entrepreneurial ecosystems have largely focused on the wider startup field. To address this gap, I pursue the following aim in chapter 3:

To assess whether the levels of sustainability entrepreneurship differ between EEs and to identify those factors that foster the development of sustainability startup ecosystems with high shares of sustainability startups

This chapter thus focuses particularly on the share of sustainability startups that is placed on the righthand side of the research model. While sustainability startups are currently still a rather small share of startups more generally across EEs (Alegre, 2015), we can expect that as global debates around sustainability topics such as climate change continue to dominate public discourse, these startups will increase in share and correspondingly relevance to their EEs. This research is interesting

particularly for policy-makers wishing to foster sustainability startup development in their region as well as incubators or investors with an interest in the subject.

To explore this topic the text components of company websites of 19,997 startups in 28 entrepreneurial ecosystems were downloaded. Websites were chosen as a suitable source to give an indication what kind of activities each startup is engaged in. This data was supplemented with information about each ecosystem, including GDP per capita and religiosity among the population, drawing on various data sources including census data and reports.

In terms of the larger research question this chapter primarily addresses *whether* there *are* differences in levels of sustainability entrepreneurship. It shows that indeed levels of sustainability entrepreneurship differ markedly between the 28 international EEs that were considered. This chapter thus presents the first global EE ranking according to the share of sustainability startups. This is an ideal point of departure for the deeper exploration of *why* these levels differ between EEs. The chapter further offers a tentative indication that the combination of several EE attributes contributes to the differences we observe between EEs.

4.3 Chapter 4

As sustainability startups remain under-researched in the EE literature so do the EE attributes that foster their development. However, understanding this is a crucial prerequisite to supporting this kind of startup, as shown in the research model. Additionally, extant research on EEs mostly takes a western-based perspective with developing countries being greatly underrepresented. In chapter 4 I thus ask the following question:

Which factors drive the share of sustainability startups in an EE?

In chapter 4 I explore this question in the context of the EEs of Berlin and Lagos thus contrasting EEs in a developed and a developing country. The basis for my analysis is a body of 40 interviews in total that I conducted with founders, investors, hubs and government officials across Lagos, Nigeria, and Berlin, Germany. In doing so, I present the first study that considers these two ecosystems in parallel and one of only very few that looks at an EE in Sub-Saharan Africa more generally.

In terms of the broader research question, this chapter investigates the question *why* levels of sustainability entrepreneurship differ between ecosystems, looking at the EE attributes that support or hinder sustainability entrepreneurs and what helps their development. In both Berlin and Lagos, the same forces appear to be at work where successful founders, or lighthouses, shape the EE in such a way that they support subsequent startups like themselves. This in turn has led Lagos to have a relatively large share of sustainability startups, while the share in Berlin remains comparatively low.

4.4 Chapter 5

While the answers provided in chapter 4 answer the question why some EEs feature attributes that better support sustainability than others, it remains silent about why sustainability startups are founded in the first place. Since the literature on entrepreneurial motivation emphasises the role of emotions in moderating those (Ruskin, Seymour and Webster, 2016), both are discussed in this

chapter. As human emotions and motivation are greatly influenced by contextual factors, we may expect this, too, to differ between EEs. In chapter 5 I thus address the following question:

How do the motivations of sustainability entrepreneurs and their emotional antecedents differ between entrepreneurial ecosystems in developed and developing countries?

This question, too, is answered in the context of Berlin and Lagos based on interviews with 26 founders from the two EEs. Understanding what the motivational drivers are that lead to the founding of sustainability startups will be particularly interesting for policy-makers and other institutions wishing to support the development of such enterprises as well as impact investors seeking opportunities and individuals to invest in.

In the final chapter, I address the second half of the question *why* the level of sustainability entrepreneurship differs between EEs, by looking at why they are founded in the first place. I find that motivations indeed differ markedly between the two places considered. The founders I interviewed in Berlin are shown to be rather idealistic in their pursuits while founders of sustainability startups in Lagos are realists pursuing both social impact and financial sustainability.

2

Firms with Benefits

A Systematic Review of
Responsible
Entrepreneurship and
Corporate Social
Responsibility
Literature

Abstract

The scholarly literature has so far paid limited attention to responsibility by commercial entrepreneurs. This paper compares responsible entrepreneurship (RE) and corporate social responsibility (CSR) scholarship in order to identify future fields of research. For this purpose, we assess the strengths and weaknesses of extant RE scholarship through the lens of CSR. We have reviewed 11,260 papers via Latent Dirichlet Allocation (LDA) for our work. We find that existing responsible entrepreneurship literature places disproportionate emphasis on how firms can benefit society instead of on how contributions to sustainable development can benefit a firm. Furthermore, the responsible entrepreneurship literature pays limited attention to employee wellbeing, customer preference as well as civil society as a stakeholder. Also, environmental issues and their balancing with financial and social issues remain relatively under-researched. Overall, we hope that scholarly works inspired by this study may ultimately help to ensure responsible behaviour of start-ups.

This paper has been published in The Journal of Corporate Social Responsibility and Environmental Management as Tiba, S., van Rijnsoever, F. J., & Hekkert, M. P. (2018). Firms with benefits: A systematic review of responsible entrepreneurship and corporate social responsibility literature. Corporate Social Responsibility and Environmental Management, 1–20.
<https://doi.org/10.1002/csr.1682>

1 Introduction

Responsibility, once a mere sideshow of doing business, has in recent years moved centre-stage. Today a growing tide of established firms, spanning different industries and locations, is turning towards socially responsible practices. With companies as diverse as Nestlé, Shell and recently even Pornhub championing corporate responsibility, the issue really seems to transgress all boundaries. Indeed, three out of four CEOs believe that in the future business success will be defined by more than financial profit (PWC, 2016). This trend is fostered by governments and non-governmental organisations (NGOs) alike. In 2014 the European Union passed its CSR guideline, requiring large listed companies to report not only on their finances but also on their social and environmental performance, and NGOs like AccountAbility, the International Organization for Standardization and the United Nations all have initiatives geared toward increasing the responsibility of businesses (Godfrey and Hatch, 2007).

Such pressures do not seem to halt at the boundaries of Silicon Valley. Traditionally new enterprises have been shown to damage the environment and violate regulation more often than their established corporate peers (Fuller and Tian, 2006; Wang and Bansal, 2012, p. 1135). However, start-ups such as the notorious Uber and Airbnb are being publicly scolded for their irresponsible behaviour and facing resistance from regulators and consumers alike. Meanwhile, numerous entrepreneurs are turning toward social responsibility (Hofmann, 2014; Tickle, 2016). This trend is mirrored by investors, who increasingly value responsible behaviour by companies (Bocken, 2015; Murguía and Lence, 2015). Once the foothold only of the mission-driven social entrepreneur, responsibility has entered the realm of for-profit commercial start-ups. Beyond the evident social and environmental benefit this shift will have today, it has the potential to alter the face of tomorrow's corporate world as new ventures grow into established firms.

This shift does not yet seem to have entered the realm of academic enquiry. The primary focus of the academic literature on entrepreneurship that has taken an interest in responsibility over the last two decades have been non-profit social entrepreneurs rather than for-profit commercial start-ups (Peredo and McLean, 2006; Santos, 2012; Hörisch, 2015). The widely accepted consensus in the field of "social entrepreneurship" is that an entrepreneur may be considered "social" when they pursue the creation of social value rather than economic value (Dees, 1998; Mair and Martí, 2006; Peredo and McLean, 2006; Dacin, Dacin and Matear, 2010). While social entrepreneurship is widely defined to include both for-profit and non-profit enterprises, the focus in the literature is largely on the latter (Austin, Stevenson and Wei-Skillern, 2006; Zahra *et al.*, 2009). In light of the recent blurring of boundaries between social and commercial enterprise this view is limited. Further, a perspective, which only considers ventures as responsible when social value creation takes precedent and profits are reinvested to serve a social mission (Haugh, 2005), leaves out of view the vast majority of new ventures, which need to generate profits (e.g. to fulfil commitments towards investors), but may still want to support some social goal.

If entrepreneurship literature on responsibility is to move out of its niche and follow calls for greater consolidation (Bacq and Janssen, 2011; Gast, Gundolf and Cesinger, 2017), it needs to widen its view and venture into territories where being responsible is not the primary defining feature of a company but part of the business model. This is not to mean that the current focus should be discarded, but rather that it may benefit from being supplemented by new perspectives. In a search

for corresponding research topics, the CSR literature, having a long-standing tradition writing about responsibility by companies, which are geared primarily toward the generation of profits rather than doing good, offers valuable avenues for exploration. Extant entrepreneurship research does not yet appear to have taken advantage of the CSR literature as a resource for such insights.

In this paper, we therefore aim to uncover prominent topics in CSR, which have thus far received comparatively little attention by Entrepreneurship scholars, by comparing and contrasting extant Responsible Entrepreneurship and CSR research with each other. This allows us to systematically identify potentially fruitful research areas for Responsible Entrepreneurship (RE) scholars wishing to study responsibility by commercial entrepreneurs. In order to identify these gaps we run a Latent Dirichlet Allocation (LDA) (Blei, Ng and Jordan, 2003) on a large corpus of 11,260 peer reviewed papers from both the entrepreneurship and the CSR field that were published between 2006 and 2017. We then identify differences in focus between the two bodies of literature along a refined version of three dimensions of the Triple Bottom Line (TBL) – finance, society and environment.

We find that CSR and RE scholars differ markedly in their exploration of responsibility. Regarding the finance dimension of the TBL, CSR scholars frequently emphasize how behaving responsibly may benefit the specific firm that is doing so. Meanwhile, RE scholars rather focus on explaining how a responsible start-up may create benefits beyond the start-up. Much CSR literature also investigates how responsibility efforts are communicated – another stream of enquiry largely neglected by RE scholars, although it may yield interesting insights. Regarding the society dimension, much CSR literature investigates the well-being of employees alongside the entire supply chain, how customers respond to firms' responsible behaviour and firms' interaction with other stakeholders in society, particularly NGOs. Again, these streams of enquiry are largely neglected by RE scholars. Lastly, regarding the environmental dimension the CSR literature – unlike the RE literature – discusses how to balance the environmental, social and economic performance of a firm.

The remainder of this paper is structured as follows. These introductory remarks are followed by a section outlining our theoretical framing. Section 3 discusses the methods employed in this paper giving an outline of LDA. In Section 4, we present the findings, which are then discussed in the same section. Section 5 summarizes our argument and gives an outlook for further research.

2 Theory/Background

2.1 Fragmented fields: A brief introduction to CSR and Responsible Entrepreneurship

The CSR field is based on the idea that corporations ought to fulfil functions beyond their direct economic interest. In his seminal four-part conceptualisation of CSR Carroll (1979) argues that “companies have not only economic and legal obligations, but ethical and discretionary (philanthropic) responsibilities as well” (Carroll, 1991, p. 40). This fundamental idea of CSR can be traced back to early industrialists such as John D. Rockefeller with his penchant for philanthropy and George Cadbury who cared greatly about social responsibility and working conditions. Despite such early origins Howard Bowen's 1953 publication “Social Responsibilities of the Businessman” is widely credited with being the first definitive book on CSR (Carroll, 1991; Lockett, Moon and Visser, 2006;

Dahlsrud, 2008). In the years since, the concept has been continually challenged and further developed by academics and practitioners alike.

As a field with highly permeable boundaries, CSR has sprouted numerous sub-strands and transmutations (Lockett, Moon and Visser, 2006). “Corporate Social Responsiveness”, “Corporate Responsibility”, “Corporate Environmentalism” (Menon and Menon, 1997), “Corporate Social Performance” (Wood, 1991; Clarkson, 1995) and “Corporate Citizenship” (Waddock, 2004) are just some of the areas that have thus developed. These strands may be understood as branches from the tree trunk of Corporate Social Responsibility (Waddock, 2004). As such, these concepts co-exist side by side rather than having developed from each other sequentially. Despite the differences between these branches, CSR can be understood as the source and common denominator they share (Carroll, 1999). We thus place our primary focus in this paper on this core literature stream and have conducted our search for literature accordingly (see *Data Collection*).

The entrepreneurship field shares CSR’s characteristic of high permeability by a diverse group of researchers. It is thus similarly defined by an abundance of sub-streams and definitional variations. In the sub-field investigating the responsibility of entrepreneurs some of the most prominent research areas are “social entrepreneurship”, “ecological sustainability entrepreneurship” and “responsible entrepreneurship”. Each of these is in turn sub-fragmented into smaller fields. Social entrepreneurship broadly looks at the use of entrepreneurial practices to achieve some social goal and create social rather than economic value (Zahra *et al.*, 2009; Dacin, Dacin and Matear, 2010; Bacq and Janssen, 2011). While environmental factors are usually mentioned here, they appear to play only a secondary role (see e.g. Mair and Martí, 2006). We note that the social entrepreneurship literature is relatively large, although social entrepreneurs are only a small subset of entrepreneurs (Alegre, 2015). While social entrepreneurship literature focuses on social issues, ecological sustainability entrepreneurship literature moves environmental factors centre-stage. However, here the focus is more strongly on enterprises that provide solutions to environmental challenges and aspire to earn a financial profit, rather than having the strong social mission drive of the social entrepreneur (Dean and McMullen, 2007; York and Venkataraman, 2010; Hansen and Schaltegger, 2013) (Gast, Gundolf and Cesinger, 2017). As opposed to the strong entrepreneurial focus in the two other fields, “responsible entrepreneurship” literature investigates CSR practices more broadly in small and medium enterprises (SMEs) (Fuller and Tian, 2006; Azmat and Samaratunge, 2009b). It can thus be seen that the field of Entrepreneurship encompasses a vast variety of research streams investigating different aspects of entrepreneurial responsibility.

Particularly in the fields of social entrepreneurship and in ecological sustainability entrepreneurship academic splintering has led to numerous calls for greater consolidation (Bacq and Janssen, 2011; Gast, Gundolf and Cesinger, 2017). While this paper is one step into that direction, we must take into account a number of different subfields. For lack of a unifying terminology and for simplicity’s sake, we will for the purposes of this paper borrow the expression “responsible entrepreneurship” as an umbrella term to collectively refer to the streams outlined above and any other scholarship that sprouts in this field unless otherwise stated.

2.2 Introducing the Triple Bottom Line and refining it: Internal and External perspectives

We present a refined version of the Triple Bottom Line (TBL) framework in this section (refined via introducing an internal and external perspective for the *people dimension*). This framework structures our section *Results and Discussion*. We note that this refined TBL framework has not been applied top-down to the section *Results and Discussion*, but rather emerged from coding those 15 topics that mark the greatest difference between the CSR and responsible entrepreneurship literature (further discussed in the section *Results and Discussion*). We continue with a discussion of our refined TBL framework.

Any discussion of responsibility poses the challenge of defining what falls within its realm. Both in the responsible entrepreneurship (Haugh, 2005; Robinson, 2006; Cohen and Winn, 2007; Rahdari, Sepasi and Moradi, 2016) and in the CSR field (van Marrewijk, 2003; Waddock, 2004; Cornelius *et al.*, 2008) one of the most established frameworks for thinking about responsibility is the Triple Bottom Line (TBL) (Elkington, 1997). The basic idea is that beyond a narrow focus on economic performance, companies also need to achieve social inclusiveness and environmental resilience (Aguinis and Glavas, 2012). The three dimensions have thus commonly been labelled “Profit”, “People” and “Planet” respectively or the “3 Ps” collectively (Elkington, 1997). While these three dimensions are often seen as overlapping (Shnayder, Van Rijnsoever and Hekkert, 2015), we treat them as separate categories for the purpose of this paper. As the three dimensions of the TBL are here used to illustrate similarities and differences between two bodies of literature we believe such definitional depth would add complexity without significantly elevating our insights.

Looking at the responsibility of firms, it is, however, elucidating to add a distinction between an internal and an external perspective for the “People” dimension, as this can give an indication of the scope of responsibility. Building on the levels of analysis debate (Davidsson and Wiklund, 2001) we propose a distinction as follows: The *people dimension* distinguishes between internal “workplace” and external “community” issues (European Commission, 2003). The former encompasses topics such as labour conditions, workplace diversity and employee wellbeing (Cornelius *et al.*, 2008) while the latter is applied to wider societal issues such as social cohesion, healthcare and education as well as global societal challenges such as discrimination and poverty. Including this distinction can thus aid our understanding of how narrowly or broadly responsibility along the *people dimension* is understood in our respective fields. This, in turn, can reveal where researchers currently do or do not place their emphasis, and thus aid our quest for new territories of academic inquiry. The refined TBL is summarised in Table 1.

TABLE 1: INTERNAL AND EXTERNAL SUB-DIMENSIONS OF THE TRIPLE BOTTOM LINE

Profit	People	Planet
Issues relating to individual firm finances and production of profit as well as the development of the wider economy	INTERNAL Internal people issues relating to employees and labour conditions	All environmental issues, both those directly linked to the firm's actions those caused by and addressed through collective action
	EXTERNAL Larger societal issues going beyond the firm	

3 Methods

Given our aim of uncovering potential research fields for entrepreneurship scholars, we have opted for an inductive research design based on the analysis of academic papers. In order to fully capture the state of current research, we decided to cast our nets wide and include all 11,260 papers that our searches returned in the analysis (described in section *Data Collection*). Since an endeavour of this scope lies beyond the boundaries of manual processability, we draw on Latent Dirichlet Allocation (LDA), a computational mathematics method, for a quantitative analysis of our textual data. This further allows for a limitation of the personal bias that often risks clouding more narrative literature reviews (Baumeister and Leary, 1997). The research process for this paper includes six primary steps: Data Collection, Data Cleaning, LDA, Calculation of Topic Ratios, and Classification of Topics. We outline these six steps in more detail in this section.

3.1 Data Collection

Given the aim of getting a broad and current overview of the two literature streams considered in this paper, the analysis draws on academic journal articles as these are reflective of the academic debate and usually have shorter timelines for publication than books, for example. The search for papers was conducted in March 2017 on Thomson Reuters' Web of Science, which has a large interdisciplinary database of academic texts, and limited to peer reviewed articles and reviews in English from 2006-2017. We introduce this time limitation to focus our results only on current debates and research topics. Further a limitation only to relevant research areas was introduced³. In order to help the labelling of individual documents as belonging to either literature stream, two separate searches were conducted.

Due to the fragmented nature of the responsible entrepreneurship field three different search terms relating to the three subfields discussed above were included. Further *startup**, *start-up** and *venture** were also included as terms, which might be used instead of *entrepreneur**. For reasons laid

³ Limitation to the research areas Business Economics, Environmental Sciences Ecology, Science Technology and other Topics, Public Administration, Government Law, Public Environmental Occupational Health, and Social Issues

out above the second search was limited only to the keywords *corporate social responsibility*. The two searches conducted in the title, abstract and keywords of papers were:

(1) ((social OR responsib* OR sustain*) AND ("start-up*" OR startup* or entrepreneur* or venture*))

(2) (corporate AND social AND responsibility)

In total the bibliometric information (including abstracts) of 5,319 papers relating to Responsible Entrepreneurship (1) and 5,656 relating to Corporate Social Responsibility (2) was returned via the searches and downloaded. There was an overlap of 285 additional documents between the two searches. In a next step, this overlap was analysed in detail and each entry allocated to either one of the two literature streams as no paper was found which was clearly relevant to both.

TABLE 2: TOP 20 MOST FREQUENT JOURNALS IN CORPUS

Journal	No. Articles
JOURNAL OF BUSINESS ETHICS	845
CORPORATE SOCIAL RESPONSIBILITY AND ENVIRONMENTAL MANAGEMENT	155
JOURNAL OF CLEANER PRODUCTION	153
ENTREPRENEURSHIP THEORY AND PRACTICE	127
ENTREPRENEURSHIP AND REGIONAL DEVELOPMENT	101
BUSINESS & SOCIETY	100
JOURNAL OF BUSINESS RESEARCH	98
JOURNAL OF BUSINESS VENTURING	86
BUSINESS ETHICS-A EUROPEAN REVIEW	82
INTERNATIONAL SMALL BUSINESS JOURNAL	78
MANAGEMENT DECISION	72
BUSINESS STRATEGY AND THE ENVIRONMENT	69
SMALL BUSINESS ECONOMICS	66
PUBLIC RELATIONS REVIEW	65
SUSTAINABILITY	64
INTERNATIONAL ENTREPRENEURSHIP AND MANAGEMENT JOURNAL	61
JOURNAL OF MANAGEMENT STUDIES	61
STRATEGIC MANAGEMENT JOURNAL	61
JOURNAL OF SMALL BUSINESS MANAGEMENT	60
AMFITEATRU ECONOMIC	48

Key word searches of this kind present at least two shortcomings. The *synonym problem* arises out of the fact that many ideas or concepts have a number of different words or names to express them (Beall, 2008). This is addressed by our choice of search terms. The *homonym problem* on the other hand is the difficulty that the search for a word with different meanings will capture documents for all the meanings (Beall, 2008). In other words, some of the collected papers may not in fact be relevant to either of our literature streams. We address this challenge by excluding all texts which are not clearly about entrepreneurship or CSR, drawing on the results of LDA, leaving a total

of 6,266 papers (2,395 Entrepreneurship and 3,871 CSR) (see *Appendix [1]* for approach). *Table 2* gives an overview of the top most frequent journals in the remaining corpus. While we intentionally did not limit our focus to only some target journals – in order to also capture relevant trends in related fields or at the periphery of the academic discourse – this table suggests that core publications in the respective fields are well represented within our corpus.

3.2 Data Cleaning

For the analysis the abstracts of the selected papers were used. An emphasis on these in favour of using whole texts was chosen because they may be expected to give a sufficient indication of what a text is about and thus provide an overview of the topics discussed in the respective fields (Blei, Griffiths and Jordan, 2010; Piepenbrink and Nurmammadov, 2015). Information on how the various texts were cleaned is provided in the appendix. The resulting vocabulary was 4,916 words in the 6,266 abstracts.

3.3 Topic Models – Latent Dirichlet Allocation (LDA)

We start this subsection by discussing the advantages of Latent Dirichlet Allocation (LDA) over bibliometric analysis before illustrating the chosen approach in the LDA used for this paper. One widely used approach to the analysis of different academic fields with the purpose of identifying underlying themes is bibliometric analysis (Callon, Courtial and Laville, 1991). Such analyses are frequently based on the keywords provided by the authors of an academic paper and academic fields or clusters are found by counting the co-occurrence of keywords within documents (Durán Sánchez *et al.*, 2017). This allows not only for the identification of such topic clusters, but also the tracing of academic trends over time. While this method has great merit it also has a number of shortcomings (Piepenbrink and Nurmammadov, 2015). First, not all academic articles will have keywords or if they do, they may not sufficiently reflect the content of the paper. Second, differences in vocabulary used have to be manually processed by the researcher, thus introducing some subjectivity. And third, clusters are assumed to be mutually exclusive and thus terms must be assigned to only one topic. However, a word such as *green* may equally be associated with a topic about eco-friendliness and a topic about colours.

The method for topic modelling employed in this paper, Latent Dirichlet Allocation (LDA), has greater flexibility using as input not only the keywords but whole abstracts in this case. LDA is a generative probabilistic topic model proposed by Blei *et al.* (2003) which can be used for the unsupervised identification of underlying topics in a large corpus of data without any prior knowledge of the topics (Sugimoto *et al.*, 2011; Guerreiro, Rita and Trigueiros, 2016). While the documents, or abstracts, are known and observed, the topics are hidden or *latent* (Piepenbrink and Nurmammadov, 2015). The basic assumption of the model is that texts are composed of a mixture of different topics (k), which are in turn characterised by a distribution over words (w) (Blei, Ng and Jordan, 2003), where as opposed to the bibliometric analysis described above words can appear prominently in several topics. This allows for modelling at a fine granularity as it realistically sees texts as made up of different topics rather than being “about” one topic alone (Zheng, Mclean and Lu, 2006). The observed words in a text can be used to deduce the proportion of each topic in it as well as the probability distribution over all words in the vocabulary for each topic.

The LDA was carried out in R using the package *topicmodels* (Grün and Hornik, 2017) which is based on the work of Blei et al. (2003). We used a Gibbs algorithm, “where the next state [of a Markov Chain] is reached by sequentially sampling all variables from their distribution when conditioned on the current values of all other variables and the data” (Griffiths and Steyvers, 2004). In other words, the algorithm randomly assigns words to topics and then sequentially draws and reassigns every word depending on the assignment of all other words within the same document and the assignment of that word to topics throughout the entire corpus. At each draw all other word assignments are held constant.

The model is based on a number of simplifying assumptions. *First*, it sees a document as a *bag of words*, where the order of words is inconsequential for our analysis (Blei, Ng and Jordan, 2003; Grimmer and Stewart, 2013). The cleaned data was thus transformed into a document-term-matrix (DTM) using the text mining package *tm* (Feinerer and Hornik, 2017) in R (R Core Team, 2017), which stores the corpus as a matrix of documents and frequencies for each word per document. *Second*, it is based on the assumption that the number of topics k is fixed and known which is an input parameter of the LDA. The choice of the correct number of topics is crucial as it determines the granularity of the results and the fit of the model for the data, i.e. how well the model describes the underlying data (Griffiths and Steyvers, 2004; Zheng, Mclean and Lu, 2006). However, the path to finding the right number of topics is subject to some debate. While the optimal number of topics can be obtained by splitting the dataset into a training and a hold-out set and then testing the likelihood of the hold-out set on the trained model for different values of k (Li and McCallum, 2006), this has been shown not to have any predictive power for the interpretability of the resulting topics by humans (Chang *et al.*, 2009).

We thus integrate both quantitative assessment and human judgement in the steps we performed in the identification of the right model for this study. As a first step we trained several models with topic numbers between 10 and 100 and calculated the density for each model following the approach presented by Cao *et al.* (Cao *et al.*, 2008) and implemented in the package *ldatuning* (Murzintcev, 2016). The idea of the density-based method is to identify a topic number where the similarity of terms within a topic will be maximised while keeping the similarity between topics as small as possible. This ensures that topics represent a clear theme while being distinct. The density-analysis placed the optimal number of topics at 95. This relatively high number can be explained by the coherence of the corpus. In corpora with a strong correlation between documents a higher number of topics is required than in diverse corpora (Cao *et al.*, 2008).

Since lower values for topics of 50, 70, and 80 also performed well in the density test we calculated models on the full dataset for these values as well as 95 for five different random seeds. In this process we ran 3000 iterations after discarding the first 2000 and kept only the models with the best log-likelihood. Based on human judgement, the models for k equal to 50, 70 and 80 were found to have less clearly defined topics with a higher level of word intrusion, i.e. topics include words that do not fit (Chang *et al.*, 2009), than that for k equal to 95, which was subsequently selected.

3.4 Calculation of Topic Ratio

Following the model selection, we calculate the average topic proportion for each topic in each of the two literature streams. For each of the 95 topics this gives us the average probability of it appearing in an RE or a CSR abstract. In order to identify those topics which are comparatively least

represented in the RE literature we divide the CSR score for every topic by the RE score for the same topic in order to obtain a topic ratio. Topics with a score greater than 1 are more likely to appear in a CSR abstract, topics with a score less than 1 are more likely to appear in an RE abstract. Since this paper aims to identify research fields which are currently comparatively less represented in the RE field we focus our analysis on those topics with the highest ratio (see *Table 3* for an overview of the top 15). Due to the high number of topics, the average proportion of topics over documents is relatively low at $1/95=0.0105$. Such low proportions for topics are quite common in LDA (Griffiths and Steyvers, 2004; Abuhay *et al.*, 2017). All results should be considered in light of this fact.

TABLE 3: TOP 15 TOPICS ACCORDING TO TOPIC RATIO (CSR/ENT)

LABEL	TERMS	PROPORTION (CSR% ENT%)	RATIO (CSR/ENT)
Consumer	consumer, product, cause, fit, experiment, response, attribution, consumption, campaign, purchase	1.5 0.7	2.020
Environmental Reporting	environmental, disclosure, information, voluntary, environmentally, disclose, emission, listed, cer, carbon	1.5 0.7	2.014
Philanthropy	corporate, reputation, good, philanthropy, philanthropic, disaster, donation, charitable, donate, charity	1.4 0.7	2.002
Annual Reporting	report, accountability, transparency, assurance, annual, audit, gri, guideline, integrated, credibility	1.3 0.7	1.948
Sustainability	sustainability, responsibility, dimension, consist, component, functional, fashion, respect, encompass, viewpoint	1.3 0.7	1.810
CSP Index	csp, association, measure, rating, index, cfp, score, esg, certain, kld	1.3 0.7	1.783
Stakeholder	stakeholder, legitimacy, pressure, expectation, dialog, demand, respond, response, salience, normative	1.3 0.7	1.719
Supply chain & workers	global, chain, supply, supplier, worker, labour, contract, manufacturer, retailer, transnational	1.2 0.7	1.640
Code of conduct & Brand	brand, image, effort, code, conduct, preference, advertising, credibility, equity, enhance	1.1 0.7	1.639
Customer Satisfaction	customer, service, perception, satisfaction, identification, loyalty, hotel, perceive, hospitality, mediate	1.3 0.8	1.628
Employees	employee, organisational, commitment, job, justice, volunteer, employer, perception, citizenship, affective	1.3 0.9	1.556
Society – Corporations	corporation, society, discourse, oil, societal, citizenship, civil, citizen, modern, notion	1.2 0.8	1.509
Financial Performance	performance, financial, impact, study, perform, manufacturing, correlation, intangible, mixed, financially	1.4 0.9	1.509
Regulation	governance, regulation, mechanism, regulatory, effective, effectiveness, compliance, regime, voluntary, csi	1.1 0.8	1.449
Human Rights	right, human, legal, law, rule, obligation, normative, respect, duty, reserved	1.2 0.8	1.411

Note: Topics strictly related to the research field (“CSR” and “Listed Company”) were excluded from the list: CSR: Corporate Social Responsibility; ENT: Entrepreneurship; CSP: Corporate Social Performance

3.5 Classification of Topics

In a next step, topics were clustered according to how they relate to each other on a content basis. This was done to identify the overarching themes that connect topics and structure the further analysis. We found topics within these top 15 to correspond with the Triple Bottom Line framework

introduced earlier in sub-section section *Introducing the Triple Bottom Line and refining it: Internal and External perspectives*. Due to the high number of topics within the “People” dimension and the difference in focus between employees and wider society, the refinement between inward- and outward-orientation was introduced for this dimension.

To gain an understanding not only of the relative probability of topics per literature stream but also of differences in their framing, the most salient papers per topic (those with the highest probability associated with each of these 15 topics) from both literature streams were selected and their abstracts read and analysed. This serves to supplement the breadth of LDA with some of the depth of content analysis and gives more granular insights into the similarities and differences between our literature streams. This process was also used to verify the allocation of topics to topic clusters. The results of these two analyses are presented together in the following section.

4 Results and Discussion

This section is structured as follows: First, we present in section *Overview of Data (Table 4)* the 15 topics (based on the framework presented in section *Introducing the Triple Bottom Line and refining it: Internal and External perspectives*) that have the greatest likelihood of appearing in the CSR literature in comparison to the RE literature. In other words: These are the topics that are much more widely discussed in the CSR than the RE literature, according to our analysis, and thus present possibly promising areas for future inquiry in our point of view. We thus focus on the weaknesses rather than the strengths of current RE scholarship when viewed through the lens of CSR research. We then discuss *how* these topics may be addressed by RE scholars by drawing on the current state of research on these topics in both scholarly fields with this discussion structured based on our framework’s topic clusters “Profit”, “People” and “Planet”⁴; the section “People” starts out by first discussing topics identified with an inward orientation before moving to those with an outward orientation. We note that some identified focus topics are discussed jointly⁵ since these are interrelated from a content perspective, whereas different from a terminology perspective (and thus appearing as separate topics in our analysis). *Table 5* gives an overview of the different themes which were identified along the TBL-dimensions together with exemplary references in the literature fields of RE and CSR respectively. These themes and the corresponding gaps we observe between RE and CSR research form the basis for the identified research agenda. The proposed future research topics are summarised in *Table 6*. They are elaborated on in the following paragraphs.

4.1 Overview of Data

To gain a broad overview of structural differences between the two academic fields of CSR and RE with the aim of uncovering potential paths for further inquiry by RE scholars, we deemed it to be useful to look at the topics that are much more widely discussed in the CSR than in the RE literature. *Table 4* shows the 15 topics with the highest ratios in our dataset with a higher ratio

⁴ Three topics were not labeled within our framework, but as “Generic”. We briefly discuss these in the section *Overview of data*.

⁵ Topics discussed jointly are (a) financial performance and CSP index, (b) employees and supply chain and worker, (c) customer satisfaction and consumer as well as (d) stakeholder, society-corporations and human rights.

indicating that a topic is on average more likely to appear in a CSR text than in an RE text. This value is derived by dividing the average proportion of a topic in a CSR text by its average proportion in an RE text. This table thus shows areas which are relatively less covered by extant RE scholarship.

TABLE 4: TOP 15 TOPICS, MAPPED ON REFINED TRIPLE BOTTOM LINE FRAMEWORK

Generic	Profit	People	Planet
<ul style="list-style-type: none">• Philanthropy (2.00)• Regulation (1.45)• Sustainability (1.81)	<ul style="list-style-type: none">• Financial performance (1.51)• CSP index (1.78)• Code of conduct and brand (1.64)• Annual reporting (1.95)	<div>INWARD</div> <ul style="list-style-type: none">• Employees (1.56)• Supply chain and worker (1.64) <div>OUTWARD</div> <ul style="list-style-type: none">• Customer satisfaction (1.63)• Consumer (2.02)• Stakeholder (1.72)• Society-corporations (1.51)• Human rights (1.41)	<ul style="list-style-type: none">• Environmental reporting (2.01)

Note: Figure in brackets indicates the calculated CSR-RE ratio. For instance, 2.01 (for ‘Environmental reporting’) indicates that the topic ‘Environmental reporting’ has a 101% higher probability of appearing in a CSR article than in an RE article in our corpus

We observe regarding *Table 4* that almost half (7) of our 15 focus topics are located in the “People” cluster with five topics assigned to the outward-oriented “People” sub-dimension. Hence, there appear to be a variety of “People” topics in the CSR literature that receive relatively less attention in the RE literature. Meanwhile, four of the 15 focus topics are coded into the “Profit” cluster. Again, this indicates that there are several “Profit” topics in the CSR literature that the RE literature apparently has paid less attention to. We discuss these further below. The “Planet” cluster is least populated in our framework. We note that this does not mean that there are no topics in this topic cluster that are widely discussed in the CSR or RE literatures. Rather, it indicates that there are no topics for this cluster in the corpus of articles analysed for this paper that are that are much more widely discussed in the CSR than in the RE literature. This is in line with previous findings by Shnayder et al. (Shnayder, Van Rijnsoever and Hekkert, 2015).

Only three of the 15 focus topics could not be mapped on our refined Triple Bottom Line framework. These are *Philanthropy*, *Regulation* and *Sustainability*. We continue by discussing promises these topics may hold for future RE scholarship. This discussion is based on the themes presented in *Table 5*. There it can be seen that along the three dimensions of the TBL both focal points and framing of issues differ markedly in the two considered literature streams. The areas which RE scholars have not yet ventured into offer great scope for future exploration.

Philanthropy: Limited RE scholarship is to be found in the topic ‘Philanthropy’ with this literature usually investigating how responsible entrepreneurs think about philanthropy (Gunnarsson

and Josephson, 2011; Bajde, 2013) (see *Table 5*). This may be driven by philanthropy being mostly considered as an endeavour of established companies with corporate behemoths such as Vodafone or IBM engaging in it (Conant, 2013). We note, though, that many entrepreneurs who have accrued great wealth turn to philanthropic endeavours with 'The Giving Pledge', a charity that aims to encourage the super-rich to give at least half of their net worth to philanthropy, either during their lifetime or after, being one of the most notable entrepreneur-driven philanthropic endeavour of recent years (Rogers, 2011). This indicates potential for future RE scholarship around philanthropy. The extant CSR scholarship frequently considers drivers of corporate philanthropy (Shapira, 2012; Tan and Tang, 2016), but also how philanthropy can impact a company (from its brand to its financial performance) (Wang, Choi and Li, 2008; Hur, Kim and Woo, 2014). Future RE scholarship may also investigate such questions (see *Table 6*).

Regulation: Our analysis also reveals only relatively few RE works in the context of regulation. The ones that do can broadly be divided into two streams. First, those that examine how regulatory entry barriers impact the launch of responsible start-ups (Ardagna and Lusardi, 2010; Cao, Ding and Zhang, 2016) (see *Table 5*). Meanwhile, much of the CSR literature focuses on the impact of corporations on regulation (Scherer, Baumann-Pauly and Schneider, 2013; Fisman and Wang, 2015). RE work on the impacts of responsible start-ups on regulation could also be worthwhile, considering the current legal battles some of the world's most valuable start-ups are engaged in (Böcker and Meelen, 2017), while start-ups frequently enter niche markets that are un- or underregulated at the moment of entry (Thiel, 2015) which, in turn, implies start-up induced regulatory change.

Second, some RE literature considers how governance evolves throughout the growth of a start-up (Wirtz, 2011) with governance referring to the mechanisms by which a firm is controlled and directed (Shailer, 2004). Meanwhile, the CSR literature focuses on determinants of governance including local regulation, national culture or NGO presence (Aguilera and Jackson, 2011; Chung, Yeo-Chang and Cho, 2012; Marques, 2016; Sethi and Rovenpor, 2016) (see *Table 5*). Widening the RE scholar's lens from the development stage of a start-up as one determinant of governance to additional factors such as regulation could also reveal valuable insights (this is summarised in *Table 6*). After all, flawed governance systems have been identified as a major cause of numerous corporate scandals in recent years (Ailon, 2011) and an enhanced understanding of determinants of firms' governance systems may help to circumvent these in the future, both in the corporate and entrepreneurial context.

Sustainability: We refrain from discussing this generic topic in this section since our work has revealed numerous relevant insights on promising future RE works on the three specific pillars of sustainability, as we further discuss below.

TABLE 5: THEMES IN RESPONSIBLE ENTREPRENEURSHIP (RE) AND CORPORATE SOCIAL RESPONSIBILITY (CSR) RESEARCH AND FUTURE RE RESEARCH

TOPIC CLUSTERTOPIC	RELATED RE THEMES	EXAMPLE RE SOURCES	CSR THEMES	EXAMPLE CSR SOURCES
Generic	Philanthropy	Entrepreneurs' views on philanthropy	Gunnarsson & Josephson 2011; Bajde 2013	Drivers of corporate philanthropy Shapira 2012; Du 2015; Cha & Abebe 2016; Tan & Tang 2016
	Regulation	Regulatory entry barriers	Ardayna & Lusardi (2010); Cao et al. (2016)	Impacts of corporate philanthropy on firm Wang et al. 2008; Hur et al. 2014
		Governance and growth	Wirtz (2011)	Impacts of corporations on regulation Scherer et al. (2013); Fisman & Wang (2015)
Profit	Financial performance/CSP index	Crowdfunding in social venture funding	Meyskens & Bixrd 2015; Lam & Law 2016	Determinants of corporate governance Aguilera & Jackson (2011); Chung et al. (2012); Marques (2016); Sethi & Rovenpor (2016)
		Environmental orientation and crowdfunding success	Calic & Mosakowski 2016; Hörisch 2015	Heras-Saizarbitoria et al. 2011; Muhammad et al. 2015; Gonenc & Scholtens 2017; Li et al. 2017; Jackson et al. 2015; Wang & Choi 2013; Wang & Berens 2015
		Sustainable VCs helping social entrepreneurs	Bocken 2015	Achieving environmental, socialRokhmawati et al. 2015; Chow & Chen 2012; Farag et al. 2015
		Success factors of sustainable VCs	Marcus et al 2013	Link between cost of capital and responsibility Ghoul et al. 2011; Wu et al. 2014; Xu et al. 2015; Cao et al. 2014; Dhaliwal et al. 2011; Ye & Zhang 2011
	Code of conduct and brand	Micro-financing to alleviate poverty & further environmental protection	Varis 2008; Jennings 2014; Saleh et al. 2016; Allet 2017	Firm valuation at international stock markets and performance 2014; Lipiec 2016; Ramchander et al. 2012; Curran & Moran 2007; Clacher & Hagendorff 2012
Annual reporting		RE as source of job creation; particularly for disadvantaged groups	Kroll et. Al. 2010; Miralles et al. 2010; Hwang & Roulstone 2015	Whether and how corporations benefit society Philippe et al. 2012; Chang 2015
		RE as solution to youth unemployment crises	Langevang et. Al.	Responsibility as competitive advantage McWilliams & Siegel 2011; Barba-Sánchez & Atrienza-Sahuquillo 2010; Juścius & Snieška 2008; Bligin 2009; Panwar et al. 2016
		RE as driver of regional economic development	Squazzoni 2009; Friedman & Desivilya 2010	
		Assessing responsibility of entrepreneurs	Achleitner et al. 2013	Drivers of CSR reporting Dagilienne et al. 2014; Kristoffik et al. 2016; Lock & Seele 2016

TOPIC CLUSTER	TOPIC	RELATED RE THEMES	EXAMPLE RE SOURCES	CSR THEMES	EXAMPLE CSR SOURCES
People (inward)	Employees/supply chain and worker			Standardizing CSR reporting	de Villiers & Alexander 2014; Einwiller et al. 2016
				Credibility of CSR reporting	Mahoney et al. 2013; De Beelde & Tuybens 2015; Michelon et al. 2015
		Physical and mental health of founders	Voltmer et al. 2011; Gunnarsson et al. 2011	Health care and mental wellbeing of employees	Calderon et al. 2016
		Work-life balance of founders	Dempsey & Sanders 2010	Supply chain labour conditions particularly in poorer countries	Andersen & Skjoett-Larsen 2009; Dawkins 2012; Perry & Towers 2013; De Neve 2014
		Overall satisfaction of founders	Thorgren et al. 2013	Supply chain labour conditions for women	Hale & Willis 2007; Prieto-Carrón 2008; Perry et al. 2015
People (outward)	Customer satisfaction/consumers			Link between a firm championing CSR initiatives and	De Roeck et al. 2014
				Association of CSR with improved labour efficiency and	Stuebs & Sun 2010; Sun & Stuebs 2013; Yang 2016; Giuliano et al. 2017
		Customers and social ventures	Park et al. 2016; Chung et al. 2015; Hall-Phillips et al. 2016	Role of employees in implementing CSR initiatives	Manika et al. 2015; Raineri & Paillé 2016; Leslie et al. 2013
		Customer perception of new (social) ventures	Li et al. 2014; Liu et al. 2014	Communication of responsibility to customers through eco-labels 2015)	Dauvergne & Lister 2010; Costanigro et al. 2016
				Green marketing initiatives	Yadav et al. 2016
Planet	Stakeholder/society-corporations/human			Impact of CSR on firm reputation	Abdelzaher & Newbury 2016
		Responsible entrepreneur-stakeholder relations	Kimmit et al. 2016; Muhammad et al. 2016; Newthrelations	Impact of CSR on willingness to pay	Chen et al. 2016; Costanigro et al. 2015; Krause 2015
		Impact of responsible entrepreneurs on livelihoods	Laelis & Lemke (2016)	Impact of eco-labelling on consumers' sustainable practices	Kim et al. 2015
				Corporation-stakeholder relations	Tokoro 2007; Hahn 2015; Zou & Zou 2015; Helmig et al. 2016
				NGO impact on corporations	Burchell & Cook 2007; van Huijstee & Glasbergen 2008; Burchell & Cook 2011; Pegg & Zabbey 2013; Parsons et al. 2014; Curran 2017
Planet	Environmental reporting			Social license to operate	Bishop 2012; Bellace 2014; McPhail & Adams 2016
		Origins of environmental entrepreneurship	Gutberlet et al. 2016; Hechavarria (2016); Hörisch et al. 2017	Human rights abuses by corporations	da Rosa et al. 2015; Braam et al. 2016; D'Amico et al. 2016

TOPIC CLUSTER	TOPIC	RELATED RE THEMES	EXAMPLE RE SOURCES	CSR THEMES	EXAMPLE CSR SOURCES
		Entrepreneurship as solution to environmental challenges	Dean & McMullen 2007; York & Venkataraman 2010	Types/credibility of environmental performance disclosure Environmental reporting and financial performance	Jose & Lee 2007; Clarkson et al. 2008; Cho et al. 2010; Giannarakis et al. 2014 Heras-Saizarbitoria et al. 2011; Jackson et al. 2015; Muhammad et al. 2015; San et al. 2015; Wang & Choi 2013; Wang & Berens 2015; Qiu et al. 2016; Gonenc & Scholtens 2017; Li et al. 2017

TABLE 6: POSSIBLE AVENUES FOR FUTURE RESPONSIBLE ENTREPRENEURSHIP (RE) RESEARCH				
GENERIC	PROFIT	PEOPLE	PLANET	
<ul style="list-style-type: none">▪ <i>Philanthropy</i>: Drivers and impacts of philanthropy▪ <i>Regulation</i>: Impacts of responsible start-ups on regulation, determinants of responsible start-up governance	<p><i>Financial performance</i>: Impact of corporate social performance on financial performance, balancing environmental, social and economic sustainability, impact of responsibility initiatives on funding success, relationship between venture valuations and responsibility efforts, aggregate performance of responsible start-ups</p> <ul style="list-style-type: none">▪ <i>Code of conduct and brand</i>: How a responsible firm might itself benefit from behaving responsibly▪ <i>Annual reporting</i>: Communicating responsibility via websites, press releases, op-eds	<p>INWARD</p> <p><i>Employees/supply chain and worker</i>: Wellbeing of responsible start-up's employees and decent jobs (alongside entire supply chain), firm responsibility as a factor of employee satisfaction/productivity, role of employee in implementing responsibility initiatives</p> <p>OUTWARD</p> <p><i>Customer satisfaction/consumer</i>: How responsibility is communicated to customers, effect of responsibility on customer's brand perception/willingness to pay and the way in which responsibility can shape customer behaviour</p> <p><i>Stakeholder/society-corporations/human rights</i>: Interplay of responsible entrepreneurs and NGOs, social license to operate and human rights</p>	<ul style="list-style-type: none">▪ <i>Environmental reporting</i>: Link between <i>environmental</i> reporting/performance, social and financial performance; implementation and measurement of environmental initiatives, while considering the full spectrum of environmental issues (e.g. pollution and water)	

4.2 Profit: Doing well by doing good

Financial performance/CSP index: Only limited RE scholarship is concerned with the financial benefit of the responsible entrepreneur, whereas financial performance is one of the most prominent themes in the CSR literature. As can be seen in *Table 5* RE scholars rather focus on topics like Crowdfunding and Venture Capital. This is somewhat surprising in a field which is based on the idea of entrepreneurs balancing the social and/or environmental pillar of the TBL with the economic one (Cohen and Winn, 2007; Santos, 2012). Scarlata et al. (2016) moreover argue that it is precisely this tension between social and economic value creation objectives that has attracted numerous scholars to the entrepreneurship field. Yet, in the scholarly discourse discussions of this latter pillar rarely become more precise than that.

This may partly arise out of the strong focus on social entrepreneurship and the corresponding (mis)conception that only non-profits actively aim to create social value. Meanwhile, those that do look at profit-making enterprises seem to consider “the economic pillar [...] as a given” (Gast, Gundolf and Cesinger, 2017) and as a result focus their research on the environmental or social domain instead. However, even if it were true that social value is created primarily by non-profits, also in the non-profit sector wages and rents need to be paid and thus financial profit here enables social profit (Haugh, 2005). This evidently holds true even more strongly in the context of commercial start-ups wishing to behave responsibly. “Consequently, avoiding the discussion of outcomes other than social value creation may result in ignoring critical outcomes that play an essential role in social entrepreneurial success” (Dacin, Dacin and Matear, 2010).

Based on the work done by CSR researchers one promising field of enquiry is the study of potential links between social or environmental performance and financial performance of a new venture, which in the corporate realm is frequently shown to be positive (Heras-Saizarbitoria, Molina-Azorín and Dick, 2011; Wang and Choi, 2013; Jackson, Singh and Parsa, 2015; Muhammad *et al.*, 2015; Wang and Berens, 2015; Forcadell and Aracil, 2017; Gonenc and Scholtens, 2017; Li *et al.*, 2017). In this context, the challenge of balancing the three dimensions of the TBL deserves greater attention. Further, current RE work on crowdfunding (Meyskens and Bird, 2015; Lam and Law, 2016) and sustainable Venture Capital (VC) (Bocken, 2015; Scarlata, Zacharakis and Walske, 2016) could be complemented by studies investigating the impact of responsibility initiatives on funding success (e.g. with angel investors or commercial VCs) (Marcus, Malen and Ellis, 2013). Relatedly, it may be of interest to examine whether and how venture valuations are affected by entrepreneurial responsibility efforts and how responsible start-ups perform from an aggregate perspective (mirroring some of the CSR research around CSP indexes). In sum, RE research may find it helpful to place greater emphasis on the economic pillar also beyond the challenge of securing funding if it is to understand responsibility by commercial entrepreneurs, who will have financial considerations at the heart of their business models (see *Table 6*).

Code of conduct and brand: There is a broader undercurrent that conceives of entrepreneurship principally as serving the communities, regions and countries in which it takes place (see *Table 5*). It is thus widely celebrated as the solution to a plethora of societal challenges (Zahra et al. 2009; further detailed in *Table 5*). However, few of those researchers appear to consider whether and in what way entrepreneurs may themselves benefit from behaving responsibly and contributing to the public good, which is a perspective frequently found in CSR research (beyond whether and how corporations benefit society). McWilliams and Siegel (2011), for example, define strategic CSR as “any

‘responsible’ activity that allows a firm to achieve a sustainable competitive advantage” with strategic CSR frequently being codified in a ‘Code of conduct’. This idea of responsibility as a part of the branding which, in turn, can develop into a competitive advantage is widely echoed by other CSR scholars (Jušćius and Snieška, 2008; Bilgin, 2009; see e.g. Barba-Sánchez and Atienza-Sahuquillo, 2010; Panwar *et al.*, 2016).

It may thus be worthwhile to study similar aspects within an entrepreneurship context (see *Table 6*). Beyond generating insights into factors which motivate entrepreneurs to behave responsibly it may have a wide-reaching impact on the type of entrepreneurship that develops in the future. If researchers can offer evidence that behaving responsibly as an entrepreneur does indeed have benefits for a firm and not just its recipients of (social) value creation, we may see even more significant shifts than we already have in this traditionally ‘irresponsible’ part of the economy.

Annual reporting: Limited RE literature can be found in the topic ‘Annual reporting’ which is mostly concerned with the communication of responsibility efforts via formal reporting to shareholders (see *Table 5*). Fassin (2008) suggests that this literature gap can be explained by only very few responsible start-ups engaging in this kind of reporting since it requires significant resources that most emerging firms cannot draw on. Meanwhile, much CSR literature examines why firms issue CSR reports (Dagilienne, Leitonienė and Grecikova, 2014; Krištofik, Lament and Musa, 2016; Lock and Seele, 2016). This literature also examines standardization in the context of CSR reporting (de Villiers and Alexander, 2014; Einwiller, Ruppel and Schnauber, 2016) as well as the credibility of these reports (Mahoney *et al.*, 2013; De Beelde and Tuybens, 2015; Michelon, Pilonato and Ricceri, 2015). While this work may not be replicable in the responsible start-up space due to a lack of such reports, a relevant question for RE scholars remains how responsible start-ups communicate their responsible behaviour to their (quasi) shareholders. For instance, Achleitner *et al.* (2013) have attempted to analyse this question via experiments with social venture capitalists. The extant CSR scholarship suggests that analysis of responsible entrepreneurs’ websites, press releases and/or op-eds could be further avenues for future research.

4.3 People

4.3.1 People-inward: employees as a factor of responsibility

Employees/supply chain and worker: Employees and their well-being do not appear to be high on the research agendas of RE scholars when compared to the CSR literature, although our definition of RE scholarship is rather broad, as outlined earlier. Indeed, we find that papers looking at the wellbeing of people working in new ventures focus almost exclusively on the founders (see *Table 5*). Scholars in this area investigate the physical and mental health of founders (Gunnarsson and Josephson, 2011; Voltmer *et al.*, 2011), the work-life balance of founders (Dempsey and Sanders, 2010), and the overall satisfaction of founders (Thorgren, Wincent and Sirén, 2013). Again, none of these make explicit the idea of employee or founder wellbeing as being a factor of responsibility – even in the context of social entrepreneurship. This stands in stark contrast to the CSR field where studies on employee wellbeing abound (Hale and Wills, 2007; Prieto-Carrón, 2008; Dawkins, 2012; De Neve, 2014; Calderon, Harris and Kirsch, 2016).

Hence, future RE studies may want to widen their view to looking also at the well-being of the employees in start-ups. Particularly in the context of reports of poor working conditions and low payment for employees of both commercial and social start-ups (Dempsey and Sanders, 2010)

considerations of employee wellbeing in an entrepreneurship context seem a highly topical research area. The identified topic 'Supply chain and workers' further suggests the idea that responsible entrepreneurship scholars may not only investigate the well-being of employees in specific start-ups, but that of workers alongside the entire supply chain. CSR studies examining CSR initiatives that aim to impact labour conditions along the entire supply chain (Andersen and Skjoett-Larsen, 2009; Perry and Towers, 2013; Perry, Wood and Fernie, 2015) may serve as a promising starting point.

While entrepreneurship is widely credited with being an instrument for job creation, the question of the kinds of jobs created (including indirect creation of jobs in the start-up supply chain) appears to be widely absent in the considered entrepreneurship literature. Another area in CSR research, which appears particularly relevant to entrepreneurship research, shows a positive link between a firm championing CSR initiatives and job satisfaction (De Roeck *et al.*, 2014). In fact it is shown that better firm reputation through CSR is associated with improved labour productivity (Stuebs and Sun, 2010; Sun and Stuebs, 2013; Yang, 2016) and a willingness to take a pay-cut. This seems particularly relevant in the resource-constrained context of a start-up. Further, employees may themselves play a crucial role in implementing such responsibility initiatives (Leslie, Snyder and Glomb, 2013; Manika *et al.*, 2015; Raineri and Paillé, 2016). A promising avenue would be to test the extent to which these findings hold true also in an entrepreneurial context (see *Table 6*).

4.3.2 People-outward: What the customer wants and stakeholder relations

Customer satisfaction/consumer: Another topic which has received comparatively little attention by entrepreneurship researchers concerns responsibility in relation to the role of the customer and their interests. Indeed, the topics 'Customer satisfaction' and 'Consumer' are much more widely discussed in the CSR than in the RE literature (see *Table 5*). Moreover, those few RE papers that do discuss customers do not appear to link them or their satisfaction to the responsibility of a venture. This holds even for those papers focusing explicitly on social ventures and how customers perceive these (Chung *et al.*, 2015; Hall-Phillips *et al.*, 2016; e.g. Park *et al.*, 2016). Leaning on the work of CSR scholars, entrepreneurship researchers may want to consider the extent to which communication of responsibility to customers through either eco-labels (Dauvergne and Lister, 2010; Costanigro, Deselnicu and McFadden, 2015) and green marketing initiatives (Yadav, Kumar Dokania and Swaroop Pathak, 2016) can impact firm or brand reputation (Abdelzaher and Newbury, 2016; Hur, Kim and Kim, 2018) and customers' willingness to pay (Costanigro, Deselnicu and McFadden, 2015; Krause, 2015; Chen, Wen and Luo, 2016). Beyond customer preferences shaping company decisions the impact responsibility measures by entrepreneurs may have on consumers' sustainable practices is another auspicious topic for exploration (Kim, Lee and Yang, 2015). The entrepreneurship field here represents an ideal context in which to gain a better understanding of the generalisability of CSR scholars' findings and to see if their revelations about customers, brand image and responsibility hold also outside of the corporate realm.

Stakeholder/society-corporations/human rights: While much of the CSR literature examines the relationship of a corporation with its numerous stakeholders (Tokoro, 2007; Hahn, 2015; Zou and Zou, 2015; Helmig, Spraul and Ingenhoff, 2016), these stakeholders have received relatively less attention in the RE scholarship (see *Table 5*). Several CSR texts in our corpus that score highly for the topic 'Stakeholder' examine the interplay of corporations and NGOs and how these NGOs pressure corporations into (more) responsible behaviour (Burchell and Cook, 2007, 2011, 2013; van Huijstee and Glasbergen, 2008). Meanwhile, CSR literature within the topic 'Society-Corporations' and 'Human

rights' tends to focus on communities as a specific stakeholder impacted by corporations. This literature investigates how corporations attempt to develop a 'social license to operate' when their business activities impact communities (Pegg and Zabbey, 2013; Parsons, Lacey and Moffat, 2014; Curran, 2017) and also considers cases of human rights abuses (Bishop, 2012; Bellace, 2014; McPhail and Adams, 2016). While some literature on responsible entrepreneurs and the interplay with their stakeholders can be found in our corpus (e. g. Muhammad et al. 2016; Newth 2016; Kimmitt et al. 2016) including literature specifically focusing on livelihoods (Laeis and Lemke, 2016), the CSR literature suggests that much more work in this realm may be undertaken (see *Table 6*). We hypothesize that particularly research on the interaction between responsible entrepreneurs and NGOs may be of interest as well on (possibly innovative) approaches responsible entrepreneurs undertake to gain a social license to operate.

4.4 Planet: From environmental to financial performance

Environmental reporting: Articles around environmental reporting are more than twice as likely to appear in the CSR literature as in the RE literature, according to our analysis (see 'Planet' column in *Table 4*). These articles have a similar focus to those identified under the topic 'Annual reporting' with some articles examining why firms disclose environmental performance information (da Rosa et al., 2015; Braam et al., 2016; D'Amico et al., 2016), others explaining how this information is disclosed (including questions of measuring environmental performance) and whether the disclosed information is valid (Jose and Lee, 2007; Clarkson et al., 2008; Cho, Roberts and Patten, 2010; Giannarakis, Konteos and Sariannidis, 2014) and finally, another strand of articles analysing the links between environmental reporting and financial performance of a firm (San et al., 2015; Qiu, Shaukat and Tharyan, 2016) (see *Table 5*). We note that a wide array of environmental issues (from water pollution to greenhouse gas emissions or soil erosion) tends to be considered in the relevant CSR literature. The related RE scholarship tends to focus on why environmental entrepreneurship emerges in the first place (Gutberlet et al., 2016; Hechavarría, 2016a; Testa et al., 2016; Hörisch, Kollat and Brieger, 2017), while also discussing the potential of entrepreneurship in solving environmental challenges (Dean and McMullen, 2007; York and Venkataraman, 2010). Based on the work done by CSR researchers one particularly promising field of enquiry is the study of potential links between environmental performance (indicated via environmental reporting) and financial performance of a new venture, as indicated earlier. Future RE scholarship could also investigate how environmental initiatives are implemented and measured, while considering the full spectrum of environmental issues (from soil erosion to water pollution and greenhouse gas emissions) at hand (see *Table 6*).

5 Conclusion

In this paper, we explore responsible entrepreneurship and the emerging phenomenon of commercial for-profit entrepreneurs turning toward responsibility as a field of study. We establish an understanding of the strengths and weaknesses of responsible entrepreneurship by considering extant literature in its various subfields and positioning it against the research field of Corporate Social Responsibility (CSR). In doing so, we substantiate that while some parallels exist between these related fields, there are several potential avenues for research thus far little explored in the entrepreneurship field. The main such avenues can be categorised along the TBL.

An increased emphasis on outward-oriented people factors of responsibility such as customer satisfaction/consumers would be of great interest. Here future studies may wish to investigate to what extent the customers of startups place an emphasis on the sustainability and what impact this has on brand perception. Further research in the same sub-category may be conducted concerning stakeholder/society-corporations/human rights. One interesting question to investigate in this context is how sustainable entrepreneurs interact with NGOs. An improved understanding of how entrepreneurs may themselves benefit from behaving responsibly is currently also underexplored. Concrete studies on the links between sustainability and the financial performance/survival rates of startups are needed. Overall a greater focus on balancing environmental with social and economic issues would be welcome. Future research may want to focus on the extent to which enterprises with a social mission also commit to environmental goals and vice versa. (For a comprehensive overview of detailed suggested research topics, we refer to Table 6)

In illustrating these paths, the foundations for future academic enquiry into responsibility by commercial entrepreneurs have been laid. Such research can supplement extant work on social and environmental entrepreneurship by accounting for this phenomenon with potential wide-reaching societal, environmental and economic impact and thus propel responsible entrepreneurship research out of its niche. It has further been shown that valuable insights can be reaped for scholars and practitioners of responsible entrepreneurship alike by entertaining findings from the CSR field. Although our focus has been on what RE scholarship may be able to learn from the CSR literature, we hypothesize that both fields may enter into a mutually rewarding conversation with each other. This has the potential to generate insights which will not only advance the academic debate but also prove useful to responsible entrepreneurs and firms themselves.

This study has some clear limitations. An exclusive focus on academic papers runs the risk of missing out on findings generated within other academic publications and the so-called grey literature as well as anything written outside of the scholarly realm. Our findings thus must be understood in this context and not seen to make claims for example about publications by practitioners. Moreover, the broad search employed presents the potential pitfall of including texts that are not relevant to the research question. We attempt to mitigate this by using the results of the LDA to narrow the focus somewhat. As a machine-based method LDA is restricted in its ability to account for nuances in meaning within a text so it cannot hope to match manual content analysis in terms of richness of results. We thus opted to supplement the LDA with a qualitative analysis of those texts with the highest probabilities for the respective TBL topics. In this light, this paper should be seen as providing a broad structuring and overview of two fragmented fields of scholarship.

In presenting some opportunities for future inquiry which emerge when comparing and contrasting the entrepreneurship and CSR fields, we hope to inspire other scholars to reach beyond the boundaries of their traditional terrain and evaluate what lies there when applied to responsible entrepreneurship.

3

Sustainability Startups and Where to Find Them

Investigating the Share of
Sustainability Startups
across Entrepreneurial
Ecosystems and the
Causal Drivers of
Differences

Abstract

While it is well known where the best entrepreneurial ecosystems can be found in general, such information is missing in the case of sustainability startup ecosystems. These are entrepreneurial ecosystems with high shares of startups that are active in industries which address the Sustainable Development Goals through innovation. This paper addresses the above-mentioned gap by establishing a ranking of startup ecosystems according to their share of sustainability enterprises. For this purpose, we have analysed the websites of 19,997 startups in 28 entrepreneurial ecosystems using latent Dirichlet allocation. We find that the highest proportion of sustainability startups among these entrepreneurial ecosystems is located in Boston, followed by Houston, Seattle and Lagos, respectively. A qualitative comparative analysis of the causal patterns underlying our results reveals that high GDP in combination with either (1) high shares of female founders of startups or (2) high shares of non-religious people in the population induce entrepreneurial ecosystems with relatively high levels of sustainability enterprises. Our work aims to stimulate further scholarly interest in sustainability-oriented entrepreneurial ecosystems.

This chapter has been submitted as a paper to the journal PlosOne and is currently under review.

1 Introduction

Today's sustainability challenges call for the help of radical innovators like those startup founders who are finding creative solutions to pollution, the unsustainable use of resources and the spread of diseases. In fields ranging from clean energy to health treatments, innovative startup firms often translate scientific findings into actionable solutions that can reach a global audience. The new business models established by startup firms are simultaneously breaking open existing arrangements, contributing to societal change (Geels *et al.*, 2017) and helping to solve today's pressing societal and environmental challenges (The United Nations, 2017).

On a global scale, the industries in which startups operate and the degree to which they are able to develop are determined to a large extent by the conditions of the regions in which entrepreneurs and startups operate (Acs, Szerb and Lloyd, 2017; Alvedalen and Boschma, 2017). These regions and their conditions are called entrepreneurial ecosystems (EEs). The most celebrated EE is Silicon Valley, which is well-known for its high founding rates and many profit-generating startups (Brock, 2012; Berger and Brem, 2016; Startup Genome Project, 2017). Other famous examples include Tel Aviv, Boston, London and Berlin. Various lists have been published that rank the cities or, in some cases, the nations that are most favourable to startups in general, taking into account factors such as founding rates and average funding amounts (Ács, Autio and Szerb, 2014; Global Entrepreneurship Monitor, 2017; Startup Genome Project, 2017). None of these rankings, however, evaluate the extent to which such EEs are favourable to 'sustainability' startups, those startups that can contribute innovative solutions to societal and environmental challenges such as those identified by the United Nations' 17 Sustainable Development Goals (SDGs).

The aim of this study is thus to assess the way in which levels of sustainability entrepreneurship differ between EEs and to identify those factors that foster the development of sustainability startup ecosystems with high shares of sustainability startups. Identifying such factors may be particularly useful for policy-makers who wish to increase the proportion of sustainability startups in their EE, perhaps with the hope of creating a 'Silicon Valley of sustainability startups'. Entrepreneurial activity, of course, also takes place outside of such EEs. However, we focus in our study on locations with high concentrations of entrepreneurial activity in order to cover the largest portion of the startup community possible.

To achieve the outlined aims, we established a ranking of 28 prominent and well-known EEs around the world according to the share of their enterprises operating in industries that contribute to sustainability through innovation (as opposed to through primarily operations). The ecosystem ranking, we have produced differs from other rankings of startup ecosystems in that it focuses solely on each ecosystem's share of sustainability enterprises rather than those factors such as average funding, number of startups and growth rate that such rankings are usually based on. We established our list by analysing the websites of 19,997 startups in the 28 EEs (Startup Genome Project, 2017) using the text mining method of latent Dirichlet allocation (LDA) (Blei, Ng and Jordan, 2003). Startups that place emphasis on any topic identified by the SDGs were considered to belong to one of the core industries that contribute to sustainable development through innovation and were categorised accordingly. The SDGs, which were collectively developed by 193 countries and numerous NGOs (Nilsson, Griggs and Visbeck, 2016) and adopted in 2015 by the United Nations, are arguably the leading international framework for addressing global challenges related to sustainability. We

determined the sustainability score of each EE according to the absolute number of sustainability startups and share of total startups in industries contributing through innovation to sustainability. Next, we conducted a fuzzy set qualitative comparative analysis (fsQCA) to identify causal patterns that might explain the emergence of relatively sustainability-focused EEs. The factors that were evaluated for their potential causal role on EEs' shares of sustainability startups were derived from a review of the relevant literature. Our approach to this process is further detailed in the Methods section below.

The remainder of this paper is organized as follows: we first introduce the key concepts used in our study, and then outline the methods we employed; we then discuss the share of sustainability startups dedicated to particular topics and contributing to specific SDGs; next, we present the shares of sustainability startups corresponding to the various EEs and show our ranking; finally, we then outline the results of the fsQCA and conclude with a presentation of policy recommendations based on these results.

2 Background

In this section we briefly introduce the main concepts used in this paper, namely sustainability entrepreneurship and entrepreneurial ecosystem (EE), beginning with the former.

2.1 Sustainability Startups

The concept of sustainability entrepreneurship employed in this paper is based on a broad body of literature containing a wide range of similar terms and definitions; 'social entrepreneurship', 'ecological sustainability entrepreneurship' and 'responsible entrepreneurship' are just a few of the terms that are often used to describe different but related phenomena. Definitions of '*social entrepreneurship*' tend to vary across the academic literature. Some definitions only identify non-profit enterprises as practitioners of social entrepreneurship, while others allow both non-profit and for-profit enterprises focusing primarily on social issues or environmental challenges to be counted as social enterprises (though the latter type of organisation is less often discussed in the social entrepreneurship literature; see e.g. Mair and Martí (2006)). Social entrepreneurship scholars are broadly unified, however, in defining social entrepreneurs as prioritising social (or environmental) value creation goals over economic ones (Mair and Martí, 2006; Zahra *et al.*, 2009; Dacin, Dacin and Matear, 2010; Bacq and Janssen, 2011). *Ecological sustainability entrepreneurship* literature, on the other hand, moves environmental factors centre-stage. This literature, however, tends to focus more strongly on enterprises that provide solutions to environmental challenges while aspiring to earn financial profits (Dean and McMullen, 2007; York and Venkataraman, 2010; Hansen and Schaltegger, 2013; Gast, Gundolf and Cesinger, 2017). As opposed to the strong entrepreneurial focus in the two other fields, *responsible entrepreneurship* literature tends to investigate corporate social responsibility practices more broadly in small and medium enterprises (SMEs) (Fuller and Tian, 2006; Azmat and Samararatunge, 2009b).

The question that is central to the debate occurring in these fields is what it means to be social or responsible. The most widely accepted framework that articulates both social and environmental values is that of the Sustainable Development Goals developed by the United Nations (The United Nations, 2017). In this paper, the term 'sustainability entrepreneurship' will thus be used

when referring to enterprises that address one or more of these goals. The UN asserts that companies in all industries have a responsibility to contribute to achieving the SDGs through practices such as the use of renewable energy and creation of fair working conditions. Some key industries, however, also have a responsibility to innovate and develop novel solutions where there currently are none, as in the field of health treatments. As startups are known for their ability to develop such innovative solutions, in this study we focus on startups in such sectors. In doing so, we choose to build upon the perspectives represented by all three streams in the literature discussed above and adopt a relatively broad focus; we thus consider firms to be sustainability startups not only if they prioritise social value creation over economic value creation, but also if they create social or environmental value irrespective of economic value creation goals.

2.2 Entrepreneurial Ecosystems

While early studies of (sustainability) entrepreneurship frequently focused on different personal traits of startup founders (Davidsson and Wiklund, 2001; Harris, Sapienza and Bowie, 2009; Zahra *et al.*, 2009), recent years have seen an increase in investigations that treat entrepreneurial ecosystems (EEs) as important drivers of how entrepreneurship develops (Ács, Autio and Szerb, 2014). Following Stam, EE's may be understood as 'a comprehensive set of resources and actors, which have an important role to play in enabling entrepreneurial action' (Stam, 2014). This set of resources and actors includes but is not limited to financiers, incubators, accelerators, pools of qualified potential employees, other startups and a set of rules that govern and enable entrepreneurial and innovative action. Through their constant interaction, these factors establish and shape the EE (Pitelis, 2012). The most common unit of analysis for an EE is a city such as New York, Berlin or London, though countries such as Estonia or Sri Lanka are sometimes also used (Stam, 2015; Startup Genome Project, 2017).

Importantly, each EE is a site of intellectual cross-pollination between the ecosystem's participants, who share knowledge through both informal and formal networks such as incubators and accelerators (Eveleens, van Rijnsoever and Niesten, 2016). As such, the ecosystem in which a startup is located is likely to have a strong impact on many of its characteristics, including its business model and the degree to which that business model is geared toward sustainability. Previous studies have demonstrated that the degree to which young entrepreneurs place importance on social value creation differs widely across EE's (Hechavarría, 2015; Hoogendoorn, 2016). However, as these studies have all focused on social entrepreneurship, this paper complements previous research by extending its scope to include sustainability entrepreneurship as this concept is defined above. We hold that the sustainability-orientation of an EE may be assessed based on the share of the enterprises within it that can be identified as sustainability startups.

2.3 Factors for Sustainability

Various theories have been proposed as to what drives the emergence of entrepreneurial initiatives that address societal or environmental challenges. One such theory states that strong economic development in a region encourages such initiatives. This follows from the argument that in the presence of relative economic security (when the basic needs of livelihood are met), people have a greater capacity to care for others and for the environment (Gelissen, 2007), and in such communities a greater number of sustainability entrepreneurs and customers who emphasise social and environmental sustainability in their decisions is likely to exist. Furthermore, higher education

levels in more developed economies may be credited with bringing about greater social and environmental awareness. This suggests that focus on sustainability can only arise when a society and its entrepreneurs can afford it, a notion that further ties the issues of social and environmental sustainability to that of economic sustainability.

The flipside of this argument is presented by proponents of the failure thesis, which posits that in the absence of government sustainability initiatives entrepreneurs are more likely to start sustainability enterprises (Hoogendoorn, 2016). When they fail to offer particular social goods or services, governments leave market gaps into which sustainability entrepreneurs enter in order to address the unmet needs of the population (Matsunaga, Naoto and Okuyama, 2010). When governments place sufficient emphasis on the provision of public goods themselves, sustainability entrepreneurship is less necessary.

Turning to the personal characteristics of the entrepreneur, it has been shown that female founders on average place greater emphasis than men on social value creation as opposed to mere profit-making (Bosma *et al.*, 2015; Hechavarría *et al.*, 2017). This tendency is consistent with the strong social expectations placed on women to be altruistic and selfless, which is also reflected in women's greater likelihood to serve as volunteers (McAdam, 2013; Hechavarría and Ingram, 2016). While men outnumber women in the fields of both social entrepreneurship and commercial entrepreneurship, the difference is smaller in the case of the former (Hechavarría and Ingram, 2016). As a result, we would expect the share of enterprises in industries contributing to sustainability to be higher in ecosystems where the share of female founders is higher.

A second personal attribute that has been suggested to impact an individual's disposition towards social and environmental consciousness is religious belief. Previous studies have revealed that an individual's religiosity is positively associated with their tendency to engage in ethical behaviour in business contexts (Weaver and Agle, 2002; Longenecker, McKinney and Moore, 2004). The underlying mechanism in this relationship is the way individuals bring values of selflessness and social responsibility embedded in religious beliefs into their work life; as a result, the decisions they make are based not only on economic factors but also on considerations corresponding with their religious beliefs. We may thus expect that in places where religious belief is more common, a higher share of entrepreneurs will be religious and bring their respective religious values to their work, which will result in a larger share of and sustainability startups.

The extent to which these attributes are found to be present in the ecosystems we consider and can explain variations in the share of sustainability startups of different EEs is discussed in the part of the Findings and Discussion section titled 'Factors for Sustainability'.

3 Methods

3.1 Data

In order to assess the sustainability orientation of startups in different EEs we chose to consider the startups' websites as the primary data source. Websites serve to communicate information about a company's products, initiatives, values and missions to customers, potential investors and potential employees. If a startup places an emphasis on social or environmental sustainability, this will most likely be reflected in their website.

Scholars such as Lyon and Montgomery (Lyon and Montgomery, 2015), however, warn against the possibility that companies engage in greenwashing, a practice that involves representing one's environmental and social practices in media such as the company website in an overly positive light. This practice can cause individuals to form overly positive views of such companies. Nevertheless, we view websites as a valuable resource offering insight into the products and practices of startups but remain conscious of the necessity to be wary of firms' potentially overstating the actual social and environmental impact of their initiatives. In addition, given that our level of analysis is the entire ecosystem rather than the individual firm, we have no reason to suspect that the share of enterprises that engage in greenwashing (if there are any that do so) differs significantly between ecosystems or that greenwashing practices differ significantly across sectors.

3.2 Data Collection

Since we focus our analysis on the prevalence of sustainability startups in different EEs, the initial task for the collection of data was to select the ecosystems on which the study should focus. We chose to use initially the top 45 global startup ecosystems identified by the Genome Startup Ecosystem Report (Startup Genome Project, 2017), as this report is the most authoritative in the field and covers all major startup ecosystems. The ecosystems that were selected and the corresponding data for the number and proportion of sustainability startups is presented below in the Findings and Discussion section.

Following the selection of ecosystems, we identified all the startups registered in the Crunchbase (*Crunchbase*, no date) database that were founded in one of the selected ecosystems during the six-year period between January 2012 and December 2017; doing so allowed us to limit our dataset to only startups, as has been suggested by Baum et al. (2000) (Baum, Calabrese and Silverman, 2000). Crunchbase is an online database that contains information on innovative enterprises ranging from startups to Fortune 1000 companies. It is the most comprehensive startup database, and using it allowed us to collect data on a significant number of enterprises in the selected ecosystems. Data found in Crunchbase is provided by companies themselves, by venture partners and by in-house data teams. While this ensures a high quality of data overall, some pieces of information will ultimately be fraudulent or missing from the database. Furthermore, not all enterprises located in a given EE are likely to be contained in Crunchbase, and the database displays a regional bias towards the US. We partly correct for this bias later in the study by considering the share of sustainability startups in each ecosystem rather than the absolute number. Including only those entries that contained a web domain, we initially collected data on 41,434 startups.

Following the collection of the Crunchbase data, we downloaded the websites of startups with up to 250 subpages listed in Crunchbase in order to obtain their text content. As several websites were not in operation or did not contain downloadable content (an eventuality that confirmed the lack of complete data as a drawback of using the Crunchbase dataset), we ultimately obtained website data on 24,103 startups. The number of firms identified in each ecosystem is shown in Figure 3. Ecosystems with very low numbers of firms ($n < 50$) were excluded from the remaining stages of the study because these numbers were not sufficiently representative to allow inferences to be made about the wider ecosystem, leaving 23,838 websites of startups located in 37 EEs.

FIGURE 3: NUMBER OF FIRMS IN DATASET PER ECOSYSTEM.

3.3 Data Cleaning

In a later stage of the study, we determined the languages of each startup website's text using the *clld2* (Ooms and Sites, 2017) package in R (R Core Team, 2017). Of the 23,838 websites, 4,366 were identified as having text that was not primarily (at least 80%) in English. This finding is plausible given the international growth aspirations of startups in general. Within these 4,366, multi-language websites, websites in which the same content was available in several languages including English were manually cleaned to only contain English text. Those 1,312 websites with text in German, Dutch or French, the three languages other than English that the authors of this paper can claim proficiency in, were automatically translated to English using the Translate function in Google Sheets. We chose to only select websites in these languages, as doing so allowed us to judge the quality of the translations. Websites in other languages (primarily Spanish, Portuguese, Russian, Korean and Chinese) were discarded. While this may result in an over- or underrepresentation of activity in some EEs relative to others, we assume that there are no significant differences in the proportion of sustainability-oriented companies that have or do not have an English-language website. This step was necessary in order to prepare the corpus for later analysis, as latent Dirichlet allocation (LDA) (Blei and Lafferty, 2007) can only be performed when data is in a single language.

Within the remaining 20,843 websites we then identified and removed duplicates. Texts were further cleaned by removing punctuation, numbers and certain standard English stop words, which

are words that occur in a high frequency in texts without contributing significantly meaning (such as ‘the’, ‘and’ and ‘some’). In the next step, the remaining words were lemmatized using the programme *TreeTagger* (Schmid, 1995) and stemmed using the *stemDocument* function implemented in the *tm* (Feinerer and Hornik, 2017) package in R (R Core Team, 2017). Lemmatisation is a process that produces the basic form of a given word (‘be’, for instance, is the basic word form of ‘is’, ‘are’ and ‘was’) (Toman, Tesar and Jezek, 2006); it can thus significantly reduce the size of a vocabulary and improve the speed of algorithms applied to a dataset. Stemming, meanwhile, reduces all inflections of a word to their stems, thus leading to a further shrinking of the vocabulary represented in a dataset. We also removed all words that do not appear in at least five websites (Griffiths and Steyvers, 2004); doing this ensures that misspellings, addresses and enterprise names are removed from the dataset, as well as some remaining foreign words. These steps led to a further reduction of the number of startup websites to 20,626 with a vocabulary of 30,567 words.

In order to identify whether there are any additional corpus-specific stop words, or words that appear in most texts of the corpus and thus give little information about the distinct topics within them, we also generated a term frequency-inverse document frequency (tf-idf) (Salton and McGill, 1983) score for each word in each document. Variations of tf-idf are commonly used by search engines to score and then rank a document's relevance based on a user's query (Blei, Ng and Jordan, 2003). The tf-idf score of a word indicates how important a word is to each document, with a higher score indicating that the word is frequently used in the document relative to its use in the corpus overall and a lower score indicating that it is highly frequent in the corpus overall. We found that setting the threshold for exclusion at the overall median tf-idf score (Grün and Hornik, 2017) had no impact on the vocabulary of the dataset, which indicates that previous data cleaning steps were successful at eliminating words that were less relevant to the corpus. The process by which the total number of websites contained in our initial dataset was reduced to the number finally presented in this paper, including steps described in the paragraphs that follow, is depicted in Figure 4 below.

FIGURE 4: DATA CLEANING STEPS AND REMOVAL OF WEBSITES

3.4 Latent Dirichlet Allocation

LDA is a generative probabilistic topic model proposed by Blei et al. (Blei, Ng and Jordan, 2003) which can be used to identify underlying topics in a large textual corpus such as the one described above (Sugimoto *et al.*, 2011; Guerreiro, Rita and Trigueiros, 2016). The model is based on the notion that texts are composed of a mixture of different topics (k), which are in turn made up of a distribution over words (w) (Blei, Ng and Jordan, 2003). While the documents, or websites in our case, that constitute the corpus are known and observed, the topics are hidden or latent (Piepenbrink and Nurmammadov, 2015). One core advantage of LDA over other techniques is that it accurately treats texts as being constituted of a variety of topics rather than just one, which allows for relatively fine-grained modelling (Zheng, Mclean and Lu, 2006). The modelling technique is based on the words that are observed in each text, and thus allows us to determine both the extent to which each topic is treated in a text and the words that are most likely to appear in association with each topic.

For our study, the LDA was carried out in R with the package *topicmodels* (Grün and Hornik, 2017), which is based on the work of Blei et al. (Blei, Ng and Jordan, 2003), using the recommended default priors and Markov Chain settings. We used a Gibbs algorithm in which, as Griffiths and Steyvers explain, ‘the next state [of a Markov Chain] is reached by sequentially sampling all variables from their distribution when conditioned on the current values of all other variables and the data’ (Griffiths and Steyvers, 2004). In other words, the algorithm randomly assigns words to topics and then sequentially draws and reassigns each word in each document based on the assignment of all the other words in the document and the assignment of that word to topics throughout the corpus. With each draw, all other word assignments are held constant (Tiba, van Rijnsoever and Hekkert, 2018).

The model is based on several simplifying assumptions. First, each document is treated as a ‘bag of words’ in which the order of words is inconsequential for the analysis (Blei, Ng and Jordan, 2003; Grimmer and Stewart, 2013). The cleaned data for our study was thus transformed into a document-term matrix using the text mining package *tm* (Feinerer and Hornik, 2017) in R (R Core Team, 2017), which stores the corpus as a matrix of documents and frequencies of each word in each document. Second, it is assumed that the number of topics k is fixed and known. This is an input parameter of the LDA model. Choosing the correct number of topics is crucial, as it determines the granularity of the results and the fit of the model to the data, i.e. the accuracy with which the model describes the underlying data (Griffiths and Steyvers, 2004; Zheng, Mclean and Lu, 2006). The best means for determining the correct number of topics, however, is a subject of debate among researchers. While some hold that the optimal number of topics can be determined by dividing the dataset into a training set and a hold-out set and then assessing the likelihood of the hold-out set on the trained model for different values of k (Li and McCallum, 2006), this technique has been demonstrated to not have predictive power when it comes to humans’ ability to interpret the resulting topics (Chang *et al.*, 2009).

We thus based our choice of the number of topics on our own human judgement, assessing selected numbers based on how clearly-defined the resulting individual topics were and how well each topic reflected the contents of the websites in which it was highly represented (Uys, Schutte and Van Zyl, 2011). Since we expected only a small subset of the topics present in the 20,626 startup websites to be relevant to our chosen focus area of sustainability, we adopted a two-step approach. First, we ran an initial LDA with the number of topics set to the relatively low value of 50, which

produced less granular results than higher values would have, in order to identify overarching sustainability topics (see Table 7) and the websites within which these topics were prominent (Titov and McDonald, 2008). This model was ultimately chosen after three models with 25, 50 and 75 topics, respectively, were trained to assure the robustness of the model with 50 topics. The topics in the 25-topic model were found to lack detail, while the 75-topic model did not produce significant improvements compared to the 50-topic model.

TABLE 7. SUSTAINABILITY TOPICS (FIRST LDA).

Topic	Top Terms
Topic 1	<i>bodi, use, skin, help, fit, health, sleep, exercis, healthi, weight</i>
Topic 9	<i>research, develop, diseas, cell, drug, cancer, clinic, studi, scienc, medic</i>
Topic 13	<i>woman, life, feel, person, peopl, love, want, like, help, look</i>
Topic 19	<i>communiti, organis, support, peopl, work, member, program, social, impact, help</i>
Topic 21	<i>home, child, care, famili, parent, kid, live, dog, love, help</i>
Topic 24	<i>patient, health, medic, care, healthcar, doctor, clinic, treatment, hospit, provid</i>
Topic 34	<i>energi, water, use, electr, product, power, solar, materi, industri, equip</i>
Topic 38	<i>student, learn, school, educ, cours, program, train, univers, teach, help</i>

When determining which topics are relevant to the SDGs and indicate that a startup operates in an industry that may address sustainability-related challenges through the development of innovative solutions, we consulted the SDGs (The United Nations, 2017) as well as additional resources provided by the UN such as the SDG Compass (Bertazzi, Lund Hansen and Didden, 2015) and the SDG Industry Matrix (KPMG and United Nations Global Compact, no date). All topics related to areas where the potential exists for the development of novel solutions to existing problems were considered relevant. For example, the SDG Industry Matrix states that companies in the energy sector can contribute to the SDGs by developing and scaling ‘breakthrough technologies to accelerate the transition to a substantially higher share of renewable energy (solar, wind, hydro, geothermal and biomass) in the global energy mix’, a practice that clearly corresponds with Topic 34, as presented in Table 7.

In the second LDA that we implemented, a subset of 2,246 startups (with a vocabulary of 10,611 words) was used in which topics related to sustainability were well-represented (suggesting that the startup is likely a sustainability startup); this allowed us to identify more granular sustainability-related topics and avoid the inclusion of unsuitable sub-topics and consequently unsuitable startups. In the results of the first LDA, for example, the topic related to energy (Topic 34) was highly represented in the websites of startups working on solar energy but was also represented on the websites of startups in the oil and gas industry. The second LDA generated one topic corresponding to energy and another corresponding to the oil and gas industry, identified through the presence of terms such as *gas, oper, mine, oil and project*, and startups in which only the former was highly represented were counted as sustainability startups. Other topics that were excluded in this way were those related to home heating systems, apps, product design, and music and arts.

The number of topics for the second LDA was also set at 50 after training was conducted with several topic numbers between 30 and 70. We calculated models on the 2,246 startup websites for these values using five different random seeds as suggested by Blei et al. (Blei, Ng and Jordan, 2003). In this process we ran 2,000 initial iterations that we later discarded and 3,000 iterations after,

keeping only those models with the best log-likelihood. The model with 50 topics was subsequently selected, as it was the best-suited to the purposes of our analysis given that the resulting topics were easily interpretable with low word intrusion (i.e. few unsuitable words for a given topic) (Chang *et al.*, 2009), and the topics represented the contents of the websites well.

Of these 50 topics, we identified 24 that are relevant to the SDGs of the UN (2017) (see Table 8) through an iterative process among the authors of this paper. We acknowledge that one's criteria for attributing the pursuit of particular SDG to a given startup are likely to be ambiguous. We attempted to overcome this ambiguity by having several of the authors of this paper examine the attribution criteria and results of the other authors. The SDGs are widely accepted goals that aim to promote the betterment of society and the planet. While there are 17 goals in total, only 7 of these could be attributed to the startup firms in our dataset, as few of these firms mention topics related to the remaining 10 goals in the text of their websites. The number of topics related to the SDG corresponding to 'Health and Well-being', meanwhile, is quite high; this result may be explained by the wide variation and high degree of specificity of the vocabulary employed in different subfields of the medical sector.

TABLE 8. SUSTAINABILITY TOPICS (SECOND LDA).

Top Terms	Sustainable Development Goal
<i>plant, water, lesson, grow, farm, soil, agricultur, produc, crop, survey</i>	15 Life on Land
<i>diseas, blood, diabet, heart, caus, condit, increas, chronic, stroke, medic</i>	3 Health and Well-being
<i>woman, pregnanc, health, babi, fertil, egg, birth, pregnant, reproduct, hormon</i>	3 Health and Well-being
<i>test, genet, dna, sampl, gene, result, sequenc, detect, clinic, genom</i>	3 Health and Well-being
<i>cannabi, medic, patient, effect, state, marijuana, product, cannabinoid, pain, research</i>	3 Health and Well-being
<i>fit, exercis, workout, train, bodi, muscl, athlet, strength, trainer, sport</i>	3 Health and Well-being
<i>clinic, develop, trial, drug, diseas, patient, studi, compani, treatment, pharmaceut</i>	3 Health and Well-being
<i>learn, student, school, teacher, educ, teach, game, classroom, scienc, lesson</i>	4 Quality Education
<i>child, parent, kid, famili, babi, year, time, love, toy, age</i>	3 Health and Well-being
<i>surgeri, treatment, pain, procedur, patient, medic, surgeon, surgic, clinic, scan</i>	3 Health and Well-being
<i>tutor, languag, english, learn, student, teach, level, lesson, onlin, teacher</i>	4 Quality Education
<i>communiti, member, event, support, organis, particip, peopl, group, social, share</i>	10 Reduced Inequalities
<i>cours, program, learn, code, train, develop, skill, student, project, design</i>	4 Quality Education
<i>care, home, live, senior, famili, assist, need, servic, caregiv, facil</i>	3 Health and Well-being
<i>exam, tooth, dental, question, prepar, smile, dentist, medic, cours, treatment</i>	3 Health and Well-being
<i>patient, health, care, medic, healthcar, clinic, hospit, physician, doctor, provid</i>	3 Health and Well-being
<i>cell, cancer, drug, develop, diseas, therapeut, target, therapi, clinic, technolog</i>	3 Health and Well-being
<i>food, diet, healthi, eat, bodi, weight, health, nutrit, meal, protein</i>	3 Health and Well-being
<i>doctor, eye, treatment, medicin, medic, test, vision, urgent, drug, onlin</i>	3 Health and Well-being
<i>energi, power, solar, system, electr, instal, cost, renew, save, generat</i>	7 Affordable and Clean Energy
<i>student, univers, school, educ, colleg, program, high, institut, degre, studi</i>	4 Quality Education
<i>donat, fund, campaign, organis, support, fundrais, nonprofit, chariti, donor, volunt</i>	17 Partnerships for the Goals
<i>sleep, therapi, feel, therapist, mental, stress, massag, life, treatment, anxieti</i>	3 Health and Well-being
<i>wast, sustain, market, carbon, recycl, busi, increas, emiss, reduc, environment</i>	12 Responsible Consumption and Production

After a reading of the websites with the highest proportions of text corresponding to each sustainability topic was conducted, a sustainability threshold was manually set at 10% (Krestel, Fankhauser and Nejd, 2009) such that all startups with websites having at least 10% of their text dedicated to one of the relevant topics were subsequently counted as sustainability startups. The figure of 10% represents the point at which the share of false positives for a 1% interval rose above 25% (in other words, for all websites with a sustainability topic share between 10% and 11%, less than 25% were false positives). For those startups that showed a high proportion of text dedicated to more than one of these topics, only the topic with the highest representation was counted.

The sustainability score for each EE was calculated by dividing the number of sustainability startups in that EE, using the method outlined above, by the total number of startups in the EE in our sample. As such, the ranking we have established of EEs by their sustainability scores differs from other EE rankings such as the Global Startup Ecosystem Report (Startup Genome Project, 2017) in that it takes into consideration only the share of sustainability startups in an ecosystem rather than various different indicators such as numbers of investors or local regulatory conditions.

The fact that the authors of this paper manually checked the startups' website contents also helped to ensure that the startups classified as being associated with SDG-related topics do in fact discuss these topics on their website. However, we recognise that the information provided on these websites cannot give a reliable indication of how these firms operate or the extent to which they contribute to the SDGs also through means such as using renewable energy or creating favourable working conditions. The LDA, rather, allows us to identify companies that operate in industries which have been identified as addressing the SDGs through innovation. We assume that within those industries the proportion of companies that do in fact develop innovative solutions to sustainability challenges is uniform across locations. Furthermore, though we cannot be certain that companies truly engage in the activities that they claim to on their websites, we assume that in most cases the information on the website of a startup corresponds with its activities.

In the 'Findings and Discussion' section of this paper, we present the findings only for those 28 ecosystems which had more than 100 enterprises in our final sample, because the dataset shows a clear gap at this point and sustainability ratios of smaller ecosystems are likely to over-represent the relevance of a small number of sustainability startups. We use the larger dataset, however, to test the robustness of the fuzzy set qualitative comparative analysis (fsQCA) model presented in the next section.

3.5 Fuzzy Set Qualitative Comparative Analysis

Qualitative comparative analysis (QCA) is a set-theoretic method of conducting systematic comparative analysis of medium-n cases in order to uncover causal patterns that explain the emergence of particular outcomes (Ide, 2015). As providing a detailed introduction to the method and its principles in this paper would carry us too far afield, the following paragraphs offer an elaboration of only those aspects that are relevant to the analysis at hand. Works by Ragin (Ragin, 2009), Schneider and Wagemann (Schneider and Wagemann, 2012) or Legewie (Legewie, 2013) may be consulted for an in-depth introduction to the relevant terminology.

In the present, in case, the outcome we aim to explain by employing QCA is the emergence of sustainability-oriented startup ecosystems. In QCA one seeks to establish causal relations rather than

correlations, as is commonly the goal in statistical methods with which the reader may be more familiar. The underlying idea of this method is that some phenomena cannot be explained by the additive effects of discrete, independent factors (in which case a regression analysis would be appropriate) but are rather the result of a specific kind of causal complexity. Causal complexity means that there may be multiple mutually non-exclusive explanations for an outcome, or that some conditions may only be effective if they appear with certain other conditions, and a particular outcome may occur when a given causally-related condition is present or not present.

QCA conceives of cases (in the present study, each ecosystem is a case) as either being a member or not being a member of a set, such as the set of EEs that have a high share of sustainability startups. Membership in a set, however, need not be characterised in such binary terms (0/1), such that an EE is classified as either sustainability-oriented or not sustainability-oriented. Membership in a set can rather be expressed as a matter of degree, just as EEs may be classified as more or less sustainability-oriented hence the term 'fuzzy set'. By using fuzzy sets, fsQCA allows for more nuanced analysis than its antecedent QCA, although the 0.5 threshold which indicates whether a condition is more present than not maintains its significance (Ide, 2015). As only quantitative data were used in this analysis, values defining relative membership in each set were calibrated using natural numerical gaps found in the data considering all 28 cases to determine if a condition is rather present or absent in each case (see Tables 9 and 10 for an overview of the chosen thresholds and Tables A.1 and A.2 in the Appendix for both the raw and calibrated data matrix).

In the analysis fsQCA identifies whether an outcome (in this case, the emergence of a relatively sustainability-oriented EE) is a subset of one or more sets corresponding to a particular condition or a combination thereof (indicating that these are necessary conditions) or a superset of such sets (indicating that the corresponding conditions are sufficient conditions) or whether no set relations can be identified (Schneider and Wagemann, 2012), the latter indicating that no relationship between condition and outcome exists.

A first step in the analysis involves identifying a suitable outcome and potential causal conditions. The chosen outcome is described in the first two parts of the Findings and Discussion section below, while the potential causal conditions and their theoretical basis have already been described in the Background section above. The causal conditions selected for this study are grounded in a thorough review of relevant entrepreneurship literature in which they are presented as possible antecedents of sustainability entrepreneurship. While it is possible that there are other causal conditions besides the four we have selected, these conditions feature prominently in the literature we considered and present plausible causal links. As the number of conditions assessed in a QCA should be neither too high nor too low, for our core model we selected four conditions that we expected to influence the level of sustainability entrepreneurship found in an EE. Further potential conditions are introduced in the Sensitivity Analyses section below.

TABLE 9. OPERATIONALISING SUSTAINABLE EES.

Outcome	Operationalisation	
Sustainability-oriented EE (sust)	0	Very low level of sustainability entrepreneurship as share of total entrepreneurship ($\leq 5\%$)
	0.33	Low level of sustainability entrepreneurship as share of total entrepreneurship ($>5\%$ and $\leq 8\%$)
	0.67	Moderate level of sustainability entrepreneurship as share of total entrepreneurship ($>8\%$ and $\leq 12\%$)
	1	High level of sustainability entrepreneurship as share of total entrepreneurship ($>12\%$)

TABLE 10. POSSIBLE CAUSAL CONDITIONS OF EE SUSTAINABILITY.

Causal condition	Operationalisation	
GDP per capita ^a (gdpcap)	0	Low metropolitan GDP per capita ($\leq 10,000$ USD)
	0.33	Moderate metropolitan GDP per capita (10,001–30,000 USD)
	0.67	High metropolitan GDP per capita (30,001–70,000 USD)
	1	Very high metropolitan GDP per capita ($>70,000$ USD)
Share of female founders ^a (womenfound)	0	Low share of female founders ($\leq 10\%$)
	0.33	Moderate share of female founders ($>10\%$ and $\leq 15\%$)
	0.67	High share of female founders ($>15\%$ and $\leq 20\%$)
	1	Very high share of female founders ($>20\%$)
Religiosity of population ^b (religious)	0	Low share of believers in population ($\leq 42\%$)
	0.33	Moderate share of believers in population ($>42\%$ and $\leq 70\%$)
	0.67	High share of believers in population ($>70\%$ and $\leq 90\%$)
	1	Very high share of believers in population ($>90\%$)
National social expenditure (socexp)	0	Low social expenditure as share of national GDP ($\leq 5\%$)
	0.33	Moderate social expenditure as share of national GDP ($>5\%$ and $\leq 15\%$)
	0.67	High social expenditure as share of national GDP ($>15\%$ and $\leq 20\%$)
	1	Very high social expenditure as share of national GDP ($>20\%$)
Environmental performance ^d (epi)	0	Low value for Environmental Performance Index (≤ 70)
	0.33	Moderate value for Environmental Performance Index (>70 and ≤ 80)
	0.67	High value for Environmental Performance Index (>80 and ≤ 86)
	1	Very high value for Environmental Performance Index (>86)
Early stage funding per startup ^a (funding)	0	Low average early stage funding per startup in ecosystem ($\leq 200k$ USD)
	0.33	Moderate average early stage funding per startup in ecosystem ($>200k$ and $\leq 400k$ USD)
	0.67	High average early stage funding per startup in ecosystem ($>400k$ and $\leq 600k$ USD)
	1	Very high average early stage funding per startup in ecosystem ($>600k$ USD)

a Source: Startup Genome Project (2017)

b Sources: Pew Research Center (2017), London Census (2011), Israel Central Bureau of Statistics (2016), Statistik Berlin Brandenburg (2011), IFOP (2011), Statistics Singapore (2010), National Household Survey (2011), Australia

Census (2016), Centraal Bureau voor de Statistiek (2016), Bangalore Census (2011), Instituto Nacional De Estadística y Geografía (2011), Central Intelligence Agency (2017), Generalitat de Catalunya (2015), Population and Housing Census (2013), Zentralwohlfahrtsstelle der Juden in Deutschland e.V. (2016), Statistics Finland (2016), Sreda (2012), Department of Statistics Stats NZ (2013), General Household Survey (2015)

c Sources: Organisation for Economic Co-Operation and Development (OECD) (2016), Channel NewsAsia (2017), World Bank (2016)

d '[The Environmental Performance Index] provides a gauge at a national scale of how close countries are to established environmental policy goals'. (*Environmental Performance Index*, 2018)

3.6 Sensitivity Analyses

The robustness of the results presented in this paper is tested via exhaustive numeration. This is currently the most common approach to assessing the robustness of fsQCA results (Thiem, Spoel and Dus, 2016); fsQCA results are considered robust by this method 'if they involve similar necessary and sufficient conditions and if consistency and coverage are roughly the same across different model specifications' (Schneider and Wagemann, 2012). We thus tested the robustness of the results for changes to the frequency threshold (row 2), to the number of cases analysed (row 3) and to the calibration of values of the outcome variable (row 4), as well as for the introduction of additional causal conditions (rows 5 and 6). The results of these sensitivity analyses are summarised in Table 11. The results reveal that in all sensitivity analyses the causal pathways were similar or identical. Furthermore, values for consistency and coverage remained roughly the same across the various model specifications; however, no model specifications have a combined consistency and coverage value as high as that of the core model. Ultimately, the results of the sensitivity analyses thus underscore the strength of the core model.

TABLE 11. SENSITIVITY ANALYSES FSQCA.

Row	Analysis	Solution formula	Cons.	Cov.
1	Main Analysis	gdpcap*(womenfound+~religious) → sust	0.90	0.88
2	Higher frequency cut-off (1->2)	gdpcap*~religious → sust	0.87	0.83
3	Nine additional cases included	gdpcap*(womenfound+~religious) → sust	0.84	0.81
4	Sustainability threshold = 0.1	gdpcap*(womenfound+~religious) → sust	0.90	0.76
5	Condition ecosystem funding incl.	gdpcap*(womenfound+~religious*funding) → sust	0.92	0.81
6	Condition epi included	gdpcap*womenfound*epi → sust	0.91	0.72

* = and; + = or; ~ = absence; → = sufficient for.

4 Findings and Discussion

4.1 Sustainability Startups...

While previous comparative research on the sustainability of startups has primarily focused on the domain of social entrepreneurship (Griffiths, Gundry and Kickul, 2013; Hoogendoorn, 2016), this

study adopts a broader view. Social entrepreneurs comprise a small subset of those entrepreneurs oriented first and foremost toward addressing particular social goals rather than generating profit, though definitional variance on the matter abounds (Dees, 1998). Sustainability startups, on the other hand, include also commercial startups that address societal and/or environmental challenges. As our study concerns sustainability startups, it encompasses a potentially much larger and more diverse set of firms than previous studies; though such firms are oftentimes neglected in the literature, they are vital to achieving the SDGs.

Sustainability startups comprise 8.4% of the enterprises in our sample (see Figure 5), the majority of these (56.2%) being startups that contribute to the ‘Health and Well-being’ goal of the SDGs. These health-oriented sustainability startups develop new pharmaceuticals and treatments or offer other health-related products, thereby working, as this SDG, to ‘ensure healthy lives and promote well-being for all at all ages’ (The United Nations, 2017). The high share of sustainability startups in this field may be explained to a large extent by the comparatively higher earnings potential of businesses in the medical and pharmaceutical sectors, as well as by the number of health issues in urgent need of solutions (though it must be noted that many such issues remain unaddressed because of the low earnings potential of developing solutions especially in niche markets). The goal of ‘Health and Well-being’ is also the SDG with the largest number of sub-topics, including care for children, families and the elderly and various topics related to the treatment of illnesses.

FIGURE 5: SUSTAINABILITY STARTUPS OVERVIEW

Companies active in the health sector are frequently criticised for implementing prohibitive pricing that does not allow the poorest individuals to obtain access to health treatments they urgently need, a practice that clearly goes against the SDGs’ demand that health be improved and well-being be delivered to all. Our approach does not allow us to differentiate between those startups in the medical field that aim to increase access and those that do not. However, innovations within the health sector offer enterprises the potential to address prevalent sustainability challenges. The extent to which such innovations are then monetised is a different albeit very important question. It is not uncommon for new products to be prohibitively expensive and to become more affordable as innovation continues and patents expire. This initial pricing does not make the innovations less valuable. As this paper aims to determine and compare how prevalent particular industries are in

different EEs and not to conduct an impact assessment of startups in those industries, we see the inclusion of health startups in our sample as valuable.

The second most prominent topic is 'Quality Education' (20.5%), covering various enterprises fostering learning at all ages. It is thus noteworthy that the vast majority of sustainability startups in our sample do not focus on environmental issues addressed by the SDGs. The three environmental SDGs represented in our dataset, 'Clean Energy' (6.8%), 'Life on Land' (2.6%) and 'Responsible Consumption' (2.2%), are addressed in sum by only 11.6% of the sustainability startups we identified. This finding confirms the results of previous studies which have found that companies engaged in responsibility-oriented activities place less emphasis on environmental than on social issues (Shnayder, Van Rijnsoever and Hekkert, 2015). One explanation offered for this is that environmental initiatives are often more difficult and more costly to implement than social ones. Furthermore, there is likely to be greater demand for products and services that improve customers' well-being by supporting, for example, their health or education than for green products, which may be more expensive than the products customers currently use or be less likely to facilitate a scalable business model (van der Linden, 2018). We assess ecosystem characteristics that may be conducive to an EE having a higher share of sustainability startups in the Factors for Sustainability section.

4.2 ... And Where to Find Them

Our analysis indicates that the share of sustainability startups varies widely across the 28 EEs we investigated, which are among the most prominent in the world. See Figures 6 and 7 for an overview of our findings. While in some ecosystems, a large share of startups emphasise sustainability, in others consideration for sustainability appears practically absent. With as many as 14.4% of the startups in Boston contributing to the SDGs, the EE of Boston tops our list of most sustainability-oriented EEs, immediately followed by Houston, where 14.3% are sustainability startups. The position of Boston in our list is in line with the 2017 SocEntCity report on social startups in the US, which found that Boston is the best location in the country for social enterprises (SocEntCity, 2017). Meanwhile, the greatest absolute number of sustainability startups is found in Silicon Valley, which only ranks 11th in our index.

One particularly striking finding of our study is that the entrepreneurial ecosystems with the greatest share of sustainability startups are not those that usually top other ecosystem rankings such as the Global Startup Ecosystem Report (Startup Genome Project, 2017). Of the 10 most sustainability-oriented entrepreneurial ecosystems only Boston and Seattle also appear in the top 10 of the Global Startup Ecosystem Report ranking (startups that appear in the top 10 of the Genome ranking are marked with an asterisk in Figure 6). This suggests that the methods that have thus far been employed to assess the quality of entrepreneurial ecosystems give little indication of the degree to which the startups that emerge in these entrepreneurial ecosystems are favourable to sustainability startups. Tel Aviv and Berlin, two of the most prominent and successful entrepreneurial ecosystems in the world (Startup Genome Project, 2017), even rank in the bottom quartile of our index (23rd and 26th out of 28, respectively). Meanwhile, of the 198 startups included in the dataset from Stockholm, we found only four that prominently mention any of the identified sustainability topics on their website

FIGURE 6: SHARE OF SUSTAINABILITY STARTUPS AND TOTAL STARTUPS BY ENTREPRENEURIAL ECOSYSTEM – GLOBAL OVERVIEW

Made with Natural Earth under a CC0 license

FIGURE 7: SUSTAINABILITY SCORE BY ECOSYSTEM. (#) RANK IN THE TOP 20 OF THE GENOME STARTUP ECOSYSTEM REPORT 2017 – OTHER ECOSYSTEMS WERE NOT RANKED

4.3 Factors for Sustainability

In order to better understand the conditions that may lead to regional differences in an ecosystem's share of sustainability startups, we have conducted an fsQCA, the principles of which are described above. Our choice of potential causal conditions draws on the theories that we presented in the Background section, which explain various potential causes for EEs having relatively high shares of sustainability startups.

GDP per capita was included in the model as a measure of regional economic development; higher GDPs are assumed to induce greater proportions of sustainability startups, as this causal relationship has been suggested by previous academic studies on the topic (Gerhards and Lengfeld, 2008). The amount of *social expenditure* was included for its importance to the failure thesis, as discussed in the Background section. The *share of female founders* in each ecosystem is the third condition included in the model. Finally, the *share of religious people* in the population was included as a measure of local religiosity; the presence of which was expected to induce higher shares of sustainability startups. In the first step of the fsQCA, the data was tested for the presence of a necessary condition for an EE having a high share of sustainability startups. This was done by testing the consistency value for each causal condition; this value is equal to the number of cases in which both the condition and the outcome are present divided by the number of cases in which the outcome is present, and thus denotes, the degree to which a causal condition leads to the outcome across the cases, for each causal condition (Ide, 2015). A condition was considered necessary if its consistency value was 0.9 or higher (Schneider and Wagemann, 2012). The presence of a high GDP per capita was the only causal condition that met the threshold for being considered a necessary condition (Schneider and Wagemann, 2012), with a consistency value of 0.91 and a coverage value of 0.75. The coverage value tells us the proportion of cases in which the outcome occurs that the condition is also satisfied – in the present case, the proportion of EEs having relatively high shares of sustainability startups that also have relatively high GDPs. The result indicates that a high GDP per capita in an EE tends to appear jointly with a high share of sustainability startups. None of the other causal conditions meet the 0.9 consistency threshold.

Two causal pathways were identified in the fsQCA that can explain the emergence of ecosystems with high shares of sustainability startups. Table 12 represents these two distinct causal pathways with each pathway's full solution formula and consistency and coverage values. First, a high GDP per capita in combination with a high proportion of female founders are sufficient conditions for a startup ecosystem with a high proportion of sustainability startups to emerge. Second, a high GDP per capita in a location in combination with a low level of religiosity also appears sufficient to induce a sustainability-oriented startup ecosystem. Of the 15 cases of sustainability-oriented startup ecosystems that we identified, 13 can be explained by one of these two causal recipes with several cases being overdetermined, meaning that both causal pathways are satisfied (details can be found in Table A.1 in the Appendix). This is indicated by the relatively low unique coverage values of the two sets of causal conditions, with 0.14 for $gdpcap*womenfound$ and 0.05 for $gdpcap*~religious$; these figures denote the share of cases that can *only* be explained by the corresponding causal pathway. The two cases that are not explained by the satisfaction of either set of conditions are those of Lagos and Bangalore, which both have high shares of sustainability startups but low GDP figures. The solution model identified by fsQCA has relatively high consistency and coverage values of 0.90 and

0.88, respectively. The sensitivity analyses that were conducted demonstrate these results to be robust (see the Sensitivity Analyses part of the Methods section).

The first causal pathway links a high share of female founders in combination with high GDP to the emergence of high shares of sustainability startups. In 1993, Terpstra et al. suggested that observed differences between the orientation of men and women towards social value creation are due to differential conditioning (Terpstra, Rozell and Robinson, 1993). It is noteworthy that the same difference in orientation still exists today. Furthermore, the fact that an ecosystem with high shares of female founders must also have significant economic development (in particular, high GDP per capita) to produce sustainability-oriented ecosystems seems to correspond with the finding of Hechavarria et al. (Hechavarria *et al.*, 2017) that female founders in post-materialist societies are more likely than men to become ‘ecopreneurs’.

TABLE 12. INTERMEDIATE SOLUTION FOR THE OUTCOME OF SUSTAINABILITY-ORIENTED ENTREPRENEURIAL ECOSYSTEMS.

Causal pathway	gdpcap*womenfound	gdpcap*~religious
Consistency	0.91	0.90
Raw coverage	0.74	0.83
Unique coverage	0.14	0.05
Example cases	Toronto, Houston, Chicago, Sydney	Seattle, Austin, Vancouver
Solution formula	gdpcap*(womenfound+~religious) → sust	
Solution consistency	0.90	
Solution coverage	0.88	

* = and; + = or; ~ = absence; → = sufficient for.

The second causal pathway establishes a relationship between the combination of the absence of high shares of believers and high levels of economic development with the emergence of sustainability-oriented EEs. That this combination of conditions should be a sufficient cause for the latter outcome is somewhat surprising, as previous business research, as described above, has found religious belief to be positively associated with ethical behaviour (Weaver and Agle, 2002; Longenecker, McKinney and Moore, 2004). One possible explanation for our result may be that lack of religiosity functions as a proxy for high levels of education, as religiosity and education have been shown to be inversely correlated (Glaeser and Sacerdote, 2008) and education to be linked to an orientation towards sustainability (Weaver and Agle, 2002). Because lack of religiosity and high levels of education are, like GDP per capita, attributes of the general population rather than entrepreneurs in particular, their presence in an ecosystem can have a threefold effect, producing greater shares of sustainability-oriented entrepreneurs, investors and consumers and creating a sort of virtuous cycle of investment, production and consumption that promotes sustainability. When assessing the relationship between religion and education, however, we might need to distinguish between particular religions, as it has been shown that education levels vary significantly between one religion and another (Pew Research Center, 2016). In all of those EEs that rank highest in our sample in their share of sustainability startups, the most commonly-practiced religion is Christianity, which research has suggested is the religion whose average practitioners have the second-highest level of education after those of the Jewish faith (Pew Research Center, 2016). Evidently, the relationship between

religiosity, education and the orientation toward sustainability among entrepreneurs is an issue that calls for more nuanced investigation.

Among the world's most prominent EEs, measures of GDP, shares of female founders and religiosity often differ significantly from differences to those found in EEs with the highest shares of sustainability startups. Silicon Valley, for example, has the highest GDP per capita of the EEs considered in the sample of this study, but places in the middle of the pack in measures of female founder share and religiosity. Chicago, on the other hand, has a slightly lower GDP per capita, ranking slightly above the median GDP of the 28 EEs we considered, but has the highest share of female founders of all the EEs considered with 34%, and ultimately ranks securely in the top 10 of EEs in terms of their share of sustainability startups. Chicago is the location of a flourishing female entrepreneurship scene that is fuelled by investment firms such as InvestHer, which focuses on investing in women-led ventures, and by several sustainability startups that have been launched by women (Henry, 2018). Silicon Valley, meanwhile, maintains its reputation as a 'boys' club' (Coren, 2018) that is geared towards profit generation rather than sustainability (Brock, 2012; Berger and Brem, 2016; Startup Genome Project, 2017). Berlin, another ecosystem that usually ranks relatively highly in other EE rankings (Startup Genome Project, 2017), finds itself in the bottom quartile in our ranking. With a relatively low GDP per capita, Berlin appears to lack the level of economic strength an EE requires to develop a high share of sustainability startups. While its population is predominantly non-religious (at 63%, it is the second least-religious EE in the sample after Estonia), this condition alone does not appear to be sufficient to drive the emergence of sustainability startups.

5 Conclusion

Policy-makers around the world are keen to develop vibrant entrepreneurial ecosystems in their cities, and particularly ones which focus on sustainability. While the literature concerning sustainability startups has begun to grow in recent years, to our knowledge no studies have yet been conducted that identify the entrepreneurial ecosystems (EEs) most favourable to sustainability startups. This paper addresses this gap and offers policy-makers, entrepreneurs, social impact investors and scholars alike a ranking that they may consult when assessing entrepreneurial ecosystems that emphasise not just profit-making but social value creation as well.

The study has produced interesting insights not only regarding the top EEs in our ranking but also regarding ecosystems ranked lower in the list, many of which may offer valuable direction for future research. For example, while significant attention has been devoted to the study of Boston as an EE, the ecosystems of Lagos and Bangalore remain relatively understudied. Further scholarly research on these ecosystems would be of great interest, as it would help us to better understand how successful EEs emerge, especially in challenging conditions where levels of economic development are relatively low. Notably, these two EEs were the only ones with high shares of sustainability startups whose success in this regard could not be explained by the results of the fsQCA; for this reason, they are of particular interest as subjects of further study.

Policy-makers, too, can benefit from considering the results of our analysis regarding the particular conditions that foster EEs favourable to sustainability startups. Our findings suggest that economic stability, in combination with a high share of female founders, induce relatively high shares of sustainability startups in a given EE. One promising path, therefore, that economically developed

regions might pursue in order to attract sustainability entrepreneurs is to support female founders, and particularly those involved in sustainability startups, through measures such as the creation of women-focused incubators. Such initiatives would both help to increase sustainability-focused entrepreneurial endeavours and improve gender parity in entrepreneurship overall.

We acknowledge that our research has several limitations. First, our lists of entrepreneurial ecosystems and the startups within them are not comprehensive due to the incompleteness of the Crunchbase database that was used to collect the underlying data for this study. However, Crunchbase is widely recognised as the most comprehensive startup database available. Furthermore, because it focuses on high-growth innovative startups, Crunchbase contains information on the most ambitious and globally-oriented startups in each ecosystem, and thus on those that are likely to contribute most to the achievement of the SDGs. We also acknowledge that whether or not the pursuit of a particular SDG can be properly attributed to a given startup is often ambiguous. We attempted to overcome this ambiguity by having several of the authors of this paper examine the others' attribution criteria and results. Future researchers may wish to delve deeper into the topic we have studied by seeking to identify not only sustainability startups but also *sustainable startups*, or those startups that emphasise sustainability in the ways they operate their businesses. Furthermore, including only six potential causal conditions (including sensitivity analyses), we may have omitted other conditions that also contribute to the emergence of sustainability-oriented EEs. However, as the set of conditions we have assessed has included causal factors that explain the outcomes of most of the cases we considered, we can conclude that several important factors are included in this set. Future research might examine an even larger number of EEs in order to possibly identify other leading ecosystems of sustainability entrepreneurship (pending, however, the development of improved databases on entrepreneurial ecosystems and their startups). Further research on the drivers of such ecosystems' emergence and the possible interplay of these drivers is also recommended. The authors of this study are keen to contribute to carrying out such work, and we are convinced that further research in this direction will promote the development of many more sustainability startups and ecosystems around the world that are favourable to sustainability entrepreneurship.

4

The Lighthouse Effect

How Successful
Entrepreneurs Influence
the Sustainability-
Orientation of Startup
Ecosystems

Abstract

The Sustainable Development Goals (SDGs) by the United Nations have been a call to action for policy-makers around the globe. Many of those believe that sustainability startups in their region can help address some of the most pressing global challenges. Such regions of startup activity are commonly referred to as entrepreneurial ecosystems (EEs) and the share of sustainability startups differ markedly between the different global EEs. While literature on EEs is abundant, scholarly work on sustainability-oriented EEs, i.e. those with a high share of sustainability startups, is still relatively nascent. Particularly there is limited understanding of which factors contribute to some EEs showing a higher share of sustainability startups than others. This paper addresses this gap by contrasting the EEs of Berlin and Lagos with each other as they have very different shares of sustainability startups. Based on 40 interviews conducted with founders, investors, hubs and government representatives in both EEs we find that particularly successful startups in an EE, so-called lighthouses, play an important role in shaping the cultural, social, and material attributes of an EE. The sustainability-orientation of these lighthouses is instrumental in creating environments in which sustainability startups can flourish. We make recommendations about how to increase the sustainability-orientation of EEs around the world.

This paper has been published in The Journal of Cleaner Production as Tiba, S., van Rijnsoever, F. J., & Hekkert, M. P. (2020). The lighthouse effect: How successful entrepreneurs influence the sustainability-orientation of entrepreneurial ecosystems. Journal of Cleaner Production, 264, 1–16. <https://doi.org/10.1016/j.jclepro.2020.121616>

1 Introduction

The Sustainable Development Goals (SDGs) by the United Nations have been a call to action for policy-makers around the globe. Many of those believe that sustainability startups in their region can help address some of the most pressing global challenges. Sustainability startups can be defined as those which contribute to one or more of the SDGs via their business model (Seelos and Mair, 2004). This focus on sustainability is welcomed by policy-makers who are keen to avoid that startups in their region pursue growth at all costs (Saxenian, 1983; Buchanan, 2014). A famous example of this mindset may be the Silicon Valley-based ridesharing app Lyft which went viral when celebrating that one of its drivers was working via Lyft only a few minutes prior to giving birth (Menegus, 2016).

Regions of entrepreneurial activity, such as Silicon Valley, are commonly referred to as entrepreneurial ecosystems (EEs). EEs can be defined as a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship within a particular territory, most commonly a large city (Stam and Spiegel, 2018). While the Silicon Valley may still be the most famous and successful EE in the world, even *The Economist* (2018) recently noted that “Silicon Valley is changing, and its lead over other tech hubs is narrowing”. Notable challengers for the Silicon Valley that have emerged in recent years range from European EEs such as London, Tallinn and Berlin to emerging economy EEs such as Bangalore and Lagos (Chow and Rubin, 2013; Bank, Fichter and Klofsten, 2017). The makeup of these EEs can differ to the one predominantly found in the Silicon Valley, with many of these emerging EEs featuring an – at times significantly – larger share of sustainability startups than the Silicon Valley (Tiba, Van Rijnsoever and Hekkert, no date a).

While literature on EEs is abundant (Stam, 2015; Van Weele *et al.*, 2016; Alvedalen and Boschma, 2017; Erina, Shatrevich and Gaile-Sarkane, 2017; Spiegel, 2017), scholarly work on sustainability-oriented EEs is still relatively nascent (Hoogendoorn, 2016). Hoogendoorn (2016) considers drivers for differences in the share of sustainability startups on a country level. While valuable, the study does not take into account that EEs may differ widely in their attributes – even within the same country (Tiba, Van Rijnsoever and Hekkert, no date a). Neither do existing studies consider potential interactions between the attributes of the sustainability EEs.

Tiba *et al.* (n.d.) provided data on where to find sustainability-oriented EEs as well as some insights on causal drivers for such ecosystems. They found that a high level of GDP in combination either with a high share of female entrepreneurs or a low level of religiousness in an ecosystem can foster the emergence of sustainability startups. However, these indicators do not fully explain differences in the share of sustainability startups in all EEs considered. For example, Lagos (which is economically less well developed and has a high religiousness rate as well as a low level of female founders) was found to have a relatively *high* share of sustainability startups. Meanwhile the share of sustainability startups in Berlin (High GDP and low religiousness) was found to be relatively *low*. This suggests that there are other (combinations of) factors that might influence the share of sustainability startups in an EE. We aim to discover these by comparing the EEs of Berlin and Lagos and by qualitatively exploring which elements contribute to differences in sustainability. The research question to be addressed is: *Which factors drive the share of sustainability startups in an EE?*

We have conducted 40 semi-structured interviews with sustainability and non-sustainability entrepreneurs in these EEs as well as incubators, investors and government officials in the spring and

summer of 2018. Building on the EE framework provided by Spigel (2017) we discuss how culture, histories of entrepreneurship, social networks, investors, mentors, government and local opportunities interact to reinforce a sustainability respectively non-sustainability EE.

Our interviews indicate that particularly differing histories of entrepreneurship may explain the differing share of sustainability startups in these EEs. Successful entrepreneurs become leaders, or lighthouses, and shine beyond a region to attract additional resources to it. These leaders create and shape the various cultural, social and material factors that make up an EE. While the early successful startup community in Berlin concentrated on growth-at-all costs startups, which were then replicated by the respective EE actors, the early successful startup leadership community of Lagos contained several sustainability startups, which were then seen as role models to copy in the respective EE.

Our narrative in this paper focuses on the effect of these lighthouses, as this topic emerged as preeminent in our interviews. In doing so, this paper bridges previous perspectives presented by scholars both of economic geography and institutional entrepreneurship and extends our understanding of the role played by successful entrepreneurs in shaping their EE's development. Yet, we acknowledge throughout that this is only one factor, albeit an essential one, according to our data, that contributes to building an EE. The other factors, too, interact and reinforce each other to shape the makeup of their respective EEs.

The remainder of this paper is structured as follows. Section 2 provides the theoretical framework employed in our analysis of the EEs of Berlin and Lagos. Section 3 details the methods adopted for this work. Section 4 presents and discusses our results, while section 5 summarizes our argument and outlines possible future areas of research for this topic.

2 Theoretical framework

We set out by discussing our definition of sustainability entrepreneurship as well as the role of EEs with relation to these. We adapt a pre-existing framework from the EE literature to explain how different attributes of an EE may contribute to determining the share of sustainability startups in that EE. We supplement this by explaining the role successful entrepreneurs, or lighthouses, can have in shaping these different attributes to enable future entrepreneurs.

2.1 Defining sustainability entrepreneurship

Much of the – still relatively young – social/environmental/sustainability startup literature has been preoccupied with the definition of what aspects make entrepreneurship *sustainable* (Tiba, van Rijnsoever and Hekkert, 2018). The various definitions encompass a wide range of both for- and non-profit activities in various organisational forms (Hoogendoorn, 2016). The one unifying understanding appears to be that entrepreneurs in this realm place a focus on social value creation (Zahra *et al.*, 2009). Depending on the sub-strand of this entrepreneurship literature either social or environmental issues are moved centre-stage (Tiba, van Rijnsoever and Hekkert, 2018). When defining sustainability entrepreneurship, one is thus presented with the challenge of defining what constitutes social value creation. For the purposes of this paper we rely on the Sustainable Development Goals (SDGs) by the United Nations (The United Nations, 2017) as a guideline towards identifying activities of social value and employ the terminology *sustainability entrepreneurship* as a reminder of this. The Sustainable

Development Goals (SDGs), developed by 193 countries, and numerous NGOs (Nilsson, Griggs and Visbeck, 2016) and adopted in 2015 by the United Nations, are arguably the leading framework to capture global challenges. We define ventures as sustainability startups if their core activities aim to address one or more of the 17 goals outlined by the SDGs (Seelos and Mair, 2004).

2.2 A framework for sustainability in startup ecosystems

While writings on the different attributes of such ventures abound, few scholars have thus far turned their attention to the factors that lead to the emergence of sustainability startups. Those that have considered the antecedents of sustainability entrepreneurship have frequently focused on the micro-level, looking at individual companies and founders (Dees, 1998; Austin, Stevenson and Wei-Skillern, 2006; Mair, Robinson and Hockerts, 2006; Hechavarría, 2016b). However, such enterprises do not come into existence in isolation but are shaped by the contexts in which they are created (Aldrich and Martinez, 2001; Truffer and Coenen, 2012; Acs, Szerb and Lloyd, 2017; Alvedalen and Boschma, 2017). Nonetheless, meso-level studies taking into consideration the ecosystems, within which these companies are situated, are few and far between (Boschma and Frenken, 2006; Hoogendoorn, Pennings and Thurik, 2010; Hoogendoorn, 2016; Alvedalen and Boschma, 2017).

We thus turn to the emerging literature on entrepreneurial ecosystems for further insight (Pitelis, 2012; Stam, 2015; Alvedalen and Boschma, 2017). Numerous frameworks have been developed to describe what makes up EEs (Malecki, 2018), many of which have been criticised for being 'laundry lists' of attributes rather than frameworks (Stam and Spiegel, 2018). A framework that does consider how attributes of an EE interact is that by Spiegel (2017). It captures the attributes commonly mentioned in other EE frameworks (e.g. Isenberg, 2011) while also recognising that they are in constant interaction. Within this framework there are three primary subdimensions: cultural, social and material factors. These three interact with and support or reinforce each other and can be split into a number of sub-factors (see *Figure 8*). As the three groups of attributes are in constant interaction with each other (as shown in the results presented by Spiegel (2017)) we represent them as a circle of interacting factors. Furthermore, we deviate from Spiegel's pyramid representation of the attributes to emphasise that we see no theoretical hierarchy between different ecosystem attributes. In the following we discuss each ecosystem attribute. We delve into the way in which they interact to determine the *share* of sustainability startups in an EE in the section findings and discussions.

FIGURE 8: CONTEXTUAL FACTORS INFLUENCING SHARE OF SUSTAINABILITY STARTUPS IN EE

Source: The authors, based on Spigel (2017)

2.3 Cultural factors

Cultural factors are defined by Spigel (2017) as “the underlying beliefs and outlooks about entrepreneurship within a region.” These beliefs are driven by pre-existing *cultural attitudes* and *histories of entrepreneurship* which emanate from the ecosystem. Social acceptance of risk-taking and the social regard for entrepreneurs can have a great impact on founding rates (as well as the kind of startups founded) and related activities in a location (Ritsilä, 1999). Histories of successful entrepreneurship can play an important role in creating such social acceptance (Feld, 2012). These stories can be used in entrepreneurship campaigns and can inspire young entrepreneurs to start a venture in a similar spirit (Aldrich and Martinez, 2001). The extent to which an orientation toward sustainability is or is not reflected in the culture both of a location and an EE, will thus have a strong effect on the prevalence of sustainability startups in an EE.

2.4 Social factors

Social attributes of an ecosystem are the “resources composed of or acquired through the social networks within a region” (Spigel, 2017). The entrepreneurial ecosystem contains four different social attributes : the *social networks*, *investors*, *mentors* and *worker talent* (Spigel, 2017). Local social networks based on trust can help to disseminate knowledge and best-practices among entrepreneurs as well as bringing them together with valuable resources (Aldrich and Martinez, 2001; Dacin, Dacin and Matear, 2010). Here, investors are of central importance. Beyond providing capital, investors often also act as mentors guiding the development of a startup and are thus invaluable in fostering a flourishing ecosystem (Nicholls, 2006; Bocken, 2015). Mentors regularly share best practice

knowledge and access to their social networks thus dramatically accelerating initial development of new ventures (Bosma *et al.*, 2011; Mason and Brown, 2014). At the core of any business lie the people who work for it. Therefore access to a talent pool of skilled people, willing and able to work in the somewhat chaotic and high risk environment of a startup is equally important (Spigel, 2017). Ecosystems where strong social networks exist for sustainability entrepreneurs, giving them access to investors interested in sustainability startups as well as mentors and talent, motivated to work for sustainability startups, will likely see a flourishing of the local sustainability startup scene.

2.5 Material factors

Material attributes of an ecosystem include all the contextual conditions that exist within an ecosystem outside of the social networks described above. They include *infrastructure, support services* as well as less tangible factors such as *regulation, opportunities and markets* (Nissan and Castañ, 2012; Hoogendoorn, 2016; Spigel, 2017). The former two are fundamental conditions that will be relevant for startups in the sustainability and the traditional entrepreneurial realm. All entrepreneurs will equally benefit from access to electricity, internet and lawyers or accountants. The primary way in which governments can shape the face of an EE is through regulation which determines the ease of starting a (sustainability) venture as well as matters of taxation (Defourny and Nyssens, 2008). A government oriented towards fostering sustainability entrepreneurship might grant special rights and/or tax cuts to such startups. Opportunities and the access to markets, too, play an important role in the development of a vibrant EE. For sustainability startups the prevalence of a local social or environmental problem may represent such an opportunity (Matsunaga, Naoto and Okuyama, 2010; Hoogendoorn, 2016), while different sorts of challenges would present opportunities for conventional entrepreneurs.

2.6 Interaction of factors

It must be noted that the discussed attributes do not stand alone but rather that ecosystems are only created through the interaction of all these factors (Spigel, 2017). Furthermore, a change in one will ripple through an entire ecosystem and influence the other factors. As such, they can only be understood in unison. For example, it is not enough for an ecosystem to provide ample opportunities for sustainability ventures if those are not recognised and identified as opportunities to do just that (Mair and Marti, 2009). The way in which contextual factors (e.g. the failure of the government to provide services) are perceived is to a large extent shaped by cultural factors. Consequently, in a society which recognises social/environmental challenges as opportunities for venture creation, such ventures are more likely to develop. It must be noted that there is no inherent hierarchy between these factors but rather they can reinforce each other in various ways.

2.7 The lighthouse effect

A central factor of these EEs, which is not explicitly captured by the framework presented by Spigel (2017) are the startups which form the nucleus of any entrepreneurial ecosystem. These startups are shaped by and also shaping the ecosystems in which they are situated. Particularly successful startups are in an ideal position to impact their context and create conditions in which they will further flourish as they enjoy a high level of legitimacy and recognition (Feld, 2012; Harper-Anderson, 2018). We call such successful startups lighthouses as they stand out from the crowd of

startups in an EE and provide guidance to the wider ecosystem. The way in which lighthouses do this is twofold and combines mechanisms described in the institutional entrepreneurship (DiMaggio, 1988) as well as evolutionary economic geography (Boschma and Frenken, 2006) literature. While the former focuses on the way in which entrepreneurs shape and are shaped by formal and informal institutions, the latter rather considers networks and the dissemination of knowledge through them as paramount.

First, within the ecosystem lighthouses shape formal (material) and informal (cultural) institutions, such as policy and culture, in such a way that they support their current way of operating. This idea builds on institutional entrepreneurship, which argues that individuals or organisations can consciously or unconsciously change the institutional setting in which they are situated, and that 'leaders' are particularly well-positioned to do so (Aldrich and Fiol, 1994; Battilana, Leca and Boxenbaum, 2009). In this position as leaders they also inspire a level of mimetic isomorphism (DiMaggio and Powell, 1983; Aldrich and Martinez, 2001) in other entrepreneurs who follow their example (Hannan and Freeman, 1986; Sud, Vansandt and Baugous, 2009). Beyond their immediate surroundings, successful startups also create a reputation for an EE beyond the city walls, thus attracting new actors or resources to their EE (Rao, 1994; Lee, Florida and Acs, 2004; Florida, Mellander and Stolarick, 2008). This idea relates to the institutional entrepreneurship literature in that entrepreneurs shape their ecosystems but also makes explicit that they have the potential to attract resources not just from within but also outside of the ecosystem. Second, lighthouses impact other (social) actors in the ecosystem directly through engaging with them. An example of this would be the mentoring of younger startups. This idea is more closely linked to those of evolutionary economic geography, which argues that regions specialise due to knowledge-sharing among actors in an ecosystem (Boschma and Frenken, 2006; Balland, Boschma and Frenken, 2015; Alvedalen and Boschma, 2017).

In this way successful entrepreneurs shape the cultural, social and material attributes of their ecosystems in such a way that they enable and empower younger startups which resemble these success cases in some way. Like this, the dominant models in an ecosystem can become self-perpetuating (Boschma and Frenken, 2009). We explore this lighthouse effect in greater detail in the empirical part of our paper. Turning to the share of sustainability startups, this would mean that the prevalence of a success case in the sustainability sphere may lead to the formation of more sustainability startups (Sud, Vansandt and Baugous, 2009). Meanwhile the lack of such a case (and the dominance of a different model) would reinforce a different kind of business model and thus explain a lower share of sustainability startups within an EE.

3 Methods

In the following section we discuss the methods employed in this paper. In order to better understand the underlying mechanisms that drive the development of sustainability entrepreneurship in an EE, we employ qualitative methods. As opposed to quantitative methods, these are best suited to discern hypotheses regarding causal mechanisms that may then be tested later on in quantitative work. Oftentimes, choosing extreme cases can be particularly helpful in eliciting these mechanisms. Indeed, this sort of small-n comparative case study approach is particularly helpful in developing intricate theoretical insights (Lijphart, 1971).

3.1 Case selection

Both of the selected ecosystems, Berlin and Lagos, show some level of sustainability entrepreneurship with Lagos having a higher share of sustainability entrepreneurs than Berlin (11,5% vs. 6,2%) (Tiba, Van Rijnsoever and Hekkert, no date a). With their location on different continents and vast difference in economic factors such as GDP per capita (~3.500 USD vs. ~26.300 USD) (Startup Genome Project, 2017) as well as cultural differences these two cases are ideally suited for this investigation. Furthermore, existent research on sustainability entrepreneurship has seldom explored developing economies and thus the inclusion of Lagos appears a worthwhile endeavour.

3.2 Case description

Berlin is the leading entrepreneurial ecosystem in Germany, having a strong infrastructure, including ample young talent and universities as well as attractive incentive systems in the form of government programmes (Startup Genome Project, 2017). The city is known for its vibrant tech-scene, driven particularly by the early successes of Rocket Internet, Germany's largest incubator and some of its e-commerce enterprises, e.g. Zalando, an online fashion retailer (The Economist, 2018b). In recent years, a sustainability startup scene has also developed in parallel to these tech ventures. Companies include educational startups such as the ReDI school (Dreyer, 2018) and Kiron Higher Education, both of which focus on educating refugees, as well as health startups, such as Ada Health, which uses AI to diagnose illnesses (*Crunchbase*, no date). Indeed, in 2016 some social startup founders in Berlin launched the Social Entrepreneurship Network Deutschland (SEND), an association of entrepreneurs focused on creating a 'grandchild-friendly future'. Nonetheless, the share of these sustainability-oriented startups within the Berlin EE remains comparatively low when posited against other ecosystems such as Lagos.

Lagos, at 17,5 million people the most populous city on the African continent, is Nigeria's economic centre (Aspen Network of Development Entrepreneurs, 2017). It too, has a vibrant tech-scene and a high concentration of young people (Startup Genome Project, 2017). Two of its biggest⁶ local tech startups are the e-commerce platforms Konga and Jumia. However, Lagos' startup scene is not dominated by these business models in the same way that Berlin is. Rather, numerous sustainability startups such as Wecyclers, who provide a solution to Nigeria's vast waste problem, have sprung up. Indeed, Nigeria's leading technology hub and early-stage incubator, the Co-Creation Hub (CcHub), is focused on sustainability-oriented business models and incubated Wecyclers amongst many other of Nigeria's most successful sustainability startups. With CcHub being founded in 2010 - two years before Konga and Jumia (*Crunchbase*, no date; Treisman, 2015) - the sustainability startup scene in Lagos developed in parallel to the its general tech scene and played a significant role in shaping Lagos as an EE. This orientation toward sustainability entrepreneurship is also reflected in Lagos' landscape of investors which includes a large number of foundations and NGOs that focus on sustainability business models rather than conventional ones (Aspen Network of Development Entrepreneurs, 2017). One such investment which attracted great public attention was made by the

⁶ According to *Crunchbase* (2018)

Chan Zuckerberg Foundation who invested 24 million USD in 2016 into another CcHub venture, Andela, which educates Nigerian youths to become coders.

3.3 Sample selection

Different sampling methods were employed in each ecosystem. The point of departure for the identification of interviewing partners in both ecosystems was a list of all companies on Crunchbase.com for each ecosystem that were founded within the 5-year window of 2012-2017, so as to include only startups. Among those the companies that have a business model relevant to the SDGs were identified (see Tiba, Van Rijnsoever and Hekkert, no date a) and contacted. As the number of commercial startups on those lists far outweighed that of sustainability startups, commercial startups to be contacted were chosen at random.

While the initial response rate among entrepreneurs in Lagos was relatively high, only few Berlin startups responded to our research requests. Snowball sampling was thus employed to recruit further interviewees, particularly in Berlin but also in Lagos. This is a common method employed to recruit difficult to reach populations (Kirchherr *et al.*, 2017). The initial seeds for these came mostly from the professional networks of the authors (Miller and Brewer, 2003). Governmental interviewees were selected by contacting the most relevant institutions for the startup ecosystem in the respective locations.

3.4 Interview schedule

Semi structured interviews were carried out in the field (Lagos and Berlin) in June and July 2018, furthermore telephone interviews were carried out from May to July 2018. The 15 telephone interviews were mostly carried out at the request of interviewees as these did not require them to be physically present and were seen as more convenient. Previous studies have shown that the data quality of telephone interviews is equally high as that of face-to-face interviews (Kirchherr and Charles, 2018). Three interviewees chose to respond to our interview request in writing. For this they were provided with the interview guide (see Appendix) used by the researcher to conduct spoken interviews and follow-up questions were posed via email (Schiek, 2014). While the responses lacked the depth of some of the spoken interviews, they nonetheless offered some interesting insights. The interviews were conducted in English and in German. Recorded interviews were transcribed by local researchers and the main author of this paper.

In total 40 interviews were conducted, of which 21 were in Berlin and 19 in Lagos. In both locations the interviewing process was terminated when we reached thematic saturation, i.e. the interviews revealed no new insights on drivers of sustainability entrepreneurship in the respective startup ecosystem (Green and Thorogood, 2004; O'Reilly and Parker, 2012). Such saturation can be achieved swiftly and is widely accepted to be reachable from as few as 6-12 interviews within a relatively homogenous group in one location (Guest, Bunce and Johnson, 2006; Van Rijnsoever, 2017).

These interviews are with sustainability startups (21 interviews), commercial startups (6 interviews), organisations supporting (sustainability) entrepreneurship (7 interviews – 4 hubs/incubators and 3 NGOs), investors (4 interviews), and public bodies supporting entrepreneurship (3 interviews). All interviews are coded with the first letter indicating the ecosystem

of the interviewee (Berlin or Lagos). The second letter denotes the type of entity interviewed. And the third stands for the mode of interview. See *Table 13* for an overview of the interviewees.

We note that our interviews were structured by a questionnaire which was developed in an iterative process by the authors but conducted as “casual, comfortable conversations” (Berry, 2002). Questions were thus adapted to the situation and at times posed in varying order depending on the answers provided. This allowed conversations to flow naturally and for the building of trust between researcher and interviewee (Berry, 2002). Furthermore, this allowed us to further explore interesting topics which were raised. Beyond generating deeper insights, the level of trust also fostered the process of snowball sampling as interviewees are more inclined towards giving access to their personal and professional networks if they enjoyed the process (Kirchherr and Charles, 2018).

TABLE 13: OVERVIEW INTERVIEWEES

Position	City	Type	Mode	Code
CEO & Founder	Berlin	Commercial Startup	Face to face	BCF1
CEO & Founder	Berlin	Commercial Startup	Telephone	BCT1
CEO & Founder	Berlin	Commercial Startup	Telephone	BCT2
Community Leader	Berlin	Hub/Incubator	Telephone	BHT1
CEO & Founder	Berlin	Hub/Incubator	Telephone	BIT3
Consultant	Berlin	Investor	Face to face	BIF1
Project Lead	Berlin	Investor (govmtl)	Telephone	BIT1
Customer consultant	Berlin	Investor (govmtl)	Telephone	BIT2
Head Berlin Office	Berlin	Investor	Face to face	BIF2
CEO & Founder	Berlin	NGO	Written	BNW1
Founder	Berlin	Sustainability Startup	Telephone	BST1
CEO & Founder	Berlin	Sustainability Startup	Face to face	BSF1
CEO & Founder	Berlin	Sustainability Startup	Face to face	BSF2
CEO & Founder	Berlin	Sustainability Startup	Face to face	BSF3
CEO & Founder	Berlin	Sustainability Startup	Face to face	BSF4
MD & Founder	Berlin	Sustainability Startup	Face to face	BSF5
Founder	Berlin	Sustainability Startup	Face to face	BSF6
MD & Founder	Berlin	Sustainability Startup	Face to face	BSF7
CEO & Founder	Berlin	Sustainability Startup	Face to face	BSF8
CEO & Founder	Berlin	Sustainability Startup	Telephone	BST2
CEO & Founder	Berlin	Sustainability Startup	Telephone	BST3
CPO	Lagos	Commercial Startup	Face to face	LCF1
COO	Lagos	Commercial Startup	Telephone	LCT1
CEO & Founder	Lagos	Commercial Startup	Face to face	LCF2
Acting National Coordinator	Lagos	Governmental Organisation	Telephone	LGT1
Co-Founder	Lagos	Hub/Incubator	Face to face	LHF1
Founder	Lagos	Hub/Incubator	Face to face	LHF2
Founder	Lagos	Investor	Face to face	LIF1
Coordinator West-Africa	Lagos	NGO	Telephone	LNT1
Senior Programme Coordinator WA	Lagos	NGO	Face to face	LNF1
Programs Lead	Lagos	Sustainability Startup	Written	LSW1
CEO & Founder	Lagos	Sustainability Startup	Telephone	LST1
CEO & Founder	Lagos	Sustainability Startup	Telephone	LST2
CEO & Founder	Lagos	Sustainability Startup	Face to face	LSF1
Business Development assistant	Lagos	Sustainability Startup	Written	LSW2
Co-Founder & Team Lead	Lagos	Sustainability Startup	Face to face	LSF2
CEO & Founder	Lagos	Sustainability Startup	Telephone	LST3
VP Investment & VP Operations	Lagos	Sustainability Startup	Face to face	LSF3
Co-Founder	Lagos	Sustainability Startup	Face to face	LSF4
CEO & Founder	Lagos	Sustainability Startup	Face to face	LSF5

3.5 Analysis

The data gathered was organised in NVivo 12, a computer programme for qualitative data analysis, in a multi-step iterative process. In an initial step we identified all passages in interviews which referred to fostering and hindering factors for the development of sustainability startups in the respective ecosystems and clustered them according to emerging themes. These emerging categories were labelled employing the wordings used by interviewees, where possible, so as to reduce researcher bias (Gioia, Corley and Hamilton, 2012). Through an iterative process of reading and rereading the transcripts as well as reviewing all interviews coded to the same topic we combined similar codes (Bazeley and Jackson, 2013). In order to marry this inductive approach with the rigour of more theory driven approaches, the codes which were developed in these initial steps were consolidated and mapped to the categories defined in the section “theoretical framing” (Van Weele, van Rijnsoever and Nauta, 2017). This process allowed us to identify themes which are grounded both in the interview data and the theoretical framework employed. The findings were then triangulated with other data, particularly press research as well as reports published by investors, hubs and NGOs active in the respective ecosystems.

4 Findings and discussion

Building on the framework introduced in the theory section, this section is structured into three subsections. First, we discuss how the cultural environments in the Berlin and Lagos startup ecosystems are shaped by histories of entrepreneurship. We then consider the role of social factors in both these systems, showing how pre-existing social structures can influence what type of startup finds success in both ecosystems. Finally, we turn to how material factors influence and are influenced by the types of startups that emerge. Overall, we place a focus on the role lighthouses play in creating an ecosystem that is either more or less oriented toward sustainability. Between the two cases considered the findings are largely congruent, giving us confidence in their generalisability. *Figure 9* gives an overview of the discussed attributes and how they interact in both EEs. We note that the underlying dynamics are the same in both ecosystems; however, differing histories of successful entrepreneurship lead to very different outcomes in terms of the share of sustainability startups. This is elucidated in this section and the findings are summarised in *Table 14*.

FIGURE 9: LIGHTHOUSE EFFECT - INTERACTION OF EE ATTRIBUTES IN LAGOS AND BERLIN

Source: The authors

TABLE 14: OVERVIEW OF EES AND FINDINGS

FACTOR	BERLIN	LAGOS
City	6 million 26.300 USD	21 million 3.500 USD
EE	1.800-2.400 6,40%	400-700 11,60%
Cultural factors	Greatest success cases are conventional tech startups; no widely known sustainability startups	Some great tech startup success stories as well as well-known examples of successful sustainability entrepreneurs
	Culture within EE strongly oriented towards achieving great financial success at all costs, driven by dominant success stories; small subculture of sustainability entrepreneurs	Strong orientation toward achieving both financial and social/environmental sustainability; pervasive culture of sustainability orientation also among conventional entrepreneurs (e.g. volunteering) both driven by local histories of sustainability startups
Social factors	Investment capital mostly focused on dominant tech industry present in Berlin; orientation toward sustainability widely seen as disadvantage	Varied landscape of investors incl. many foundations; orientation toward sustainability widely seen as an advantage; success cases serve as magnets to attract more funding
	Local hubs mostly focused on conventional startups; sustainability startups sometimes supported by these due to lack of hubs with sustainability focus; best known hubs were home to Berlin's greatest entrepreneurial success cases (mostly commercial)	Largest local hub (CcHub) focused on finding solutions to sustainability challenges - gained fame through the successes of its startups; hubs for conventional startups also available
Material factors	Mentors	Several cases of successful sustainability entrepreneurs mentoring young founders following in their footsteps; sustainability startup scene also supported by other successful entrepreneurs
	Policy and governance	Some focus on sustainability startups by announcing focus sectors (e.g. agriculture) for which there is dedicated funding. However, no wide-reaching support. EE seen as a means to creating jobs.
	Opportunities	Great awareness of local opportunities for sustainability venture creation driven by success stories of such ventures and prevalence of social/environmental challenges

¹ (Tiba, Van Rijnsoever and Hekkert, no date a)

² Startup Genome Project (2017)

4.1 Cultural factors

4.1.1 Cultural attitudes

Both in Lagos and in Berlin we find a strong divide between perceived cultural attitudes within the EE and those within the wider population (see Appendix Table A.1 for an overview of corresponding codes and representative quotes). While the wider population in Berlin is seen as largely supportive of sustainability goals, this culture is not pervasive in the city's startup scene. Among those interviewed the Berlin population is widely drawn as socially liberal and environmentally oriented (e.g. BIT3, BSF1, BSF5, BSF3, BST1). This also reflects local political preferences with close to half (49,2%) of the population having voted for either a left-wing (SPD or DieLinke) or the green party in the last parliamentary election (2017). In the central constituencies of the city, where most interviewees work and live, the concentration is significantly higher (*Morgenpost*, 2017). The presented view of the startup community stands in stark contrast to this – having a reputation for being tech-focused and money oriented. A commercial entrepreneur with several years of experience in the Berlin startup scene said he never encountered a strong social culture in the “normal startup field” (BCT1).

Conversely, interviewees found an orientation toward sustainability to be quite wide-spread in the Lagos EE, while they were divided over how strongly this is present in the wider population. While several interviewees argued that values in Nigerian society centre around a sense of solidarity and helping each other, the same people also said that their society is primarily driven by an individualistic drive for survival (e.g. LHF1, LHF2). Despite these conflicting perspectives when looking at the wider society, there was much broader agreement with regards to the prevailing culture within the startup ecosystem. Here many interviewees said that they are perceiving a shift toward both sustainability as well as sustainability entrepreneurship (e.g. LSF1, LSF3, LSF5, LHF1). Together with this shift, sustainability and social impact appear to have gained traction within the startup ecosystem and today “the [sustainability entrepreneurship] culture is very pervasive” (LIF1).

These tendencies within the two EEs also reflect the prevalence of sustainability startups in each location. It thus appears that these cultural differences not within society but more narrowly in the respective startup ecosystems can explain some of the differences between Lagos and Berlin. The primary driver of this that was mentioned in both places are the local histories of entrepreneurship or the influence of lighthouses as is further explained in the next section.

4.1.2 Histories of entrepreneurship

Local entrepreneurial culture is centrally driven by those entrepreneurs that are already in an ecosystem. Particularly startups which have found success serve as role models to other aspiring entrepreneurs and thus give cultural validity to their own practices and business models (Buenstorf and Cordes, 2008). When it comes to success cases, or lighthouses, Lagos and Berlin present vastly different images. Both cities have a flourishing tech scene with successful e-commerce startups amongst many others. However, Lagos also has a number of highly successful and widely-known sustainability startups. Arguably the most famous such example in Lagos is previously mentioned Andela. Andela gained international fame in 2016 when the Chan Zuckerberg Initiative endowed them with 24 Mio USD. Several interviewees pointed out how such successful sustainability entrepreneurs had inspired them in their endeavours (LSF2, LSF4, LSF5).

These kind of role models are something that Berlin is entirely lacking. One sustainability entrepreneur explains: “Lighthouses help; so, if you have one case in the media that people talk about, that influences, motivates people, inspires people to do the same. The problem is, I don’t know yet of any large German light house case.” (BSF7). Rather, the Berlin ecosystem is dominated by the successes of tech startups churned out by its largest incubator, Rocket Internet, which is known for its cut-throat mentality and extreme profit orientation. Most interviewees in Berlin emphasised the role of Berlin as a tech-hub rather than a place for sustainability (e.g. BSF3, BSF5, BSF7, BCF1, BSF8, BIT2, BIT3, BIF1).

We thus observe similar dynamics in both ecosystems where the orientation toward sustainability is driven and legitimated by lighthouses. However, these dynamics lead to different outcomes in the two ecosystems with Lagos lighthouses embedding a strong orientation toward sustainability in Lagos’ culture and Berlin’s lighthouses conversely enforcing an orientation away from such sustainability topics.

4.2 Social factors

4.2.1 Social networks

These differences between Berlin and Lagos are also evident in the social attributes of the respective startup ecosystems which are strongly entwined with the lighthouse cases (see Table A.2). Particularly the landscape of hubs and incubators, who maintain and foster the social network as well as providing an entry way into the ecosystem for new founders, shows strong variation. In both ecosystems, those hubs/incubators which helped bring about successful startups are those which are best-known and most widely recognised as success cases themselves. While Berlin’s most prominent incubator, Rocket Internet, has a strong tech and low sustainability focus, one of Lagos’ best-known incubator, CcHub, is focused solely on the creation of sustainability startups and brought about some of Lagos’ biggest success cases in the sustainability sphere. One of its lead investors, the Indigo Trust, repeatedly points to successful enterprises that were previously incubated at CcHub in their funding announcements (O’Reilly, 2011).

Corresponding with Berlin’s weaker sustainability scene, it lacks a comparatively large and successful incubator focused on sustainability topics. Rather some of the sustainability startups interviewed were supported by the more commercially-oriented local hubs, like the Axel Springer Plug and Play Accelerator (BST1, BST2, BST3). This supports the idea that legitimacy is contagious and that the legitimacy of successful startups can foster that of their affiliates (David, Sine and Haveman, 2013). Also it shows that among entrepreneurial support organisations, too, leaders will emerge (Harper-Anderson, 2018). These are then in an ideal position to help the emergence of further startups similar to the lighthouses they helped create. We thus find that lighthouses also strengthen and reinforce organisations which have helped them, like incubators, and therefore create ideal conditions for young enterprises with a similar focus to flourish. In this way lighthouses with a focus on sustainability business models help create the social infrastructure that enables young sustainability startups.

4.2.2 Mentors

Another group of people who can take on this role of helping budding entrepreneurs are founders who have already found success. Thus, beyond acting as mere role models, as described

previously, founders of sustainability lighthouses can also help develop the next generation of sustainability startups. In Lagos, several interviewees report that they have been mentored by founders of one of the large sustainability startup success cases (LSF5, LSF4). In Berlin, the lack of lighthouses in the sustainability startup scene means that it is also lacking those kinds of mentors. Furthermore, unlike some of their international counterparts, successful commercial entrepreneurs rarely support sustainability startups by mentoring them. Indeed, both sustainability and commercial entrepreneurs that were interviewed in Berlin said there are few interlinkages between the two spheres (BCT1, BIF1, BCT2, BSF5). Beyond acting as role models, creating a culture for sustainability and enabling support organisations, founders of lighthouses also interact directly with young entrepreneurs to help them launch their businesses. The presence of sustainability lighthouses thus becomes also a source of mentors for budding sustainability startups, which can also lead to a higher share of sustainability startups. Conversely, if an EE only has conventional commercial startups, their founders frequently mentor businesses that are similar to theirs as this is an area where they can offer the greatest expertise, leading to a relatively stronger non-sustainability startup scene.

4.2.3 Investors

Stories of entrepreneurial success, or lighthouses, also help attract investors focused on the dominant models in an ecosystem – be they sustainability-focused or not. Corresponding with the prominence of its sustainability startups, in most interviews conducted in Lagos, interviewees mentioned that investors frequently focus on the social and environmental impact of the startups they invest in (e.g. LNF1, LST1, LHF1, LIF1). Indeed, several interviewees claimed that it is easier to secure funding for startups which pursue social impact (LCF1, LSF5) and that investors actively demand sustainability from their investees (LNF1). As opposed to their Nigerian counterparts, none of the commercial startup founders interviewed in Berlin had ever encountered an investor who placed an emphasis on this (BCF1, BCT1, BCT2, BIF1, BSF1). Even an impact investor focused on sustainability startups, who is active in Berlin, said it is not the best place to go if you want to find an investment-worthy sustainability startup (BIF1). In this way the investment sphere, too, is shaped by Berlin's history of entrepreneurship, which does not have a strong sustainability-focus. Analogous to the point on mentors above, an interviewee lamented that successful commercial entrepreneurs from Berlin do not enter into impact investing (BIF2) – as for example Mark Zuckerberg has done.

Lighthouses play a role in building an EEs reputation for what makes a good investment. Based on this reputation, investors with a focus on those business models are attracted to the EE. For sustainability startups this means it is significantly easier to secure funding in a place where a sustainability lighthouse has already provided a proof of concept. Going even further it means that conventional startups, too, have to start paying attention to sustainability issues. If such sustainability lighthouses are missing, on the other hand, investors are likely to place an emphasis on other topics or to even regard a focus on sustainability as a disadvantage.

4.3 Material factors

4.3.1 Policy and governance

The policy landscape in both ecosystems is to some extent reflective of the lighthouse cases we encounter (see Table A.3). Where the Berlin government provides ample support to new ventures of all stripes (BIT2) (however, not with an explicit sustainability focus), government in Lagos is widely

perceived as unsupportive (LST3, LCF1) but provides some dedicated funding for “e-health, e-agriculture and e-education” (LGT1, LSF3; Chinedu, 2017). However, such startups do not enjoy easier access to a simplified bureaucratic process or tax breaks. When asked why the government supports startups, public representatives in both cities say the primary focus is job-creation rather than some other sustainability goal. Indeed, awareness among Berlin government representatives that sustainability startups exist at all in their city is limited (LGT1, BIT2).

While the presence of lighthouses can help to create awareness among policy-makers which kind of startups their ecosystem is harbouring, the extent to which these policy-makers are then helpful to the startups in their EEs remains unclear. In sum, it appears that governmental support programmes do not play an overly important role in increasing the share of sustainability startups within an ecosystem. While entrepreneurs in both ecosystems say they would like more government support – especially financially – this appears not to be a factor that dramatically impacts the sustainability startup landscape in the two cases considered. The one role that governments can play is to raise awareness of sustainability business models as viable options for aspiring entrepreneurs, as the Lagosian government has done.

4.3.2 Opportunities

This opportunity-recognition and the narratives around it are to a large extent also shaped by the presence of lighthouse cases. Many Lagosian interviewees report that in recent years, following the emergence of successful sustainability startups, there has been a growing awareness that the country’s multitude of social and environmental problems represent an opportunity for venture creation (LHF1, LSF2, LCF2). Meanwhile, in Berlin interviewees find that the strength of the welfare state puts a limit to the spread of sustainability entrepreneurship (BIF1, BSF1), while maintaining that Munich is a great place for sustainability startups. Driven by its strong tech lighthouses, Berlin is perceived as a place which represents opportunities for tech enterprises rather than sustainability enterprises. This evidently reinforces the existing order and inspires isomorphism among young entrepreneurs looking for the best opportunities to launch a successful startup.

Sustainability lighthouses therefore also play a role in helping young entrepreneurs to recognise sustainability challenges as opportunities for starting a new venture. More importantly than the actual presence of such challenges locally, lighthouses help those challenges to be discovered by entrepreneurs, thus fostering the development of a sustainability startup scene.

5 Conclusions

Turning back to the research question *‘Which factors drive the share of sustainability startups in an EE?’* we find that dynamics in both ecosystems, Berlin and Lagos, are relatively similar. Both are shaped by outstanding local success cases of entrepreneurship, their lighthouse cases, which have a large effect on the share of sustainability startups we see in an EE. While Berlin is most strongly defined by the success of its commercial tech startups, especially those of Rocket Internet, Lagos has seen sustainability startup superstars develop in tandem with their commercial tech counterparts. These lighthouses touch upon and influence all elements of their ecosystems (cultural, social, and material) in such a way that they come to foster the development of similar ventures. In turn, they also help further strengthen the lighthouse cases themselves. In this way dominant dynamics in both

sustainability and non-sustainability EEs respectively become self-perpetuating. The share of sustainability startups in an EE is thus to a great extent determined by the strength and visibility of its most successful sustainability entrepreneurs.

The lighthouse effect here described bridges theoretical perspectives presented by institutional entrepreneurship (Boschma and Frenken, 2006; Balland, Boschma and Frenken, 2015; Alvedalen and Boschma, 2017) and evolutionary economic geography (Boschma and Frenken, 2006; Balland, Boschma and Frenken, 2015; Alvedalen and Boschma, 2017) by emphasising both the way in which individual entrepreneurs interact with the rules and norms that govern their EE as well as knowledge distribution through entrepreneurial networks. In this way this paper extends our understanding of how different attributes of EEs interact to strengthen their sustainability startup scene. Particularly the EEs of developing countries remain understudied and this paper represents the first investigation into drivers of sustainability startups in such a location that we are aware of.

The chosen comparative case study approach has allowed us to gain a detailed understanding of the mechanisms that lead to a high share of sustainability startups in an EE. The findings are particularly promising as we found the same dynamics by which lighthouses shape an EE and its sustainability-orientation in strongly contrasting cases. This presents an ideal venture point for future studies into the topic to test the presence of the lighthouse effect in a larger number of cases across the globe. The finding that particularly successful sustainability entrepreneurs have wide-reaching effects on their EE raises the question which factors lead to the inception of such sustainability startups, which, beyond contextual attributes, may lie in personal factors and motivations of entrepreneurs. An exploration of such factors represents a promising avenue for further inquiry.

Our research has two primary limitations. The chosen cases, Berlin and Lagos, represent extremes in terms of economic, cultural, and social attributes as well as their share of sustainability entrepreneurs. While they were selected because of these attributes for the purposes of this paper, future studies may wish to consider other ecosystems besides the ones studied here. Particularly, EEs in other regions, such as Asia or America, which represents a large share of startup activity generally, may provide novel insights into the dynamics that foster the development of sustainability EEs. We expect that the lighthouse effect will also play a role in other EEs around the world, however, some additional drivers for the share of sustainability startups may well emerge as relevant. Further, this paper employed interviewing techniques to gain an understanding of how the respective EEs developed rather than taking a longitudinal approach. A more explicit focus on the evolution of sustainability EEs over time rather than the snapshot here presented may also reap novel insights which will be relevant not only to established EEs but also nascent ones.

Beyond the scholarly realm our research may also prove relevant to policy-makers wishing to foster sustainability startups in their EE. Placing an emphasis on certain sustainability topics and making dedicated funding available to startups which work on them, as has been done in Nigeria, can help foster the development of some sustainability lighthouses. Furthermore, publicly supporting sustainability startups which are already present in an EE, e.g. through joint media appearances, could increase public awareness of the sustainability startup, thus fostering cultural support and motivation of young entrepreneurs to pursue a similar path. Also, it is helpful to put regulatory conditions, such as tax advantages or simplified bureaucratic processes, in place which make it easy for such young entrepreneurs to found a sustainability startup and lead it towards becoming a lighthouse for their EE. However, none of these alone represent a silver bullet as cultural, social and material factors interplay

in creating an environment which fosters the emergence of sustainability startups and ultimately sustainability lighthouses which can boost an EE's sustainability-orientation.

5

Goodfellas

On the Motivations of
Sustainability
Entrepreneurs
Evidence from Germany
and Nigeria

Abstract

Sustainability entrepreneurs are entrepreneurs whose startups are focused on at least one of the SDGs and many policy-makers today believe that they are vital in achieving these. Their motivations explain why specific sustainability startups are ultimately founded. However, limited research has been carried out on the motivations of sustainability entrepreneurs. Particularly we have little understanding of how motivations of sustainability entrepreneurs might differ between entrepreneurial ecosystems and their institutional contexts. This paper addresses this research gap. For this purpose, we have carried out in-depth interviews with sustainability entrepreneurs in Lagos, Nigeria, and Berlin, Germany. We find that the motivations of sustainability entrepreneurs in these two cities vastly differ. Archetypical sustainability entrepreneurs both in Lagos and Berlin are driven by the urge to help society. However, the archetypical sustainability entrepreneur in Lagos also finds out of frustration about a specific sustainability problem that they believe they can solve with a profit-making venture. Meanwhile, the archetypical sustainability entrepreneur in Berlin acts out of passion; they seek personal fulfilment, while pursuing social impact rather than profit. The sustainability entrepreneur in Lagos thus appears as a pragmatist, while the sustainability entrepreneur in Berlin is much more of an idealist. Different policy mixes may thus be needed to stimulate sustainability entrepreneurship in these cities in order to maximize the contributions of sustainability entrepreneurs to the SDGs.

1 Introduction

The sustainability movement has gained great momentum with all 193 countries of the United Nations (UN) General Assembly in 2015 having adopted *Transforming our World: The 2030 Agenda for Sustainable Development*, the document outlining the 17 Sustainable Development Goals (SDGs) and the accompanying 169 targets (Freistein and Mahler, 2016; Campagnolo *et al.*, 2018). The private sector ought to play a “fundamental role [...] in advancing [the SDGs]”, according to the UN (2015), with policy-makers increasingly hoping that startup entrepreneurs act as sustainability ‘Goodfellas’ that help them to accomplish the ambitious goals (Steinz, Van Rijnsoever and Nauta, 2016; Baldassarre *et al.*, 2017). After all, startups’ business models must offer radically novel solution pathways in order to be able to compete with well-established incumbents – novel solution pathways which then may, in the hopes of the policy-makers, transition entire industries towards sustainability (Christensen, 1997; Farla *et al.*, 2012).

A startup is a young enterprise with an innovative and scalable business model. We define any startup that addresses at least one of the SDGs at the core of its business model as a sustainability startup (Stam, 2015; Tiba, van Rijnsoever and Hekkert, 2018). Hence, both commercial as well as not-for-profit enterprises can be sustainability startups. Some recent research has examined factors that increase the likelihood that sustainability startups emerge in a specific entrepreneurial ecosystem (EE).⁷ These range from the share of female founders in an ecosystem and the level of funding available to the number of extremely successful sustainability startups in the respective ecosystem that then serve as role models for aspiring founders as well as institutional factors such as regulation or culture (Tiba, Van Rijnsoever and Hekkert, no date a; Ritsilä, 1999; Buenstorf and Cordes, 2008; Hechavarría, 2016b). However, these works remain silent on the specific motivations of individuals eventually launching sustainability startups, although these motivations which “transform [latent] entrepreneurial intentions into [specific] action” (Yitshaki and Kropp, 2016, p. 1) are the “key antecedent of [founding sustainability startups]” (Germak and Robinson, 2014, p. 5).

Over a century of academic research explores why people do what they do (Forbes, 2011; Ruskin, Seymour and Webster, 2016). Accordingly and unsurprisingly, substantial theoretical and empirical work exists on the motivation of commercial entrepreneurs (Germak and Robinson, 2014; Ghalwash, Tolba and Ismail, 2017a). Broadly, the literature distinguishes between entrepreneurs that found their startups out of (financial) need, so-called necessity entrepreneurs, and those that are driven by their wish to pursue some opportunity they see, opportunity entrepreneurs. We focus this study on opportunity entrepreneurs as the need of necessity entrepreneurs to escape some personal hardship would have a clear impact on their motivation (Watson, Hogarth-Scott and Wilson, 1998; Taormina and Kin-Mei Lao, 2007; Afutu-Kotey, Gough and Owusu, 2017).

While scholarship on the motivations of entrepreneurs is vast, research on sustainability entrepreneurs remains comparatively limited (Corner and Ho, 2010; Ruskin, Seymour and Webster, 2016; Yitshaki and Kropp, 2016; Ghalwash, Tolba and Ismail, 2017a). The research that does exist

⁷ An entrepreneurial ecosystem is defined as a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship within a particular territory (Stam and Spiegel, 2018, p. 407)

suggests that these exhibit specific motivations that are clearly distinct from those of ‘non-sustainability’ entrepreneurs (Lukeš and Stephan, 2012; Campin, Barraket and Luke, 2013; Clark, Newbert and Quigley, 2017; Stephan and Drencheva, 2017). Sustainability entrepreneurs are there shown to be more strongly driven by other-oriented motives and less by financial objectives than their commercial counterparts⁸ (this conceptualization is further outlined in section 2).

Those motivations are in turn regulated by the entrepreneur’s emotions. Such emotions “influence the direction, intensity, and persistence of motivated behaviour” (Ruskin, Seymour and Webster, 2016, p. 3). When looking at the motivations of sustainability entrepreneurs it is thus helpful to gain also an understanding of the emotions that precede them (Cardon *et al.*, 2012; Miller *et al.*, 2012; Welppe *et al.*, 2012). Nonetheless, scholarship that considers the links between the two in the context of sustainability entrepreneurship has been limited. Especially the question which emotions precede specific motivations that lead to sustainability entrepreneurship deserves further investigation.

In turn, regulative, normative and cultural-cognitive institutions, ‘the rules of the game’ (North, 1990, p. 3) have a great influence on our behaviour and the emotions and motives that precede it (Scott, 2008). Especially, cultural-cognitive belief systems are known to shape our feelings and urge us into action. Since institutions vary widely between regions across the globe (Kostova, 1997), one may expect different emotions and motivations to vary accordingly. Several academic studies have argued for the important impact of context and personal experiences in shaping the motivations of sustainability entrepreneurs (Laure Humbert and Drew, 2010; Clark, Newbert and Quigley, 2017; Stephan and Drencheva, 2017; Wry and York, 2017). Surprisingly, regional differences in the motivations of sustainability entrepreneurs have thus far received little attention. This is particularly problematic when considering sustainability entrepreneurship not only in the Western World but on a global scale. However, research on sustainability entrepreneurs has mostly focused on Europe and the Americas (Afutu-Kotey, Gough and Owusu, 2017). Particularly work on sustainability entrepreneurs’ motivations in emerging economies remains limited, while these countries have vastly different institutional contexts than Western economies. Hence, we do currently not know if the institutional context influences the motivations and emotions of sustainability entrepreneurs. Or in other words, what drives these Goodfellas?

This paper aims to address this gap by asking: How do the motivations of sustainability entrepreneurs and their emotional antecedents differ between entrepreneurial ecosystems in developed and developing countries?

To answer the research question, we have conducted in-depth interviews with Goodfellas in Lagos, Nigeria, and Berlin, Germany, presenting, as far as we are aware, the first comparative case study on motivations and emotional antecedents of sustainability entrepreneurs. We find two different typical emotions and motivations of sustainability entrepreneurs in these two institutional contexts. While the archetypical sustainability entrepreneur in Berlin is driven by a passion for helping society and finding personal fulfilment through social impact, the archetypical sustainability entrepreneur in Lagos is frustrated at societal/environmental challenges around them and consequently pursues financially viable solutions that fill a societal need. We thus address the

⁸ Space prohibits a further discussion of the motivations of traditional entrepreneurs in this paper.

identified gap by extending our understanding of emotions and motivations of sustainability entrepreneurs in different EEs, particularly in developing economies. Rather than identifying the *one* set of motivations of sustainability entrepreneurs we show that different locations with different institutional settings may be populated by different archetypes.

Moreover, we recognize that “the rationale for going into business among [sustainability entrepreneurs is] crucial for understanding and stimulating [sustainability] entrepreneurship” (Afutu-Kotey, Gough and Owusu, 2017, p. 4). Understanding what motivates sustainability entrepreneurs in different regions will be particularly helpful for policy-makers or impact investors hoping to stimulate the development of such entrepreneurship.

The remainder of this paper is structured as follows. Section 2 outlines the theoretical framing of this work. Section 3 presents the methods adopted. Section 4 presents and discusses our findings, while section 5 discusses our argument and limitations as well as offering an outlook for future research.

2 Theoretical Framing

This section outlines the theoretical framework applied to the data presented in section 4 of this paper. For this we draw upon the literature on motivations and emotions from psychology (Batson, 1987; Baum and Locke, 2004; Forbes, 2011), entrepreneurial emotions (Cardon *et al.*, 2009, 2012; Doern and Goss, 2013), motivations of social and commercial entrepreneurs (Boluk and Mottiar, 2014; Ruskin, Seymour and Webster, 2016; Yitshaki and Kropp, 2016; Ghalwash, Tolba and Ismail, 2017a; Stephan and Drencheva, 2017), and the mechanisms that link the two (Miller *et al.*, 2012; Clark, Newbert and Quigley, 2017). We use the theory outlined below as a framework to interpret our empirical data and to build inductively on in the setting of different EEs and their institutional settings.

2.1 Background

The study of entrepreneurial motivation has a long-standing tradition as researchers have long been interested in understanding what drives individuals to create businesses that break open existing structures and propose innovative new solutions. Insights into motivations can offer us an understanding of reasons for such behaviour (Kollmuss and Agyeman, 2002, p. 249). Traditional entrepreneurs have often been characterised as being motivated by a great need for autonomy and achievement (McClelland, 1961; Collins, Hanges and Locke, 2004). The image for sustainability entrepreneurs' motivations is somewhat more diverse and complex. While they present some characteristics of those of the traditional entrepreneur, they are supplemented by motives more commonly associated with pro-social behaviour such as altruism and the need to help others (Turaga, Howarth and Borsuk, 2010). Consequently, the scholarly literature on the motivations of sustainability entrepreneurs presents us with a wide array of potential options.

Overall, there is a great fragmentation among theoretical frameworks outlining motivations of sustainability entrepreneurs (Miller *et al.*, 2012; Boluk and Mottiar, 2014; Germak and Robinson, 2014; Ruskin, Seymour and Webster, 2016; Yitshaki and Kropp, 2016; Clark, Newbert and Quigley, 2017; Ghalwash, Tolba and Ismail, 2017a). Upon reviewing numerous existing frameworks in the

scholarly literature, we depart from the framework by Ruskin et al. (2016), one of the most recent frameworks on the topic, as this was the only framework that encompasses both motivations of founders and the underlying emotions that lead to those motivations. As Ruskin *et al.* (2016) present only those emotions and motivations in their framework that they find in their dataset, we use it as a basis open to further adaptation drawing on the existing literature and our own inductive research. We thus supplemented and slightly adapted the framework to better suit those purposes. However, we largely preserved the framework so as to make our findings more easily comparable. We thus use existing theories as opposed to establishing new ones (Dacin, Dacin and Matear, 2010; Clark, Newbert and Quigley, 2017).⁹

The entrepreneurship literature widely distinguishes between push and pull factors that result in individuals founding companies (Watson, Hogarth-Scott and Wilson, 1998; Taormina and Kin-Mei Lao, 2007; Afutu-Kotey, Gough and Owusu, 2017). Push factors are those that move a person toward starting a business (Afutu-Kotey, Gough and Owusu, 2017). A reason for this could be that the potential entrepreneur aims to escape unemployment, for instance. The entrepreneur is then what the literature calls a necessity entrepreneur (Brewer and Gibson, 2014). Meanwhile, pull factors are those factors that draw the potential entrepreneur towards founding (Taormina and Kin-Mei Lao, 2007) (further conceptualized below) – they result in what the literature calls opportunity entrepreneurs (Langevang, Namatovu and Dawa, 2012). This paper focuses only on opportunity entrepreneurs because when founders start an enterprise out of necessity other motivations would be secondary. The sample of interviewees was also selected accordingly.

Our framework (Figure 10) distinguishes between (1) emotional antecedents and (2) self-oriented motives and other-oriented motives to launch a sustainability startup, a distinction proposed by Ruskin et al. (2016)¹⁰. Emotional antecedents precede motivation with different emotions having distinct behavioural responses (Cardon *et al.*, 2009; Ruskin, Seymour and Webster, 2016). Motivation is self-oriented if the primary intention is to benefit the entrepreneur (Batson, 1990; Ruskin, Seymour and Webster, 2016) and other-oriented “if the primary intention is to benefit another individual or group of people” (Ruskin, Seymour and Webster, 2016). We note that early literature on sustainability entrepreneurs did not include self-oriented motives since this literature tended to depict sustainability entrepreneurs “as virtuous and practically heroic in character” (Boluk and Mottiar, 2014, p. 62) and thus only driven by other-oriented motives; it is only the most recent literature that suggests a much “murkier set of motivations” (Boluk and Mottiar, 2014, p. 62). In doing so, it echoes research from the field of psychology which has discussed both altruism and egotism as motives behind pro-social behaviour for several decades (Batson, 1987; Batson *et al.*, 1989; Karp, 1996; Kollmuss and Agyeman, 2002; Gebauer *et al.*, 2008). These emotions and motivations develop within the institutional context of an individual. The idea that institutional contexts matter to the emotions

⁹ We acknowledge that the framework by Ruskin et al. (2016) seeks to explain the motivations of social entrepreneurs. As it is rather general we still deem this framework as suitable to start exploring sustainability entrepreneurship since social sustainability is one of the three pillars and thus a subset of sustainability (Zils, 2014; Loiseau *et al.*, 2016).

¹⁰ Distinguishing between self- and other-oriented motives has also been proposed, inter alia, by Boluk and Mottiar (2014).

and motivations we may see emerge is an aspect that was not reflected in the framework by Ruskin et al. (2016) and has thus been supplemented by us.

FIGURE 10: FRAMEWORK ON EMOTIONAL ANTECEDENTS AND MOTIVATIONS OF SUSTAINABILITY ENTREPRENEURS

Source: Adapted from Ruskin et al. (2016)

2.2 Emotional Antecedents

Emotions, like motivations, can move people to action (Ruskin, Seymour and Webster, 2016). Joy, love, fear and anger all have the potential to influence judgements of situations and opportunities, which are crucial for the entrepreneurial process (Welpé *et al.*, 2012; Cardon, Glauser and Murnieks, 2017). Here, positive emotions like passion have been shown to increase the likelihood that such opportunities will be pursued (Cardon, Glauser and Murnieks, 2017), while negative emotions like fear can hinder action (Welpé *et al.*, 2012; Doern and Goss, 2013). Furthermore, emotions can act upon and augment the motivations of an entrepreneur. For example, compassion has been shown to positively influence pro-social motivations of sustainability entrepreneurs (Miller *et al.*, 2012). Miller *et al.* (2012) argue that through the processes of integrative thinking, prosocial cost-benefit analysis and commitment to alleviating others' suffering compassion is transformed into

sustainability entrepreneurship. Ruskin et al. (2016) further show that also self-oriented emotions can be important antecedents to sustainability entrepreneurship. Emotions are thus essential to develop an understanding of the underlying reasons the founding of sustainability startups.

Ruskin et al. (2016) find four emotional antecedents in their work. These are passion, frustration, sympathy and empathy. *Passion* is feeling drawn toward an activity that one enjoys, finds important, and chooses to do. Meanwhile, *frustration* (in a work context) refers to feelings of stress, irritation, and annoyance. *Sympathy* is the capacity to feel concern for others, while *empathy* is the ability to assume another person's emotional state. Passion and frustration are emotional antecedents of self-oriented social entrepreneurial motivation, according to Ruskin et al. (2016), while sympathy and empathy are emotional antecedents of other-oriented drives of social entrepreneurs. We signify this by the dotted line in Figure 10 but we leave open the possibility that any of those emotions might also lead to either self- or other-oriented motivations as well as the option that other emotional antecedents might exist (signified by “...” in Figure 10). The inclusion of frustration as an emotional antecedent for entrepreneurship in the framework by Ruskin et al. (2016) is noteworthy since usually only positive emotions such as passion are seen as propellants for entrepreneurship (Ruskin, Seymour and Webster, 2016; Saebi, Foss and Linder, 2019). We further discuss these emotional antecedents and possible interdependencies with motives in section 4 of this paper.

2.3 Self-Oriented Motives

Below we present the four self-oriented motives identified by Ruskin et al. (2016) and add a fifth one, profit-making, drawing on the relevant literature.

The first self-oriented motive identified is *achievement orientation*. It is the will to do well (perhaps better than others) and accomplish something difficult (Johnson, 1990). This is well-exemplified by Ruskin et al. (2016, p. 14) who interview an entrepreneur that tells them that one motivation to set up her venture was to see that she has “been able to do that, set up an organization and go through all of the ups and downs that go along with that”, while Germak and Robinson (2014, p. 16) find an entrepreneur that argues he founded a business since “I’m always looking, constantly looking for opportunities to create something”.¹¹

The second self-oriented motive identified is *personal fulfilment* which Maslow (1943) calls “self-actualization” and Boluk and Mottiar (2014) call “personal interest”. This framework dimension is adapted from Ruskin et al (2016), who write of autonomy instead. We see autonomy as a sub-motivation of personal fulfilment, i.e. autonomy may be one path to personal fulfilment (Germak and Robinson, 2014). This motive may be best exemplified by a quote from a social entrepreneur that was collected by Germak and Robinson (2014, p. 14): “I believe that all of us have a purpose in our life. [...] I know that my purpose at this point of time is to create that institution that I’m trying to create.”

Third, *relatedness*, or the closeness to a sustainability problem can be a self-oriented motive resulting in the launching of a sustainability startup, according to the literature (Ghalwash, Tolba and Ismail, 2017a). Sustainability entrepreneurs frequently recognize new opportunities based on problems encountered as part of their lives (Yitshaki and Kropp, 2016). Saebi et al. (2019, p. 9) even

¹¹ The need to achieve is also found as a core motivation by Boluk and Mottiar (2014), among others.

claim that “[sustainability entrepreneurs] often share a similar background as the disadvantaged population they want to serve” and thus have a particularly deep understanding of this population’s challenges. Zahra et al. (2009), writing about social entrepreneurs, frame this category of entrepreneurs as social bricoleurs – they “perceive and act upon opportunities to address a local social needs” (Zahra et al., 2009).

The fourth motive identified is *influence*, or power to influence others and their behaviour or the condition one finds in the world after one’s own ideals (Ruskin, Seymour and Webster, 2016). The drive for influence is one that is also very present in the wider entrepreneurship literature and often described as a general entrepreneurial motivation (Stephan and Drencheva, 2017). In the context of sustainability startups this wish for influence would generally be directed more toward seeing the positive impact of one’s work rather than having power over others. However, previous studies have suggested that sustainability entrepreneurs display similar power motivation compared to commercial entrepreneurs (De Hoogh et al., 2005).

While large parts of the literature propose that the defining feature at of entrepreneurs in the sustainability domain is that they are not motivated by money, several studies have found that some sustainability entrepreneurs are in fact primarily motivated by money (Boluk and Mottiar, 2014; Stephan and Drencheva, 2017). Scholars such as Peredo and McLean (2006) and Certo and Miller (2008) have pointed out that *profit-making* can also be a motivation to launch a sustainability startup. “[Sustainability] entrepreneurs [...] are likely also to allow for, even aim at, profits for themselves”, as Peredo and McLean (2006, p. 24) write. Indeed, Schumpeter (1934) identifies financial orientation as one of the primary motives of the entrepreneur. We thus supplement this dimension to the framework by Ruskin et al. (2016).

2.4 Other-Oriented Motives

We identify four other-oriented motives in our framework by drawing on Ruskin et al. (2016) as well as additional literature. Branzei et al. (2018) argue that other-oriented prosocial action is an integral part of being a sustainability entrepreneur.

The first other-oriented motivation identified by Ruskin et al. (2016) is *altruism*. By this they describe a form of self-sacrifice for the betterment of others. This motivation is widely discussed in the social entrepreneurship literature as one of the drivers of sustainability entrepreneurs (Stephan and Drencheva, 2017). At the same time many of those authors agree that a view of the sustainability entrepreneur as an altruist must be supplemented with other motives (Mair and Martí, 2006; Martin and Osberg, 2007) as ample research exists on the conflict of altruism and egotism in motivating action (Batson, 1987; Batson et al., 1989; Karp, 1996; Kollmuss and Agyeman, 2002; Gebauer et al., 2008).

The second motive is *nurturance*, the need to care for others and help foster their development (Ruskin, Seymour and Webster, 2016). This would usually be expressed in relation to younger generations, e.g. in the way that commercial entrepreneurs may name their responsibility towards their families as a motive for building an enterprise (Kuratko, Hornsby and Naffziger, 1997).

The third other-oriented motive used in our framework is *helping society*, which is a “fundamental desire to make a contribution to the community” (Boluk and Mottiar, 2014, p. 62). We

have adapted this dimension from Ruskin et al. (2016), who instead write of social justice but say that the wish to rectify a social wrong and the wish to make a positive contribution to society are closely linked. The wording “helping society” is also used by Germak and Robinson (2014). Ostrander (2007) even claims that sustainability entrepreneurs would be exclusively driven by this motivation. To further illustrate the “helping society” motive: Sustainability entrepreneurs interviewed by Christopoulos and Vogl (2015) mentioned that they would have been “motivated by ‘social justice’ and ‘sustainable futures’”.

The fourth motivation is having a *sense of obligation* that drives sustainability entrepreneurs to found their startups. This sense of obligation may be related to a number of factors. One may be a moral or religious obligation that is felt to act in a certain way (Bargsted *et al.*, 2013). Another may be the feeling that one wishes to ‘give back’ after having been the recipient of a social service or simply good fortune oneself (Ruskin, Seymour and Webster, 2016). Others may feel that in becoming a sustainability entrepreneur they are fulfilling their destiny or calling (Hall and Chandler, 2005; Bunderson and Thompson, 2009).

2.5 Institutional explanations for variation in motivation between EEs

Finally, we give a brief explanation for why we expect these emotions and motivations to be different for sustainability entrepreneurs in different EEs. Emotions and motivations for human behaviour do not emerge in isolation but rather in a person’s “individual-environment context” (Carsrud and Brännback, 2011). This context may be understood in terms of the institutions that constitute it.

“Institutions are social arrangements that have achieved a high level of adaptability to change” (Valdez and Richardson, 2013, p. 3) and they guide human behaviour. Institutions may manifest themselves in various forms but Scott (2008) identifies three distinct pillars that constitute institutions. The three pillars are regulative, normative and cultural-cognitive. The regulative pillar encompasses all formal rules and regulations that make up our environment. The normative pillar consists rather of the norms and customs that a society agrees upon more informally. The cultural-cognitive pillar, finally, reflects the values, beliefs and culture that are embedded in a social context. All of these three pillars act upon and influence every aspect of human action including the entrepreneurial process (Busenitz, Gómez and Spencer, 2000). They are thus an integral part of the factors that make up entrepreneurial ecosystems (Van Weele *et al.*, 2016).

Indeed, several scholars have considered institutions as important factors in shaping entrepreneurial ecosystems and found that they may be important factors in predicting entrepreneurial activity (Thomas and Mueller, 2000; Hofstede *et al.*, 2004). While previous research has looked at how institutions impact entrepreneurial activity, we would argue that institutions do not only impact the activity directly but also the motivations that entrepreneurs have for starting enterprises and growing them. Institutions provide the cognitive framework in which emotions and motivations arise.

Institutions can influence the values held by individuals and thus the motives they aspire to, the way they feel about activities such as socially or environmentally directed action and how they assess their chances of being successful in starting an enterprise (Scott, 2008; Thompson, Herrmann and Hekkert, 2015). We assume that “nascent entrepreneurs are motivated to expend effort toward

the creation of a new venture because they believe that this will lead to some desired outcome” (Edelman *et al.*, 2010). The extent to which certain outcomes are institutionally conceptualised as desirable or attainable will have a great impact both on the motivation and the emotions of the entrepreneur. Furthermore, institutions can lend legitimacy to certain practices making them more socially acceptable (Busenitz, Gómez and Spencer, 2000; Scott, 2008). Indeed, studies have found that the motivations of entrepreneurs vary significantly based on cultural background even within the same country (Edelman *et al.*, 2010). Such institutions will vary even more significantly between different regions (Kostova, 1997).

We may thus expect that the emotions and motivations of sustainability entrepreneurs will also be impacted by the different institutional settings in different EEs. For example, previous studies have suggested that in well-developed post-materialist societies there is a stronger cultural orientation toward helping others and environmentalism than in less developed ones (Gerhards and Lengfeld, 2008; Hoogendoorn, 2016). We might thus expect to find a stronger focus on other-oriented motives in EEs in more developed countries. Studies that have tried to draw an image of the motivations of *the* sustainability entrepreneur may consequently fall short by ignoring the regional and institutional differences of the context in which emotions, motivations and sustainability entrepreneurship arise.

3 Methods

A lot of entrepreneurship research relies on quantitative methodologies, however multi-faceted topics such as entrepreneurs' motivations are best explored employing qualitative methodologies (Gough and Langevang, 2016). Hence, a qualitative approach was chosen for this study, which is detailed below. We note that the data used in this paper was collected together with the data used in Tiba *et al.* (*forthcoming*). There are thus some overlaps between this methods section and the methods section in that paper.

3.1 Case selection

Comparative studies of extreme cases are suited to uncovering intricate mechanisms that determine social phenomena (Lijphart, 1971). Lagos and Berlin were identified as two suitable ecosystems for exploration. After all, both show some level of sustainability entrepreneurship with Lagos at 11,5% having a higher share of sustainability entrepreneurs than Berlin at 6,2% according to Tiba *et al.* (2018). With their location on different continents and vast difference in economic factors such as GDP per capita (~3.500 USD vs. ~26.300 USD) (Startup Genome Project, 2017) as well as cultural differences these two cases are ideally suited for a comparative analysis.

3.2 Case description

Berlin is the largest startup ecosystem in Germany and one of the leading tech hubs in Europe. It is characterised by a large young and educated workforce, good infrastructure and government support programmes for budding entrepreneurs (Startup Genome Project, 2017). Berlin established its reputation as a leading ecosystem for startups through some of its earlier successes such as Delivery Hero, a food delivery service, and has more recently manifested its place among the leading global startup ecosystems with international players such as the online bank N26. Berlin also has a

flourishing sustainability startup scene which has developed in recent years. Some of Berlin's best-known sustainability startups include Kiron Higher Education, which provides education programmes for refugees, and Ada Health, which uses a chatbot based on artificial intelligence to diagnose illnesses (Müller, 2018). In fact, several sustainability entrepreneurs established the Social Entrepreneurship Network Deutschland (SEND) in 2016 in order to jointly lobby for the interests of sustainability entrepreneurs. Despite first successes in getting some of their demands into the current government's coalition agreement, government programmes to foster entrepreneurship mostly remain focused on traditional startups and the Berlin sustainability startup scene remains small when compared to other ecosystems such as Lagos.

Lagos is Africa's most populated city and one of its largest startup ecosystems. It has an extremely young population with many of its entrepreneurs having been educated at international universities abroad in the UK or the US (Startup Genome Project, 2017). Overall it is a city characterised by economic divisions. While it is home to many of the continent's millionaires, the majority of its population still lives in slums with no access to electricity or sewage systems (World Population Review, 2019). Correspondingly, the overall infrastructure of the city is underdeveloped. However, some areas, such as Yaba, the centre of startup activity in Lagos, recently invested heavily in infrastructure such as fibre optics at the pressure of some of its most successful entrepreneurs. While there is some government funding available for startups, a large proportion of the money invested in the local startup ecosystem comes from international investors, especially Silicon Valley VCs (Office for ICT Innovation and Entrepreneurship, 2017; Startup Genome Project, 2017). While Lagos' most successful startups are traditional commercial companies such as e-commerce platform Konga, its most successful incubator is the Co-Creation Hub (CcHub), which focuses exclusively on sustainability-oriented business models. One of its biggest off-springs is Andela, who educate Nigerian youths to become coders and who received 24 million USD funding from the Chan Zuckerberg Initiative in 2016. This is also reflective of the wider funding landscape in Lagos where aforementioned Silicon Valley VCs are joined by a large number of international foundations and NGOs that focus on sustainability business models rather than conventional ones (Aspen Network of Development Entrepreneurs, 2017). As such the sustainability startup scene has grown in parallel to the rest of the ecosystem and is very present in it.

The two EEs correspondingly also show some differences in their institutional setup. The regulatory environment in Lagos is generally less socially-oriented than Berlin, with the latter showing a strong social welfare system which is mostly absent in the former (Die Welt, 2018; Folarin, Arwolo and Olugbenro, 2019). However, in terms of startup regulation policy-makers in Lagos appear to place a stronger focus on supporting sustainability entrepreneurs than those in Berlin. When it comes to entrepreneurial norms and culture, those are strongly shaped by the most successful businesses in the respective EE that were mentioned before (Tiba, Van Rijnsoever and Hekkert, no date b). The entrepreneurial culture in Berlin is thus strongly focused on high-growth and strongly profit-focused business models, while in Lagos there is a clear focus also on sustainability, financial as well as social and environmental, in the EE (Aspen Network of Development Entrepreneurs, 2017).

3.3 Sample selection

As response rates to cold-calls differed significantly between the two ecosystems, different sampling techniques were employed in each. The point of departure for both ecosystems was a list of all companies founded in the 5-year window between 2012-2017 that were listed on Crunchbase.

Within those the companies that have a sustainability-oriented business model were identified (see Tiba, Van Rijnsoever and Hekkert, no date) and contacted. Commercial startups to be contacted were chosen at random from that list as their numbers far surpassed those of the sustainability startups.

In Lagos the response rate was relatively high. Of the 22 startups contacted, 13 replied and 11 interviews were conducted. Two additional interviewees were recruited through snowball sampling with interviewees referring other candidates for us to talk to. Of the 21 companies contacted in Berlin only three replied and two interviews were conducted. As these interviews did not produce any referrals, additional interviewees in Berlin were recruited through snowball sampling with the initial seeds coming mostly from the professional networks of the authors (Miller and Brewer, 2003). This is a strategy commonly employed to recruit interviewees from difficult to reach populations (Kirchherr *et al.*, 2017).

3.4 Interview procedure

Semi-structured interviews were carried out in the field (Lagos and Berlin) over the summer of 2018, furthermore telephone interviews were carried out during the spring and summer of 2018. Telephone interviews were mostly carried out at the request of interviewees, as these were frequently traveling and thus deemed telephone interviews to be more convenient. This does not impact the data quality (Kirchherr and Charles, 2018). We further note that three interviewees chose to respond to our interview request in writing. For this they were provided with the interview guide used by the researcher to conduct spoken interviews. While the responses lacked the depth of some of the spoken interviews, they nonetheless offered some interesting insights and were thus added to our eventual sample. The interviews were conducted in English and in German, recorded and transcribed by local researchers and the main author of this paper.

In total, 13 interviews with sustainability entrepreneurs were conducted in Lagos and 13 in Berlin. In both locations the interviewing process was terminated when we reached thematic saturation, i.e. the interviews revealed no new insights on drivers of sustainability entrepreneurship in the respective startup ecosystem (Green and Thorogood, 2004; O'Reilly and Parker, 2012). Such saturation can be achieved swiftly and is widely accepted to be reachable from as few as 6-12 interviews within a relatively homogenous group in one location (Guest, Bunce and Johnson, 2006). We also note that comparable research on sustainability entrepreneurs' motivations relied on a similar number of interviews (e.g. Germak and Robinson, 2014; Christopoulos and Vogl, 2015; Ruskin, Seymour and Webster, 2016). See *Table 15* for an overview of the interviewees.

TABLE 15: OVERVIEW INTERVIEWEES

Position	City	Type	Mode	Code
Community leader	Berlin	Hub/Incubator	Telephone	BHT1
CEO & Founder	Berlin	NGO	Written	BNW1
Founder	Berlin	Sustainability startup	Telephone	BS1
CEO & Founder	Berlin	Sustainability startup	Face to face	BSF1
CEO & Founder	Berlin	Sustainability startup	Face to face	BSF2
CEO & Founder	Berlin	Sustainability startup	Face to face	BSF3
CEO & Founder	Berlin	Sustainability startup	Face to face	BSF4
MD & Founder	Berlin	Sustainability startup	Face to face	BSF5
Founder	Berlin	Sustainability startup	Face to face	BSF6
MD & Founder	Berlin	Sustainability startup	Face to face	BSF7

CEO & Founder	Berlin	Sustainability startup	Face to face	BSF8
CEO & Founder	Berlin	Sustainability startup	Telephone	BST2
CEO & Founder	Berlin	Sustainability startup	Telephone	BST3
Co-Founder	Lagos	Hub/Incubator	Face to face	LHF1
Founder	Lagos	Hub/Incubator	Face to face	LHF2
Coordinator West-Africa	Lagos	NGO	Telephone	LNT1
Programs Lead	Lagos	Sustainability startup	Written	LSW1
CEO & Founder	Lagos	Sustainability startup	Telephone	LST1
CEO & Founder	Lagos	Sustainability startup	Telephone	LST2
CEO & Founder	Lagos	Sustainability startup	Face to face	LSF1
Business Development assistant	Lagos	Sustainability startup	Written	LSW2
Co-Founder & Team Lead	Lagos	Sustainability startup	Face to face	LSF2
CEO & Founder	Lagos	Sustainability startup	Telephone	LST3
VP Investment & VP Operations	Lagos	Sustainability startup	Face to face	LSF3
Co-Founder	Lagos	Sustainability startup	Face to face	LSF4
CEO & Founder	Lagos	Sustainability startup	Face to face	LSF5

We note that our interviews were structured by a questionnaire which was developed in an iterative process by the authors but conducted as “casual, comfortable conversations” (Berry, 2002). Questions were thus adapted to the situation and at times posed in varying order depending on the answers provided. This allowed conversations to flow naturally and for the building of trust between researcher and interviewee (Berry, 2002). Furthermore, this allowed us to further explore interesting topics which were raised. Beyond generating deeper insights, the level of trust also fostered the process of snowball sampling as interviewees are more inclined towards giving access to their personal and professional networks if they enjoyed the process (Kirchherr and Charles, 2018). The interviews were between 20 and 90 minutes in length, depending primarily on the time the interviewees had available and the detail in which they responded to each question. Most interviews took around 45 minutes. We note, however, that questions were not limited to motivations of sustainability entrepreneurs but those were embedded in a larger questionnaire to also reap insights about the ecosystem and attributes in it that affected interviewees and their startups. Insights from those questions are presented in a separate paper (Tiba, Van Rijnsoever and Hekkert, no date b).

3.5 Deductive and inductive coding

The data gathered was organised in NVivo 12, a programme frequently used for qualitative analysis in academic research. In a first step all passages in interviews that referred to motivations for starting a sustainability startup and emotional antecedents were identified. These were mostly discussed when interviewees were asked about the history of their startup but sometimes also in other passages of the interviews. Interviews were thus read in their entirety and quotations corresponding to themes that emerged were clustered and labelled using the vocabulary used by interviewees so as to reduce researcher bias (Gioia, Corley and Hamilton, 2012). Through an iterative process of reading and rereading these codes were consolidated and mapped to the categories developed in the section *Theoretical Framing*.

This allowed us to combine the initial inductive approach with the rigour of more theory driven approaches (Bazeley and Jackson, 2013; Van Weele, van Rijnsoever and Nauta, 2017). Using an existing framework allows our findings to be easily comparable to other studies in the field. However,

as the framework by Ruskin *et al.* (2016), which forms the point of departure of the coding categories here used, was developed based on interviews with Australian entrepreneurs and since motivations can differ by context, it was important that we remain open to other coding categories emerging. This was made possible by the chosen multi-step approach. Based on the coding, two of the motivations identified by Ruskin *et al.* (2016) were adapted and renamed and one further motivation was added. The emotional antecedents discussed by our interviewees matched those identified by Ruskin *et al.* (2016) and consequently remained unchanged.

4 Results and Discussion

This section presents our empirical findings regarding motivations of sustainability entrepreneurs. First, we outline our results on emotional antecedents. We then present our findings on self- and other-oriented motives. We start out each of the three sub-sections with our results for Lagos which are then compared with our results from Berlin.

We provide an overview of the emotional antecedents and motivations we found in our data in Table 16. The table does not contain all of the passages coded to each emotion or motivation but rather serves to illustrate more concretely the contexts in which these motivations and emotions were mentioned. The frequency with which each emotion and motivation was mentioned in each ecosystem is shown in Figure 11, where the most frequent codings for each ecosystem are highlighted. In presenting these counts we do not assume that they allow us to generalise about the wider population of sustainability entrepreneurs in both ecosystems but rather we offer an overview of patterns in our data (Morgan, 1993). Figure 12 shows the archetypal motivations of sustainability entrepreneurs for each EE.

Overall, we find that frustration is the dominant emotional antecedent in Lagos. Coupled with profit-making and relatedness as self-oriented motives as well as the urge to help society as the main other-oriented motive, this results in the founding of sustainability startups in Lagos. Meanwhile, the dominant emotional antecedent in Berlin is passion. Coupled with personal fulfilment and the aim to have influence as self-oriented motives as well as the urge to help society as the main other-oriented motive, this results in the founding of sustainability startups in Berlin. The sustainability entrepreneur in Lagos thus appears as a pragmatist, while the sustainability entrepreneur in Berlin is more of an idealist, with entrepreneurs in both ecosystems usually displaying a mix of self- and other-oriented motives, though.¹² The differences between the two EEs may be explained looking at variations in their regulative, normative and cultural-cognitive institutions, an overview of which is given in Table 17.

¹² Regarding our framework outlined in section 2 of this paper, we observe that this framework fits the data well, whereas the importance of categories varies, at times significantly, from ecosystem to ecosystem.

TABLE 16: OVERVIEW OF FINDINGS (EXEMPLARY QUOTES)

EMOTIONAL ANTECEDENTS			
Passion	Frustration	Sympathy	Empathy
<ul style="list-style-type: none">• We just loved the idea of just being able to give back (LHF2)• We placed an emphasis because I pushed for it. Because I think it's great. (BSF3)• I also do this because I think it's fun (BST3)• We partnered with fellow West Africans who were passionate about tackling youth unemployment and launched [our company] (LSW1)• I have always been passionate about this topic (BSF4)	<ul style="list-style-type: none">• We have had to [look for talent] a BSF3le of times and it was really tedious [...]. It took weeks before we found somebody. (LS2)• I personally just got tired of complaining about no power, no jobs, poverty, no food, no this and no that (LHF1)• We constantly faced trying to go to work, constantly, constantly. I had not seen anyone trying to solve this problem. (LSF5)	<ul style="list-style-type: none">• You see most women having eye problems. Just for example my mum, she is now in her 70s and she already has a serious eye problem. (LST1)• We then told this friend, 'we will gather other friends and put our money together to help you' (LSF3)• My grandfather came to Germany as a refugee, so we had a strong connection in the family towards the refugee case. (BSF5)	<ul style="list-style-type: none">• Maybe no one would have noticed that a child at 8 was working on a building site (...) at 8 I was still bouncing on my daddy's lap. It did not make sense to me. (LNT1)• Like so many, I was just tired of seeing people suffering. You cannot live in this much neglect and not do anything (LHF1)• 70% of Nigerians are at the base of the pyramid and are very poor; they don't have basic sanitation; they don't have basic healthcare, and we wanted to do something that would positively impact that segment (LSW2)• I believe that for every social entrepreneur, if you do not have a genuine empathy, it is so easy to fall out (LHF2)

OTHER-ORIENTED MOTIVATIONS		
Altruism	Nurtrance	Helping society or others
<p>N/A</p>	<ul style="list-style-type: none">• We want to shape a grandchild suitable future with social entrepreneurship as a key transformation supporter (BNW1)	<ul style="list-style-type: none">• We just wanted to directly help people with particular needs or hardships (BSF1)• The aim is basically to enable everybody to study whatever they would like to do so to follow their dream careers or educational plans irrespective of their financial backgrounds. (BSF2)• At the end of the day whether we are building projects or products the whole idea is to help build talent in Nigeria that can solve problems. (LSF2)
		<p>Sense of obligation</p> <ul style="list-style-type: none">• I am a Christian, and I call it, you must have a sense of calling that you are meant to be doing this, because I believe that for every social entrepreneur, if you do not have a genuine empathy, it is so easy to fall out. (LHF2)• We are here to eradicate unemployment in Nigeria. Because unemployment is a ticking time bomb (LSF4)• I think it is really important that social responsibility is taken on by everyone (BST1)

SELF-ORIENTED MOTIVATIONS				
Achievement	Relatedness	Personal fulfillment	Influence	Profit-making
<ul style="list-style-type: none">• We want to offer the proof that companies, that take on social responsibility are at least as successful as those that don't care (BST3)• So those are the kinds of influence that I get, people who are telling me this is something that is worthwhile, and you should go ahead and solve this. (LSF2)• So I thought to myself, when I have done absolutely everything I can do then I can vent as much as I want, but until then you just keep finding there's more to do, and that's how we evolved into this model (LHF1)	<ul style="list-style-type: none">• So, a lot of times we found ourselves always looking for talent and then we won't find... and it would take a lot of time for us to find people that can deliver. (LST2)• There was an experience I had before we founded the company, where I taught someone Math and I wasn't paid at the end of the month. (LSF1)• It was through my own experience as a volunteer that I got to see what it was like first-hand (BST1)	<ul style="list-style-type: none">• [Our previous jobs] just didn't give us the drive and fulfillment anymore [...] so we thought we would do something with greater value (BST2)• For me I always think about whether I will still think that the things that I do are cool when I am lying on my death bed one day (BSF1)• I think to really work for something you have to believe in a mission that is behind it (BSF8)	<ul style="list-style-type: none">• I think it's just about the fact that you want to create impact during your life (BSF8)• I mean if social startups could prove that social issues can be solved with an entrepreneurial approach as effective and efficiently as possible, that would have a huge impact. (BSF2)• We actually got together to think about where we have the capabilities to create as much social value as possible (BSF1)• Everywhere in Africa there is corruption, there is poverty, so many problems. We all are looking for ways to eradicate these issues. (LST2)	<ul style="list-style-type: none">• It's one thing to believe you can run a sustainability business with a specific idea, but to actually have returns (BSF2)• Running a venture is about making money [...] if I invest in the talents, in the long term it will come back to me. (LST3)• People often forget that sustainability enterprises still need a flow of money, the economic aspect is often forgotten (BSF4)• I realized, these are not problems, they are opportunities, because whoever solves them is going to make a lot of money (LHF1)

TABLE 17: OVERVIEW OF INSTITUTIONAL PILLARS IN BERLIN AND LAGOS AND CORRESPONDING EXEMPLARY QUOTATIONS

Pillar	Berlin	Quotations	Lagos	Quotations
Regulatory	Strong welfare state which lessens pressure on individuals to support themselves as well as the	Well of course in Germany, given the welfare state, that has an influence on how our strong social enterprises are seen, the market and that in Germany. All in all, I also think that the philosophy in Germany is still that everything that has something to do with social matters should be handled and indeed is often handled by the state. (BSF1) There were never any touchpoints where being in Berlin was an advantage. It probably would have been better to be somewhere in the countryside, away from all the distractions. (BSF6)	Weak (welfare) state which puts greater responsibility on the individual to realise goals and take care of themselves; increased need	Sometimes the government shies away from talking with other support providers, because they know they haven't done a whole lot. (LNF1) I think the issues are known to government, but we have issues peculiar to business. The agri-space needs help. Are we going to wait for the government? No! What can we do? We seize the moments. (LSF3) I think, the typical barriers for doing anything in Nigeria are just the regulations, getting registration, bureaucracy, maybe some elements of corruption. (LHF1)
Normative	Large nucleus of society that sees social and environmental responsibility as a social norm Investment space that cares about profits first and foremost	I believe that it is important that society and community is something that is shouldered jointly [...] where the individual takes on social responsibility „I think, if I look at the startup ecosystem, it often revolves around money. If I look at Berlin culture more broadly, it isn't like that“ (BSF1) "Well, we always struggled to find investors who say: "Yes, the social mission is also important to me and it's a reason for us to invest.""(BSF1)	Providing social stability to others in one's proximity - especially those less fortunate - seen as social norm Investment space that dictates that startups need to focus on sustainability	Empathy is really an African thing. In the West, you don't take in your brother's son to live in your house. In Africa, that's always part of our culture. (LHF2) Everyone is sort of responsible for a lot of people. Every family is probably supporting six other families [...] so you are everyone's social insurance (LHF1) So, when you're building a business plan, you have sustainability in it. If you don't build it in, you don't get the funding. So, it's actually enhancing some of these investments. And for businesses that don't have it, they don't get investment... this is especially true for startups. (LNF1) Social impact was not really a thing until three years ago. Now it's huge. (LSF5)
Cultural-cognitive	Culture which sees engagement in social or environmental activities as desirable	We have a huge nucleus of students and a culture of socially interested people who like, say they come to Berlin to do something differently or they come to have a break so they all have free time. (BSF5)	Culture in wider society which does not place an emphasis on social responsibility	So, you find yourself in a place like Lagos where there is a whole lot of hustle. So, what you see the city trigger in people is survivor. So, I really don't care about the next person, because I want to survive. (LHF2)

Pillar	Berlin	Quotations	Lagos	Quotations
	Belief system which puts pursuit of passion and personal fulfilment centre stage	We just saw how our friends, who were doing something more meaningful, would get up in the morning and what kind of energy and joy they were radiating. (BST2)	Belief system focused on working hard and being self-sufficient	I don't know why, but it feels like in Lagos there is also something we call "hustle". People want to get rich or become famous. (LSF1)
	Prevailing belief that sustainability startups are not financially viable and corresponding focus on impact	Actually, the investor base is not that strong in Berlin for impact investments [...] And for social enterprises, there is nothing special about the ecosystem here, I would say. The money is not here anyway. (BIF2)*	Belief that sustainability and financial success are linked	Lagos is very thriving, it is a city where people come to hustle, to get work, get employment and all that. (LST2)
				I think [businesses with a social mission receive more funding]. To give an example, I know for a fact that if your business is around agriculture and helping to create social impact, also in the health sector, in the educational sector, yeah you have a very good chance of getting funding. (LST2)
			Frustration at current situation as an established social ritual	There are a lot of problems here, a lot of things that are wrong, and people used to just complain and complain. Now there has been a paradigm shift in that: I could actually do something to change the state of things. (LSF1)

* Investor interviewed to gain better understanding of wider ecosystem, not considered in other results as those are limited to founders

FIGURE 11: FREQUENCY OF CODINGS BY ECOSYSTEM **FIGURE 12: ARCHETYPICAL MOTIVATIONS OF SUSTAINABILITY ENTREPRENEURS**

Source: Authors' depiction adapted from Ruskin et al (2016)

4.1 Emotional Antecedents

All four emotional antecedents identified by Ruskin et al. (2016) are found in the data gathered in Lagos respectively Berlin. However, the emphasis on particular emotional antecedents varies significantly in the two ecosystems examined, with different emotional antecedents emerging as dominant in the two ecosystems. While for Lagosian entrepreneurs, frustration at the current state

of their country, appears to be the strongest emotion guiding them to founding a sustainability startup, Berliner sustainability entrepreneurs are rather driven by a passion for doing good. We did not identify any emotions apart from the ones outlined in the section theoretical framing.

4.1.1 Lagos

In Lagos, *frustration* is by far the most frequently mentioned emotional antecedent (coded seven times). Frustration at various aspects of life in Nigeria was often expressed very early in interviews as interviewees complained about poverty, inefficiencies and corruption, as observed by us personally, often even before formal interviews began. In connection with those less fortunate, *empathy* (coded four times) was also expressed by some interviewees who felt very strongly about seeing others suffering. In those interviews where they were mentioned, *passion* (coded three times) and *sympathy* (coded twice) appeared to be rather secondary emotions to the otherer two and were mentioned later in interviews.

Regarding *frustration*, the founder of a Nigerian ride-sharing service, for instance, shared with us, how one of the co-founders was so upset about the faulty and expensive commuting options in Lagos that they wanted to tackle this with a venture (LSF5). Meanwhile, the founder of an education company for young Nigerian developers described how *frustration* about being unable to find coders in Lagos eventually resulted in them founding their company. “[Finding a suitable coder] was really tedious, tedious [it could take] weeks” (LST1). While much of the literature suggests that negative emotions such as *frustration* would not trigger action, as discussed amongst others by Ruskin et al. (2016) and Saebi et al. (2019), our research, also in line with the findings of Ruskin et al. (2016), suggests otherwise. It appears in fact that the *frustration* at current social challenges propels Lagosian Goodfellas to action. In this way *frustration* appears to be similar to anger in that, despite being a negative emotion, it fosters entrepreneurial action (Welpé et al., 2012). Furthermore, it even stimulates socially-oriented entrepreneurial action.

This finding is also in line with previous research which has suggested that in places which have a large number of sustainability problems, there is more sustainability entrepreneurship. As researchers have linked such high levels of sustainability problems to a failing of public or governmental services, it has been dubbed the ‘failure thesis’ (Hoogendoorn, 2016).

4.1.2 Berlin

While *frustration* was the most common emotional antecedent identified in Lagos, *passion* is the most common emotional antecedent found in Berlin. Almost all of our interviewees (twelve of our thirteen interviews) emphasised how passionate they are about their work or doing something ‘good’. We identified it in. Meanwhile *frustration*, *sympathy* and *empathy* were each only coded twice. Here *frustration* and *sympathy* were emphasised much stronger and mentioned earlier in the interviews than *empathy*. Regarding *passion*, one founder shared with us how they wanted to work on something they found “cool, even on my deathbed” (BSF1). Another founder, the creator of a social entrepreneurship network, told us that they wanted “to shape a grandchild-suitable future” (BHW1) with this startup. This finding is in line with the current consensus in the literature (Zahra et al., 2009; Ruskin, Seymour and Webster, 2016; Saebi, Foss and Linder, 2019) that positive emotions propel individuals towards founding a company. Our findings suggest that this is indeed true, particularly in developed countries.

4.1.3 Parallels and differences

In terms of emotional antecedents, the differences between Berlin and Lagos appear stark. While in Berlin entrepreneurs are attracted to sustainability issues through their passion for 'doing good', Lagosian entrepreneurs push themselves to change something about conditions that are causing them frustration. These differences can be explained in terms of differences in the normative and cultural-cognitive institutions of the two EEs. It appears that following your passion is more socially acceptable in the post-materialist society of Berlin. This normative institution (social acceptability) is closely connected with a belief system embedded in the culture that puts a pursuit of passion at the fore of personal aspirations. Meanwhile, expressing frustration at Lagosian issues such as traffic is almost a cultural ritual (Gambrell, 2012) in the way that complaints about the weather are in many European countries. Evidently, these differences in culturally acceptable emotions also have underpinnings in the physical and economic conditions in these EEs. While Berlin is the capital of one of the wealthiest economies in the world and has very strong social services and welfare systems, many aspects of life in Lagos are – frustratingly – inefficient or unequal. Infrastructure such as electricity, internet and roads is poor (Akorede, 2019) and the city is rife with poverty, crime and corruption. Some interviewees report becoming especially frustrated with this after spending some time abroad in more highly developed countries (LSF5, LNT1). The frustration may thus also stem from personal expectations coming into conflict with the reality of norms and customs in Lagos.

4.2 Self-Oriented Motives

Like the emotional antecedents, the prominence of the self-oriented motives also shows significant variation between Lagos and Berlin with different self-oriented motives emerging as the dominant motives in each location. While making a profit by addressing problems that the entrepreneur has some proximity to are the driving self-oriented motives in Lagos, Berlin entrepreneurs are motivated by seeking personal fulfilment and exerting influence.

4.2.1 Lagos

Two self-oriented motives stand out in Lagos. First, most founders interviewed explained how relatedness resulted in them founding a company. For instance, the founder of a platform for offline and online tutoring told us that "I taught someone math [a few years ago] and I wasn't paid at the end of the month. I wanted to ensure that that doesn't happen to other people that teach" (LSF1). These personal stories of problems experienced or observed were often the first thing interviewees mentioned when asked about the history of their company. This again underscores that the founders we interviewed in Lagos appear to be rather pragmatic – they outline that they launched their ventures since there was a problem and they believed they could solve it, while earning a profit along the way. This also links into the second most prominent self-oriented motive in Lagos.

Meanwhile, 6 out of the 13 founders interviewed named profit-making as a core motivation to launch their sustainability startup. Except for one interview this orientation toward making money was mentioned spontaneously before any questions about the financing of the startup were asked (The interview questionnaire contained one question asking whether the company had been financially or otherwise supported by any organisations). Profit-making is thus the second most commonly found self-oriented motive in Lagos – a finding in stark contrast to the literature that regularly depicts sustainability entrepreneurs as driven by other-oriented motives, "as virtuous and

practically heroic in character” (Boluk and Mottiar, 2014, p. 62). Indeed, several studies exclude startups that are not non-profit from their investigation. Regarding profit-making as a motive, one founder who had created an accelerator for sustainability startups shared with us, for instance, that at some point they “realized that [there are] not [sustainability] problems, [there are] opportunities. Because whoever solves them is going to make a lot of money” (LHF1).

Achievement and influence were mentioned as a motive to launch their sustainability startup less prominently. Only one interviewee mentioned personal fulfilment, according to our coding. In fact, one interviewee emphasised that “the reason we started was not for social impact [...] we just wanted to address a problem” (LSF5).

We note that both most prominent motives identified in Lagos, profit-making and relatedness, are also connected to frustration as an emotional antecedent. Overall, all of the seven founders that expressed frustration also mentioned being close to a sustainability problem. Meanwhile, four of them also mentioned profit-making. The most notable example of this may be LHF1, the creator of a sustainability accelerator who shared with us that “I personally just got tired of complaining about no power, no jobs, poverty, no food, no this and no that” and that this, in combination with the many sustainability problems they encountered in Lagos, triggered them to launch their venture.

4.2.2 Berlin

Two self-oriented motives also stand out in Berlin. The first one is personal fulfilment, found in seven of the thirteen interviews. A common theme here is individuals moving out of corporate jobs, particularly consulting and banking, into a venture that they deem to be more meaningful. For instance, the founder of a health startup targeting elderly patients, told us: “I used to be a management consultant, my co-founder was doing real estate, and we both had the urge to do something more meaningful” (BST2). Another founder shared with us: “I just wanted to do something that would be fun. I just couldn’t take that risk analysis job at my bank anymore” (BST3). We outlined in section 2 of this paper that personal fulfilment contained both the notions of meaning and autonomy. While the former notion was present in all six interviews coded into the category “Personal fulfilment”, the latter notion was only found in one interview. This echoes previous findings that sustainability entrepreneurs are strongly driven by seeking personal fulfilment and that dissatisfaction with previous work plays a role (Shaw and Carter, 2007; Stephan and Drencheva, 2017). However, that research was also conducted in Western developed countries like Germany (Shaw and Carter, 2007).

The second motive that emerges is influence, with seven interviewees mentioning this as a core motive. Here the wording most often employed by interviewees is “impact” – they want to see that they can effect positive change in the world. Indeed, this wish is so strong that – as opposed to their Lagosian counterparts – this impact itself is seen as a form of reward or payment. Consequently, four of those seven who list influence as a motive also explicitly say that they wanted to launch a startup that would *not* be making profits. For instance, the founder of a volunteering platform told us “from day one, a key motivation for me was doing something social, I did not want to launch another for-profit-thing” (BST1). Similarly, another founder told us that “this is 100% social impact, not a for-profit-organization” (BST3). The other three motives played a comparatively less important role in the interviews we conducted.

We note a link between passion as an emotional antecedent and personal fulfilment with these two coding categories co-occurring seven times. This is already evident from the two quotes provided in the previous sub-section. Passion and influence also co-occur seven times. Passion and a focus on not making a profit co-occur four times. This does not suggest, though, that passion as an emotional antecedent and profit-making are inversely related, since passion also co-occurs twice with profit-making as a self-oriented motive. We find passion and achievement orientation co-occurring once.

4.2.3 Parallels and differences

Our findings suggest that the archetypical sustainability entrepreneur in Berlin may be of a different character than the sustainability entrepreneur in Lagos. While the latter wants to solve a problem that they encountered and earn a profit along the way, the Berlin entrepreneur is searching for meaning via their endeavours, frequently leaving profit considerations aside. This can be explained by a mix of regulative, normative and cultural-cognitive factors.

We contemplate that the pragmatic approach of the founders interviewed in Lagos and the idealistic non-profit focus of Goodfellas in Berlin may for some founders also be rooted in their socio-economic situation as well as the corresponding regulative institutions. While none of the founders in Lagos appear to be necessity entrepreneurs, they may not (yet) be able to found purely out of personal fulfilment. This may also be explained by a regulative environment which, in the absence of social security programmes, puts increased pressures on individuals to be self-sufficient. On the other hand, the social welfare systems in place in Germany mean that founders do not need to fear for financial stability and that an orientation toward social and environmental – rather than financial – impact is more widely supported. Here the pressure appears to be greater to prove that one is creating ‘impact’. This may be driven particularly by the culture, rules and norms put in place by the impact investing scene, which funds some of the startups interviewed.

A pure focus on self-fulfilment may also not be culturally appropriate within the Lagos entrepreneurial ecosystem. Rather, several interviewees emphasised that working hard or “hustle” are part of the culture in Lagos’ EE. In Berlin the opposite appears to be the case where a pursuit of personal fulfilment seems to be widely accepted. While Berlin has a comparatively smaller share of sustainability startups than Lagos, among our interviewees who do engage in sustainability entrepreneurship a more idealistic sub-culture that goes explicitly against motives such as profit-making has been formulated, i.e. this aspect might be explained by the cultural-cognitive institutions dominant in this subgroup. Indeed, previous research has shown that cultural factors can have a large impact on the way in which entrepreneurs operate and even what kind of enterprises emerge in an EE (Tiba et al., forthcoming). This culture is often shaped by previous success cases. Seeing that other sustainability entrepreneurs in Lagos have also achieved financial success may also have helped the sustainability entrepreneurs we interviewed to formulate this as a motive. Conversely, the motive of making money may have pre-existed and the realisation that it can be achieved through sustainability entrepreneurship may have been fostered by seeing such successful examples.

Given the various social and environmental challenges Lagos faces, in combination with a lack of regulation that counteracts this, and the relative absence of those in Berlin, it is unsurprising that relatedness is a stronger motive in Lagos than Berlin. Founders in Berlin will simply have fewer touchpoints with hardship than Lagosians.

4.3 Other-Oriented Motives

We find four of the five other-oriented motives in the data in Berlin and Lagos with no notable differences emerging for other-oriented motives between these two ecosystems. This finding appears to go against our initial expectation that the post-materialist society in Berlin may sprout more other-oriented motivations. Contrary to previous studies, altruism was not mentioned as a motive by our interviewees. The other-oriented motives also appear to be related to the emotional antecedents outlined previously, though.

4.3.1 Lagos

The most common other-oriented motive found in Lagos is helping society. It is frequently mentioned prominently together when founders explain what they aim to achieve with their companies. Most exemplary for this may be LSF2, the founder of a startup on IT education, who states: “At the end of the day, whether we are building projects or products, the whole idea is to help build talent in Nigeria that can solve problems”. The founder of a similar startup, LST2, states that his company would be about training people “so that they can be part of many companies, startups that are also driven by tech” which then, in turn, would help to accelerate development in Nigeria.

One founder referred to his sense of obligation due to his faith to explain why he launched his company: “I am a Christian. We must have a sense of calling that you are meant to be doing this. Because I believe that for every social entrepreneur if you do not have genuine empathy, it is so easy to fall out” (LHF2).

Ruskin et al. (2016) have suggested that passion and frustration only relate to self-oriented motives. This is not confirmed by our research. Indeed, we find that four founders who express frustration, according to our coding, also aim to help society, an other-oriented motive. Here a frustration about social inequality seems to inspire entrepreneurs to help others.

4.3.2 Berlin

Like Lagos, in Berlin helping society is the dominant other-oriented motive, mentioned early on in the interviews. For instance, the founder of an educational startup tells us that “the aim is basically to enable everybody to study at university, [to enable everybody] to follow their dream careers or educational plans, irrespective of their financial background” (BSF2). This quotation corresponds well with the social justice motive introduced by Ruskin et al. (2016). Other interviewees were less focused on social injustices. We also identified one founder in Berlin whose motivation would fit best into the coding category ‘Sense of obligation’ and one for ‘Nurturance’.

We find that passion also seems to be connected to helping society, with all of the eight founders coded on the other-oriented motive ‘Helping society’ also displaying passion. Again, this

goes against Ruskin et al. (2016) who claim that passion would be only connected to self-oriented motives, but not to other-oriented motives.¹³

4.3.3 Parallels and differences

In terms of other-oriented motives we get relatively consistent results between the two ecosystems considered. It appears that a drive to help others or make a positive contribution to society is a motivation that largely unites the interviewees in our sample in both ecosystems. Arguably, this orientation towards helping others is also one defining feature of sustainability enterprises.

Interestingly, this motive appears to emerge out of two different sets of normative and regulative institutions in the two EEs considered. One Lagosian interviewee argues that because of the failings of the state there is a social norm that those more fortunate take responsibility for others: “everyone is sort of responsible for a lot of people. Every family is probably supporting six other families [...] so you are everyone’s social insurance” (LHF1). In Germany the idea of social responsibility and taking responsibility for others goes beyond social norms and is indeed entrenched both in the culture and in regulative institutions which give financial incentives to make positive social contributions, e.g. special tax regulation for socially beneficial enterprises. These regulations in turn become anchored in norms and customs (cultural-cognitive) which place an expectation on the individual to act in a manner that has a positive impact on others. We thus see two similar sets of norms develop in vastly different regulative contexts.

However, referring back to previously discussed motivations, helping others might also be linked also to some self-oriented motives. While doing something for the benefit of others may be a path to self-fulfilment for entrepreneurs in Berlin, it may be a path to financial success for entrepreneurs in Lagos.

We outlined previously that Ostrander (2007) has claimed that sustainability entrepreneurs are driven exclusively by other-oriented motives. This claim is rebutted by our research. While 23 of the 26 Goodfellas we interviewed outlined other-oriented motives as drivers for launching their ventures, all of those interviewed mention at least one self-oriented motive at the same time,¹⁴ corroborating Boluk and Mottiar (2014) who claimed that both self- and other-oriented motives would drive sustainability entrepreneurs. Even the archetypical sustainability entrepreneur in Berlin whose self-oriented motives, such as personal fulfilment, are, admittedly, much closer to other-oriented motives such as helping society thus does not appear as a pure idealist.

¹³ We do not further discuss here how empathy and sympathy relate to other-oriented motives since both of these emotional antecedents were only found very few times in our interview data, as outlined in the first sub-section of this section.

¹⁴ Split per ecosystem: Berlin – 11 sustainability entrepreneurs with other-oriented motives of which 9 also with at least one self-oriented motive; Lagos – 12 sustainability entrepreneurs with other-oriented motives of which 8 also with self-oriented motives.

5 Conclusion

Our work has aimed to explore how the emotions and motivations of sustainability entrepreneurs differ between EEs in emerging and developed economies. We advance the literature on the topic by carrying out, as far as we are aware, the first comparative case study on the emotions and motivations of sustainability entrepreneurs. The choice to carry out a comparative case study rests on the supposition that emotions and motivations of sustainability entrepreneurs may differ from ecosystem to ecosystem with particularly marked differences possibly existing between ecosystems in emerging and developed economies. These may be due to differences in the institutional contexts of Berlin and Nigeria, the two EEs here investigated.

5.1 Theoretical implications

Our work supports the initial idea presented in this paper based on institutional theory that motivations will differ by context. In this paper, we have translated this idea to the realm of sustainability entrepreneurship, thus making a number of theoretical contributions. We show that within our sample the motivations of sustainability entrepreneurs do indeed differ between two EEs and their institutional contexts. This is a marked progression from previous studies on the motivations of sustainability entrepreneurs (Ruskin, Seymour and Webster, 2016; Yitshaki and Kropp, 2016; e.g. Ghalwash, Tolba and Ismail, 2017a) that displayed them as driven by the same set of motivations irrespective of context.

Based on this, we present two different archetypes of the motivations and emotional antecedents of sustainability entrepreneurs, where the sustainability entrepreneur in Lagos may be dubbed a pragmatist while the sustainability entrepreneur in Berlin is much more of an idealist. As our results for Berlin particularly echo the findings of research conducted in Western countries, as discussed previously, we hypothesise that the archetype we have found in Lagos is dominant in other less developed and particularly Sub-Saharan EEs. This proposition remains to be tested.

With regards to emotions we show that both positive emotions, such as passion, and negative emotions, like frustration, may be antecedent of self- and other-oriented motivations for sustainability entrepreneurship. This finding is novel in two ways. First, scholars have previously argued that generally only positive emotions motivate sustainability entrepreneurship (Cardon, Glauser and Murnieks, 2017). We show this not to be the case in our sample. Second, those two emotions were previously assumed to be linked only to self-oriented motivations (Ruskin, Seymour and Webster, 2016). However, as evidenced by our findings they may also be linked to other-oriented motivations. Perhaps it is thus valuable to rethink the distinction between self- and other-oriented emotions. Indeed, it seems that in our sample both frustration and passion are emotions felt toward things outside of the individual, like for example, the idea of helping society.

Particularly the institutional settings in these two EEs appear to play an explanatory role. The regulatory context in Berlin, with its strong social welfare systems, lessens the pressure on sustainability entrepreneurs to seek profits. Correspondingly we see belief systems which make a pursuit of personal fulfilment through social impact culturally acceptable and indeed normatively desirable. This focus on impact rather than profit may also be explained by an investment space which conceives of sustainability enterprises as generally less profitable. This in turn moves the focus of

sustainability entrepreneurs toward impact investors. Meanwhile, the Lagosian regulatory context puts greater pressure on the individual to take on (financial) responsibility for themselves. In tandem with this we see a normative context which expects individuals to work hard providing for themselves as well as others in one's proximity who are less fortunate. This sprouts in a cultural context in which regard for the need others is less dominant than in Berlin. These harsh social conditions together with a belief in the financial viability of sustainability entrepreneurship may explain the pragmatic money-focused approach of Lagosian sustainability entrepreneurs.

5.2 Practical implications

Different policy mixes may be needed in order to stimulate sustainability entrepreneurship in ecosystems with (aspiring) entrepreneurs motivated by different factors. For instance, policy supporting sustainability entrepreneurship in Lagos may need to be much more concerned with ensuring that sustainability ventures founded in Lagos are also profit-making ventures (reflecting that many sustainability entrepreneurs in Lagos are driven by profit-making). One idea to ensure this could be to set up a matching fund with every dollar of venture capital invested in a sustainability startup in Lagos matched by a dollar by the government. Lagos already does provide some targeted funding for sustainability enterprises by announcing focus sectors that are then supported especially. Policy-makers in EEs where sustainability entrepreneurs have a strong focus on money making could also give a platform to other sustainability entrepreneurs who achieved financial success in order to provide role models for future generations of sustainability entrepreneurs.

Meanwhile, policy-makers supporting sustainability entrepreneurship in developed countries with potential entrepreneurs driven by social impact and self-fulfilment may particularly focus on easing the transition from working in a – potentially less fulfilling – job to becoming a sustainability entrepreneur. This could evidently be done through financial support. However, previous studies have suggested (Van Weele, Steinz and Van Rijnsoever, 2014) that other resources, such as access to networks and expertise on how to run such a startup are more important for startups' success. To foster this, they could create incentives for existing actors in the sustainability startup scene (other startups, investors, hubs) to support such budding Goodfellas. Building a platform that highlights issues that sustainability entrepreneurs could work on and that connects budding Goodfellas with the relevant stakeholders could also help attract individuals looking for opportunities to do "good" in such a developed EE. A one-size-fits-all policy approach for stimulating sustainability entrepreneurship is likely not to work, according to our research.

5.3 Limitations and future research

Our research faces at least three limitations. First, our analysis of motivations rests on interviewing sustainability entrepreneurs with this group being possibly biased. For example, the low focus of the interviewed Goodfellas in Berlin on money may be because we interviewed a relatively homogenous group of wealthier entrepreneurs who were all connected and referred to us through snowball sampling. In order to address this, we used three different individuals who did not know each other as seeds for the sampling and also recruited some interviewees through cold calls. As the view was relatively consistent between interviewees from these different sources we are confident that our findings are not relevant exclusively to a niche group of sustainability entrepreneurs in Berlin.

In Lagos, most interviewees were recruited through cold-calls so the risk of a bias through snowball sampling appears less of an issue there.

Second, our interviews were conducted only once with each interviewee and within a relatively small timeframe of only a few months. While recognising that emotions and motivations are shaped by institutional contexts, which are ever evolving, we thus present a static view on what those emotions and motivations are in the respective ecosystems. As institutions do not tend to get overhauled overnight, we expect that our findings will remain relevant for years to come. However, the fact that institutional settings and, correspondingly, emotions and motivations of sustainability entrepreneurs may have changed should be kept in mind – especially by future readers of this paper.

Third, the examination of only two ecosystems is also a limitation to our work with the results possibly being specific to the ecosystems but not relevant to emerging respectively developed economies. However, seeing as the results echo previous studies, especially for the Berlin EE, as discussed in the results and discussion section, we have some confidence that the findings will also have relevance to other EEs. Furthermore, the consideration of these more extreme cases is also a strength as it allows us to establish an understanding of the emotions and motivations of Goodfellas in two vastly different contexts. This presents an ideal point of departure for future research.

Future research on the motivations of sustainability entrepreneurs may address these limitations. For instance, friends, family and colleagues of sustainability entrepreneurs may also be interviewed in order to gain additional perspectives on their motivations. Survey-based research on motivations of sustainability entrepreneurs in Berlin and Lagos may also be carried out to provide a statistically reliable view on the motivations of sustainability entrepreneurs in these ecosystems. Lastly, the motivations of sustainability entrepreneurs in additional entrepreneurial ecosystems, particularly in emerging economies, should be conducted to further broaden and deepen our knowledge on why individuals found sustainability startups.

Sustainability entrepreneurs are pivotal actors in accomplishing sustainability transitions. By shedding light on these Goodfellas we have enabled policy-makers to further stimulate sustainability entrepreneurship around the world.

6

General Conclusions

Sustainability startups are promising vehicles on a path toward the achievement of the Sustainable Development Goals (SDGs). While much has been written about these companies over the past decades, relatively little is known about the conditions under which they sprout. I thus set out on my PhD journey, with the question where in the world I can find these young ambitious companies, that bring such great promise with them. This led me to two questions: First, there is the question whether there are some contexts that are more conducive to their development than others and thus display higher shares of sustainability startups – the theory on entrepreneurial ecosystems that I knew suggested they must be. And, secondly, if so, what made those contexts so special. On this foundation I formulated the main research question that I endeavoured to answer in this thesis:

How and why does the share of sustainability startups differ between EEs?

This final chapter discusses what I found throughout the journey that was initiated and guided by this question and how the discoveries presented separately in previous chapters relate to and reinforce one another. I further discuss which new theoretical perspectives these findings reveal and what their significance might be to policy makers. I close with limitations of the research presented, paths not taken and potential avenues for future exploration.

1 Main Findings

In order to answer the main research question outlined above, I developed a research model drawing on the responsible entrepreneurship, entrepreneurial ecosystem and entrepreneurial motivation literature. Together these point toward two different aspects that can explain why the

level of sustainability startups might differ between EEs. While the EE literature can offer an overview of which factors can influence the *sustained development* of existing sustainability startups and thus their sustained survival and growth, the entrepreneurial motivations literature is drawn upon to explain why such enterprises *get founded* in the first place. These two thus illuminate two different aspects of the same phenomenon. In this way, the findings from the chapters considering these different aspects strengthen each other.

A short answer to the main research question could thus read as follows: The share of sustainability startups differs markedly with many commonly celebrated EEs demonstrating comparatively low shares of sustainability startups. Furthermore, the kind of sustainability startup that exists differs strongly between EEs with several startups showing a high share of startups dedicated to one particular of the SDGs, for example education startups in Lagos. This can be explained by the rate at which certain kinds of sustainability startups are founded as well as the degree to which EE attributes support sustainability startups. While the founding can be explained by the motivations of sustainability entrepreneurs, which are influenced by the institutions within an EE, the latter can be explained by the EE attributes, which is largely driven by lighthouses within them. The emergence of those may in turn be explained by wider contextual factors like economic development. Throughout the chapters in this thesis I first turned to the literature on sustainability entrepreneurship in order to gain clarity on what kind of startup exactly should be the subject of my investigation. I then explored to what extent the level of sustainability differs between EEs and which regional factors and EE attributes influence this. I finally investigated what motivated sustainability entrepreneurs in two ecosystems to setup their sustainability startups. In the following pages I discuss the main findings along the sub-questions to the main research question that were presented in the introduction.

1.1 Chapter 2: To provide an overview of the literature and present potentially fruitful avenues for further exploration by sustainability entrepreneurship scholars

In the second chapter I provide a broad overview of the literature about sustainability startups – which I call ‘responsible entrepreneurship literature’ for lack of a pre-existing unifying term – and identify areas that are currently underexplored by its researchers. I do this by comparing papers from responsible entrepreneurship and corporate social responsibility literature using the computer-based method of latent Dirichlet allocation. In doing so I addressed calls for reconciliation of the various fragmented sub-fields within responsible entrepreneurship research, as outlined in the introduction of this thesis.

The findings of chapter 2 suggest that work on the way that sustainability startups interact with systems (e.g. regulation) or individuals (e.g. employees, customers or stakeholders) that are relevant to them is limited. They have thus mostly been looked at in isolation rather than as part of a wider ecosystem. This view puts a great limitation on existing scholarship. Furthermore, the focus in existing research is overwhelmingly not on profit making startups. Particularly, a conception of sustainability startups as enterprises that also need to generate revenues in order to survive is missing. These thus represent promising avenues for further exploration by responsible entrepreneurship scholars.

In relation to the overarching research question, this chapter sets the scene and provides a footing in the relevant literature for the chapters that follow. Throughout the rest of the thesis particular attention is paid to incorporating not just not-for-profit but all startups that have the potential to make a meaningful contribution to the SDGs. This choice was taken following the finding that for-profit startups are thus far underrepresented in the corresponding literature. Furthermore, the chapter confirmed the need to dive deeper into the way that sustainability startups shape and are shaped by their contexts and the material as well as social factors that constitute them.

1.2 Chapter 3: To assess the way in which levels of sustainability entrepreneurship differ between EEs and to identify those factors that foster the development of sustainability startup ecosystems with high shares of sustainability startups

In chapter 3 I analyse the websites of 19,997 startups in 28 EEs across the world in order to identify where a particularly high share of sustainability startups can be found. This is done using latent Dirichlet allocation, a computer-based method that can identify patterns in large bodies of text. I find that the share of sustainability startups differs markedly between EEs with Boston, Houston, Seattle, and Lagos topping the list of EEs with the highest share of sustainability startups. Here it is most noticeable that each ecosystem has different focus sectors within the field of sustainability startups, for example, health care in Boston or education in Lagos. Another striking discovery is that those EEs that usually perform well in other rankings, such as the Genome Ecosystem Ranking (Startup Genome Project, 2019), did not rank very highly in the ranking I created. An initial analysis of different regional attributes suggests that they can explain some of the variation in the share of sustainability startups between EEs. The qualitative comparative analysis of the causal patterns underlying the results reveals that high GDP in combination with either (1) high shares of female founders of startups or (2) high shares of non-religious people in the population may induce entrepreneurial ecosystems with relatively high levels of sustainability enterprises.

Building on chapter 2, the second chapter of this thesis sheds light on a question implicitly raised by the first chapter and its overview of the literature on sustainability entrepreneurship. Namely, where in the world such sustainability enterprises, that bring with them the promise of solving many of today's greatest environmental challenges, can be found and which industries they operate in. Furthermore, it picks up the issue raised by chapter 2 that extant research pays limited attention to the interaction of sustainability startups with their contexts, though chapter 2 primarily raised the issue of regulation as a point of focus. Such isolated consideration of sustainability startups runs the risk of neglecting some of the most important factors that can determine the success of such ventures. The findings of this chapter confirm that a deeper dive into the contexts in which sustainability entrepreneurship takes place is a worthwhile endeavour.

Concerning the chapters that follow, this chapter lays the groundwork for future analyses by pointing toward EEs to explore further when studying sustainability startups and their EEs. The chapter was thus instrumental in identifying EEs with both high and low shares of such startups and provided a foundation for following investigations into drivers of sustainability-oriented EEs. In contrast to a large share of the sustainability startup literature this chapter also emphasised that sustainability startups are by no means a purely Western phenomenon. If we are to understand these startups fully a broadening of perspectives to include also developing economies is thus essential.

1.3 Chapter 4: Which factors drive the share of sustainability startups in an EE?

In chapter 4 I investigate which factors drive the share of sustainability startups in an EE. This question is explored in the EEs of Lagos, Nigeria, and Berlin, Germany. The main data source for this chapter is a body of 40 interviews that were conducted with founders, investors, hubs and policy across the two locations. These interviews were then coded in NVivo using an approach presented by Gioia et al. (2012) which marries inductive and theory-driven approaches.

In the chapter I show that the interplay of social, cultural and material EE attributes plays an important part in shaping what kind of startups can be found in that EE. This is true not only for sustainability startups but also for startups more generally. These attributes both shape and are shaped by the startups within an EE. Particularly lighthouses, i.e. successful startups, shape these attributes to make them support startups like themselves. Therefore, having sustainability startup lighthouses in an EE can help the emergence and growth of young sustainability startups. This appears to be the case in the EE of Lagos. If, on the other hand, the main success cases in an EE are explicitly geared away from sustainability issues, EE attributes are less geared toward sustainability enterprises and thus provide a less favourable environment for them. That is the situation I found in Berlin.

When selecting the sustainability entrepreneurs to interview in the two EEs, I drew on the conceptualisation in chapter 2 and placed an emphasis on including also for-profit sustainability startups in my sample. This chapter thus clearly addresses a gap that was identified in chapter 2 by considering both this aspect and the way in which sustainability startups interact with their contexts, going also beyond regulation, which was the main aspect identified in chapter 2. The fact that both these aspects have found limited attention in scholarship thus far means that a large part of the sustainability startup activity was neglected and understanding of the EE attributes that shape them was limited.

In relation to chapter 3, this chapter confirmed the finding that the sustainability-orientation of the Lagos EE was much stronger than that of the Berlin EE. Furthermore, it reaffirmed that this was associated with differences in EE attributes. It also explained the underlying mechanism of why we might see such strong and pervasive variations in the sustainability orientation of EEs pointing us toward the history of an EE and the startups that are already in it and have found success. In doing so this chapter presents an explanatory model for the variation in sustainability startup activity that I found in chapter 3. This in turn leads to the question why such enterprises are founded in the first place. This question is addressed in the final chapter of this thesis.

1.4 Chapter 5: How do the motivations of sustainability entrepreneurs and their emotional antecedents differ between ecosystems in developed and developing countries?

Rather than investigating which attributes can help the survival and growth of a sustainability startup, this chapter investigates the motivations of sustainability startup founders. The findings are based on 26 interviews conducted with founders of sustainability startups from Lagos and Berlin. Just as in chapter 4 the interviews were analysed using the Gioia (2012) method in NVivo.

While previous research has often tried to find the *one* set of motivational drivers for sustainability entrepreneurs, this chapter was approached with an expectation that motivations of sustainability entrepreneurs might not be so homogenous and indeed differ the world around. Throughout my research this expectation was both debunked and confirmed. While I did find sustainability entrepreneurs both in Berlin and in Lagos to be driven by the other-oriented motivation of helping others, it is in the dimension of self-oriented motivations that they differ markedly. The archetypical sustainability entrepreneur in Lagos also founds out of frustration about a specific sustainability problem that they believe they can solve with a profit-making venture. Meanwhile, the archetypical sustainability entrepreneur in Berlin acts out of passion; they seek personal fulfilment, while pursuing social impact rather than profit. The sustainability entrepreneur in Lagos thus appears as a pragmatist, while the sustainability entrepreneur in Berlin is much more of an idealist.

In relation to chapter 2 this chapter clearly addresses a gap that was identified there. In chapter 2 I argue that there is little scholarship that pays attention to the benefits that sustainability entrepreneurs may receive from starting or operating a sustainability startup. A lack of understanding of this aspect of sustainability entrepreneurship makes it difficult to understand why such business models arise in the first place. Such insights, however, can be beneficial to anyone trying to foster such startups. Chapter 5 thus provides valuable answers to this by looking into the motivations and objectives founders of sustainability startups pursue in this activity. Furthermore, the motivations of sustainability entrepreneurs may differ by context as the benefits of founding such enterprises may differ too. For example, while sustainability-orientation is strongly rewarded by investors in Lagos, it can hamper funding success in Berlin.

In relation to chapters 3 and 4 this chapter provides another piece of the puzzle in addressing the question why some EEs see a higher share of sustainability startups than others, by elucidating the motivations that precede the founding of sustainability startups. As such it supplements the previous chapters in this thesis which have focused more strongly on the factors that determine the success of sustainability startups once they are founded. Looking at the thesis at large this chapter marks the end in a progression from macro (sustainability orientation of EEs), to meso (sustainability startups), to micro (founders of such startups).

1.5 Answering the main research question

To conclude this section, we return to the main research question of this thesis: How and why does the share of sustainability startups differ between EEs?

Taken together this thesis argues that EEs and their attributes can help or hinder the development of sustainability startups. They do this primarily in two ways. First, by providing conditions (which are shaped by an EE's lighthouses) that can impact the development of sustainability startups and, second, by influencing the motivations of budding entrepreneurs to start sustainability startups in the first place (see Figure 13). The emergence of lighthouses may in turn be impacted by wider regional conditions such as economic development or the share of female founders. Through these mechanisms much of the variation in sustainability-orientation between EEs can be explained. In the following I further elaborate on how this answer was developed throughout the chapters.

FIGURE 13: RESEARCH MODEL

Chapter 2 lays the groundwork both for the formulation and the answer to this question. First, the chapter points toward the fact that scholars may benefit from placing a greater emphasis on how sustainability startups shape and are shaped by factors they interact with such as regulation, employees, customers or stakeholders. This confirms the importance of considering not only sustainability startups in isolation but also within their contexts, e.g. their entrepreneurial ecosystems. Second, the chapter helps in the conceptualisation of a sustainability startup by emphasising that for-profit business models should also be considered.

Chapter 3 answers the first part of the main research question showing that the share of sustainability startups differs markedly between EEs around the world with Boston, Houston, Seattle and Lagos topping the list leaving traditionally celebrated EEs like the Silicon Valley far behind. Tel Aviv and Berlin, two of the most prominent and successful entrepreneurial ecosystems in the world (Startup Genome Project, 2017), even rank in the bottom quartile of our index (23rd and 26th out of 28, respectively). Furthermore, it is shown that each ecosystem has different focus sectors within the field of sustainability startups, for example, health care in Boston or education in Lagos. In showing this chapter 3 it addresses the ‘how’ part of the main research question or the righthand side of the research model.

Chapters 3, 4, and 5 subsequently also answer the ‘why’ part by illuminating different aspects of the main research question. Those are depicted as the arrows leading to the share of sustainability startups in the research model as well as those leading from EE attributes to development and founding of startups. Chapter 3 suggests that strong economic development (material factor) either in combination with a high share of female founders (social factors) or with a low share of religious people (cultural factor) will foster sustainability-oriented EEs. This idea that an interaction of different material, social and cultural EE attributes foster sustainability startups is also confirmed by chapter 4. Here it is further shown that many of the most relevant EE attributes are shaped by so-called lighthouses, entrepreneurs who have already found success in an EE. Chapter 5, finally, shows that

not only the success of founders but also their motivation to set up a sustainability startup differs by EE. This motivation is in turn shaped by the institutional context they are situated in.

2 Theoretical implications

This section discusses how my findings contribute to the literatures I engage with and which theoretical perspectives it opens up for those fields.

2.1 Contribution to responsible entrepreneurship literature

This thesis contributes to the responsible entrepreneurship literature by widening its view to include also for-profit sustainability startups. While chapter 2 shows that potentially fruitful avenues for scholarly exploration exist outside the confines of non-profit startups focused solely on social value creation, chapter 5 emphasises that monetary factors can also be a major motivation for sustainability startup founders.

Future research on such startups can supplement extant work on social and environmental entrepreneurship by accounting for this phenomenon with potential wide-reaching societal, environmental and economic impact and thus propel responsible entrepreneurship research out of its niche. It has further been shown in chapter 2 that valuable insights can be reaped for scholars and practitioners of responsible entrepreneurship alike by entertaining findings from the CSR field. Although the focus has been on what RE scholarship may be able to learn from the CSR literature, I hypothesize that both fields may enter into a mutually rewarding conversation with each other. This has the potential to generate insights which will not only advance the academic debate but also prove useful to sustainability startups themselves.

Another large contribution that this thesis makes in chapters 3 and 4 is to bridge a gap between the responsible entrepreneurship and the entrepreneurial ecosystems literature. It thus contributes to both at the same time by adding an EE perspective to RE scholarship and by supplementing the EE literature with a view at the sustainability startups within them. I establish for sustainability startups that their contexts are important and that within entrepreneurial ecosystems sustainability startups play a role. Thus, both fields have been enriched by this research. In the following paragraphs I elaborate on that contribution while discussing other contributions made to the EE field.

This thesis bridges another gap by moving the literature on entrepreneurial motivation closer to that of EE and responsible entrepreneurship research. I thus also delve into the contributions made to the field on entrepreneurial motivations and emotions below.

2.2 Contribution to entrepreneurial ecosystems literature

The first important contribution this thesis makes to the EE literature, as outlined above, is to supplement it with a consideration of sustainability startups. As shown in the introduction, existing reports and rankings of EEs have paid comparatively little attention to sustainability startups. This phenomenon extends into the realm of academic scholarship. Research in the relatively nascent field of EE (Stam, 2015; Van Weele *et al.*, 2016; Alvedalen and Boschma, 2017; Erina, Shatrevich and Gaile-

Sarkane, 2017; Spigel, 2017) has focused primarily on traditional startups rather than sustainability startups. Their primary pre-occupation, indeed, has been to define the different elements of an EE rather than look at the kind of enterprises they sprout. This thesis builds on that research and shows that not all EEs are created equal when it comes to the startups within them. Indeed, in the realm of sustainability startups there is great variation across the globe's foremost EEs. However, this thesis does not emphasise how those EEs that have high shares of sustainability startups and those that have low shares are different, but rather how they are the same.

This thesis rather emphasises that EE attributes do not merely determine whether startups will be successful. EE attributes are not merely a bucket list of things that need to be there for entrepreneurship to work in a region, they can have a profound effect in *shaping* the startups within them, as they are shaped by them and other EE attributes. As such EEs are ever-evolving together with their startups. And EE attributes can point budding founders and established entrepreneurs in a certain direction. This can influence the share of sustainability startups in an EE. However, it can also have an effect on the kind of startups in an EE more generally. This might apply to the industry of startups, the kind of business models, the sort of founding teams that are successful etc. Indeed, referring back to chapter 3 this dynamic might even influence to what extent female founders start enterprises.

In this way, EE attributes do not only shape some startups that they are focused on but may touch on many more. For example, I found that in Lagos, which has a strong sustainability-orientation and EE attributes geared towards that, all commercial entrepreneurs I talked to also placed an emphasis on sustainability. This was not the case in the much less sustainability-oriented EE of Berlin. Thus, whether sustainability startups are being studied or not, it makes sense to consider the EE as a whole, including commercial and social, profit and non-profit startups as by virtue of being part of the same EE, they will likely affect each other.

In this interconnectedness of EE attributes some startups play a particularly important role in shaping the EE. Chapter 4 of this thesis shows that startups which have emerged as success cases early in the development of an EE can have a lasting impact on the EE attributes that can be seen within it. While previous studies have seen histories of entrepreneurship as part of the cultural attributes of an EE (Spigel, 2017), this thesis argues that the influence of such histories goes further, permeating many different attributes. Particularly successful startups are in an ideal position to impact their context and create conditions in which they will further flourish as they enjoy a high level of legitimacy and recognition (Feld, 2012; Harper-Anderson, 2018). We call such successful startups lighthouses as they stand out from the crowd of startups in an EE and provide guidance to the wider ecosystem. The way in which they do this is twofold. First, within the ecosystem lighthouses shape formal (material) and informal (cultural) institutions, such as policy and culture, in such a way that they support their current way of operating. Second, they influence other actors in the EE directly, e.g. by mentoring younger entrepreneurs. This idea of entrepreneurial lighthouses draws particularly on ideas presented in the institutional entrepreneurship (DiMaggio, 1988) as well as evolutionary economic geography (Boschma and Frenken, 2006) literature.

Returning to the topic of sustainability-startups, the presence of such sustainability lighthouses will likely shape EE attributes in such a way that they are advantageous to other sustainability startups like themselves. Further their founders may mentor budding sustainability entrepreneurs thus creating a sort of virtuous circle for sustainability entrepreneurship within an EE.

This is the phenomenon I observe in Lagos where the presence of one large sustainability lighthouse case has in fact propelled other sustainability startups forward to create more sustainability lighthouses. This has had the wide-reaching effect mentioned above where most startups in the ecosystem now take sustainability into consideration. This strong effect of success, however, means that in other places where this initial sustainability lighthouse is missing, the EE might take an entirely different trajectory. In Berlin, for example, early successes of high grow tech startups have led to a culture leaning away from sustainability. The primary thing to emphasise here is that despite the two EEs looking very different in terms of their share of sustainability startups, nonetheless the same dynamic that has led to this is observed. The importance of considering not only one kind of startup but all that make up an EE cannot be stressed enough. By studying this dynamic not only in the Western world where academic research in this field has traditionally focused but also in a developing country this thesis further enriches existing scholarship in the field of EE research.

One final contribution to the EE literature that is made by looking at findings across chapters 3 through 5 pertains to the boundaries of EE scholarship. While it appears that EE culture and its attributes are important once they are established and also develop somewhat separately from the societies in which they are situated, nascent EEs will be strongly influenced by the societies in which they are situated. These wider contextual factors may, for example, explain how such lighthouses can come to the fore in the first place. Chapter 3 presents the idea that founders in more highly developed countries will generally be more strongly oriented toward sustainability while societies in less developed countries cannot afford such concerns and thus their startups are rather oriented toward profit-making. This distinction when it comes to profit-orientation appears to be confirmed by chapter 5 where I find that founders in highly developed Berlin are less driven by profit than founders in less developed Lagos. However, due to the existence of (financially) successful sustainability lighthouses, founders in Lagos perceive sustainability entrepreneurship as one path toward profit-making. Here this distinction of social versus financial impact is thus dissolved while founders still behave in line with our expectation to pursue profits more in less developed countries. Thus, scholars must not forget that EEs do not exist in isolation but are embedded in their social, economic, cultural and historical contexts.

2.3 Contribution to literature on motivation of sustainability entrepreneurs

The literature on motivations of sustainability entrepreneurs has been enriched particularly by this thesis' focus on variations between EEs. While extant research has attempted to find *one* set of motivations of sustainability entrepreneurs (Miller *et al.*, 2012; Boluk and Mottiar, 2014; Germak and Robinson, 2014; Ruskin, Seymour and Webster, 2016; Yitshaki and Kropp, 2016; Clark, Newbert and Quigley, 2017; Ghalwash, Tolba and Ismail, 2017a), this thesis shows that they widely differ between locations. Especially differences between developed and developing countries have received little attention. As motivation literature has long recognised that contextual factors can impact motivation (Carsrud and Brännback, 2011), it is surprising that this idea has not found much consideration in the corresponding scholarship on sustainability entrepreneurs. It is furthermore regrettable as the focus has been largely on characterising the sustainability in a Western country. Both issues are addressed in this thesis.

These variations in motivation can be explained by the differences in institutional configurations between EEs. Institutions "are social arrangements that have achieved a high level of adaptability to change" (Valdez and Richardson, 2013, p. 3) and within an EE are closely linked to or

reflective of the attributes that constitute that EE. Cultural-cognitive and normative institutions are part of the cultural attributes of an EE while regulative institutions are part of the material attributes of an EE (Scott, 2008; Spigel, 2017). By providing not only a framework which individual entrepreneurs navigate when engaging in entrepreneurship but rather an institutional setup which can influence the values held by individuals as well as the way they feel about those activities and how they assess their chances of being successful in starting an enterprise (Scott, 2008; Thompson, Herrmann and Hekkert, 2015), EEs can have a much more profound impact on entrepreneurs than either the EE or the entrepreneurial motivation literature gives them credit.

By looking into the EEs of Berlin and Lagos I showed that archetypes of sustainability entrepreneurs differ vastly between this developed and developing EE. There is thus not only one motivational path toward the founding of a sustainability startup but potentially many. The two archetypes here identified are that of the idealist (in Berlin) and that of the pragmatist (in Lagos). While sustainability entrepreneurs in Berlin are largely driven by the wish to find self-fulfilment through social impact rather than earning a profit, Lagosian entrepreneurs want to earn a profit by solving a social problem. What is different are the inherent beliefs and narratives about what kind of models can be successful and also what constitutes success. While Lagosian sustainability entrepreneurs clearly see profit-making as a desirable goal and indicator for success, doing “something social” is seen as a goal in itself by sustainability entrepreneurs from Berlin. Furthermore, the dominant narrative in Lagos is that sustainability is a path toward profit-making while the opposite is true in Berlin. Such narratives that shape the behaviour of entrepreneurs and may steer them toward or away from sustainability are inherent in the EEs and also society beyond those EEs.

A related contribution is the idea that it may be valuable to rethink prevalent ideas about the sustainability entrepreneur as selfless and altruistic. Rather this thesis has shown that particularly self-interested motives such as a pursuit of self-fulfilment or profit objectives can motivate individuals to start sustainability startups. We have thus divorced the idealised conception of the sustainability entrepreneur from ideas of altruism. However, it must be noted that across EEs a wish to help others and make a positive contribution to society was a unifying motivational driver of sustainability entrepreneurs. Also, this thesis argues against a distinction between self- and other-oriented emotions as necessary precursors of motivations in either direction. Rather I found that self-oriented emotions can also precede other-oriented motivations. Though I did find self-oriented emotions to be much more present among sustainability entrepreneurs in both EEs than other-oriented ones like sympathy or empathy.

3 Recommendations to policy makers

3.1 Think about what kind of startups you want in your EE

Throughout the interviews I conducted for this thesis it was striking to find how little the policy-makers I talked to were thinking about the kind of enterprises that are being created in their EE. Rather, they were pursuing goals such as maximising the number of startups founded or the number of jobs created by them (without any concern for the kind of jobs created). Correspondingly, the policy instruments employed were relatively blunt, e.g. funding for any kind of startup or policy hackathons to make the EE more startup-friendly. While these initiatives will undoubtedly help the development of startups, policy-makers in these EEs may end up with undesirable effects. Rather than

creating jobs for a population that is already there, startups might create highly specialised jobs that require hiring employees from abroad and leaving local unemployment numbers unchanged. Or they may create business models that create little social or environmental value.

While evidently it is important for a region to be thriving economically, policy-makers can be bolder in pursuing other goals alongside those of economic development when it comes to their startup ecosystems. As the majority of startups fail, their primary promise cannot be economical but should rather be to bring innovation to a region. It is then up to the policy-maker to think about what kind of innovation they wish to support in their region. Here sustainability startups bring with them the promise to create a solution to some of humanity's greatest challenges. It might thus be worthwhile to consider if tax money might not be better spent by channelling some of it toward startups that create social or environmental value rather than yet another blockchain startup. Whatever the result of such considerations, policy-makers should actively decide what kind of startups they hope to support through their initiatives and target their efforts accordingly.

3.2 Understand who the lighthouses are in your EE

The findings in this thesis have shown that EEs are strongly shaped by their histories. Particularly successful startups, so-called lighthouses, play a role in shaping the attributes that foster entrepreneurship. The lighthouses in an EE can thus give an indication of what kind of enterprises an EE is geared toward and which kind of startups are best supported by its institutions. For policy-makers trying to gain an insight into what might potentially be hindering startups they want to foster, it is valuable to look at which startups the lighthouses are in an EE. Likely it will be startups of this kind that are best supported by the EE's attributes. Should a policy-maker wish to support startups that are different to those that are currently lighthouses in their EE, particular effort will need to be expended in creating a supportive environment. Here, particularly a shift in culture and the attraction of capital present a challenge.

One way to help foster the development of specific kinds of startups, e.g. sustainability startups, is to give those startups that a policy-maker wants to support a platform to publicise their success and inspire others. This may in turn also help an EE build a reputation for being home to sustainability startups which can help attract both people interested in founding and in supporting such startups. For those regions that currently do not have a strong EE yet but aspire to have one in the future, it is helpful to keep the effect of early successes in mind and try to consciously develop the EE in a desirable direction. In the absence of strong EE attributes, wider contextual factors such as regional economic development or cultural orientation toward social and environmental issues may be of greater importance for the future development of lighthouses.

3.3 Understand what motivates the kind of entrepreneur you want to support in your EE

When trying to encourage people to engage in sustainability entrepreneurship, supportive EE attributes are not the only factor that needs to be taken into consideration. Rather it is important for policy-makers to also understand what motivates entrepreneurs and sustainability entrepreneurs particularly in their EE to start a venture. When it comes to founding of startups the motivations of entrepreneurs differ markedly by institutional setting and what kind of startup is being founded.

Different policy mixes may thus be needed in order to stimulate sustainability entrepreneurship in ecosystems with (aspiring) entrepreneurs motivated by different factors. The findings in this thesis indicate that in an economically less developed EE, the promise of financial stability may be a strong driver, while founders of sustainability startups in more developed countries are more strongly driven by a pursuit of self-fulfilment.

In the former case, policy-makers trying to foster sustainability entrepreneurship may want to focus on making the endeavour financially attractive. They could launch a programme that makes dedicated funding available to startups active in a specific field, e.g. renewable energy. Here also attracting investors interested in such business models will be of primary importance. Meanwhile in EEs where the focus is on self-fulfilment rather than money-making, policy-makers may rather want to focus their efforts on helping the transition from a currently less fulfilling career into sustainability entrepreneurship. The most important thing to note here though is that policy-makers need to gain an understanding of what motivates sustainability entrepreneurs in their EE. A one-size-fits-all policy approach for stimulating sustainability entrepreneurship is likely not to work, according to our research.

4 Limitations and suggestions for future research

The research presented across the four chapters has several limitations. As limitations are also discussed at the end of each individual chapter, this section only picks up the main points that are relevant across chapters. These are the regional focus that I chose, the methods employed, and the time over which data was collected.

Across chapters 3 to 5 I consider only large established EEs that were also represented in the Genome Startup Ranking (2017). By focusing on those EEs, I face the potential pitfall of overlooking important areas of startup activity outside of those EEs. This might encompass both startup activity outside of large metropolitan areas but also cities with vibrant EEs that were simply not included in the Genome ranking. One issue that is very noticeable in the ranking is that it is heavily geared toward Western countries and particularly the United States. Thus, there may be some other interesting hotbeds of sustainability entrepreneurship, for example in a developing country, that might have been overlooked. Future scholarship may thus want to explore other EEs as well as (sustainability) startup activity outside of the confines of EEs. Nonetheless, the choice to take this focus was taken consciously as the effect of EEs on their startups was the subject of investigation. And focusing on the most prominent ones promised to capture the largest share of global startup activity within such EEs.

Another limitation is the choice in chapters 4 and 5 to focus on two EEs that emerged as unusual cases in chapter 3. While the results of the fsQCA indicated that an EE with high economic development and low levels of religiousness, like Berlin, should have high shares of sustainability startups, the opposite seemed to be the case. Coevally, Lagos with its low economic development was an unlikely candidate to rank so highly. It is precisely because of the fact that the fsQCA results could not explain those two cases that I decided to dive deeper into them. Comparative studies of extreme cases are suited to uncovering intricate mechanisms that determine social phenomena (Lijphart, 1971). However, future research may want to explore some of the more “typical” cases to assess

whether the same forces are at work there and the lighthouse effect can be confirmed for those cases.

For chapters 4 and 5 primary data was collected through qualitative interviews with interviewees, some of which were recruited through snowball sampling. This data collection method runs the risk of introducing a bias into the data, however it is often employed when trying to interview difficult to reach populations as was the case in Berlin. I tried to mitigate this by also interviewing people that I found through cold-calls and having different seeds for my snowball sampling as well as interviewing many different kinds of interviewees: non- and for-profit sustainability startups, other commercial startups, hubs, NGOs, investors, government officials. While the method of conducting qualitative interviews is very effective when developing detailed insights into the mechanisms that govern EEs, they do not produce generalisable results. Future research may thus want to employ larger scale surveys both within the EEs of Berlin and Lagos but also beyond to test the findings presented in this thesis.

Another limitation that chapters 3 to 5 face is that data collection was only conducted once for each data point. Both, the company websites, that were analysed in chapter 3 and the interviews conducted for chapters 4 and 5 were only collected once. This allowed us to gain a detailed account of one particular point in time, but it gives us little indication of how things have changed as well as potential trends for future development. Furthermore, an account that interviewees give of past experiences, like founding their startup, is likely to be less accurate than data collected at the time those experiences occurred. Future studies might thus opt for a longitudinal approach to understand how shares of sustainability startups across EEs as well as EE attributes and entrepreneur motivations change over time. This could help paint a richer picture of how these factors can impact the level of sustainability entrepreneurship we see in different EEs.

References

- Abdelzaher, D. and Newburry, W. (2016) 'Do green policies build green reputations?', *Journal of Global Responsibility*, 7(2), pp. 226–246. doi: 10.1108/JGR-05-2016-0012.
- Abuhay, T. M. et al. (2017) *Analysis of Computational Science Papers from ICCS 2001-2016 using Topic Modeling and Graph Theory*, *Procedia Computer Science*. doi: 10.1016/j.procs.2017.05.183.
- Achleitner, A.-K. et al. (2013) 'Disentangling Gut Feeling: Assessing the Integrity of Social Entrepreneurs', *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 24(1), pp. 93–124. doi: 10.1007/s11266-012-9264-2.
- Ács, Z. J., Autio, E. and Szerb, L. (2014) 'National Systems of Entrepreneurship: Measurement issues and policy implications', *Research Policy*, 43, pp. 476–494. doi: 10.1016/j.respol.2013.08.016.
- Acs, Z. J., Szerb, L. and Lloyd, A. (2017) 'Enhancing Entrepreneurial Ecosystems: A GEI Approach to Entrepreneurship Policy', in *Global Entrepreneurship and Development Index 2017*. Springer, pp. 81–91.
- Afutu-Kotey, R. L., Gough, K. V. and Owusu, G. (2017) 'Young Entrepreneurs in the Mobile Telephony Sector in Ghana: From Necessities to Aspirations', *Journal of African Business*. Routledge, 18(4), pp. 476–491. doi: 10.1080/15228916.2017.1339252.
- Aguilera, R. V. and Jackson, G. (2011) 'Comparative and International Corporate Governance', *SSRN Electronic Journal*. doi: 10.2139/ssrn.1766002.
- Aguinis, H. and Glavas, A. (2012) 'What We Know and Don't Know About Corporate Social Responsibility: A Review and Research Agenda', *Journal of Management*, 38(4), pp. 932–968. doi: 10.1177/0149206311436079.
- Ailon, G. (2011) 'Mapping the cultural grammar of reflexivity: the case of the Enron scandal', *Economy and Society*. Taylor & Francis Group, 40(1), pp. 141–166. doi: 10.1080/03085147.2011.529331.
- Akorede, S. (2019) 'Employees in Lagos are stressed, burned out and exhausted because of "hellish traffic"', *CNN*, 2 August. Available at: <https://edition.cnn.com/travel/article/traffic-stress-lagos-nigeria/index.html> (Accessed: 27 August 2019).
- Aldrich, H. E. and Martinez, M. A. (2001) 'Many are Called, but Few are Chosen: An Evolutionary Perspective', *Entrepreneurship: Theory and Practice*. Edited by Á. Cuervo, D. Ribeiro-Soriano, and S. Roig. Berlin Heidelberg: Springer Verlag, 25(4), pp. 41–56.
- Aldrich, H. and Fiol, M. (1994) 'Fools Rush in ? the Institutional Context of Industry Creation', *Academy of Management Review*, 19(4), pp. 645–670. doi: 10.5465/AMR.1994.9412190214.
- Alegre, I. (2015) 'Social and economic tension in social enterprises: Does it exist?', *Social Business*, 5(1), pp. 17–32. doi: 10.1362/204440815X14267607784767.

- Alvedalen, J. and Boschma, R. A. (2017) 'A critical review of entrepreneurial ecosystems research: towards a future research agenda', *European Planning Studies*, 25(6), pp. 887–903. doi: 10.1080/09654313.2017.1299694.
- Andersen, M. and Skjoett-Larsen, T. (2009) 'Corporate social responsibility in global supply chains', *Supply Chain Management: An International Journal*. Edited by A. Lindgreen. Emerald Group Publishing Limited, 14(2), pp. 75–86. doi: 10.1108/13598540910941948.
- Ardagna, S. and Lusardi, A. (2010) 'Heterogeneity in the Effect of Regulation on Entrepreneurship and Entry Size', *Journal of the European Economic Association*. Blackwell Publishing Ltd, 8(2–3), pp. 594–605. doi: 10.1111/j.1542-4774.2010.tb00529.x.
- Aspen Network of Development Entrepreneurs (2017) *Lagos: Entrepreneurial Ecosystem Snapshot*. Available at: https://cdn.ymaws.com/www.andeglobal.org/resource/resmgr/west_africa/Lagos_Entrepreneurial_Ecosys.pdf.
- Audretsch, D. B. and Belitski, M. (2017) 'Entrepreneurial ecosystems in cities: establishing the framework conditions', *The Journal of Technology Transfer*, 42, pp. 1030–1051. doi: 10.1007/s10961-016-9473-8.
- Austin, J., Stevenson, H. and Wei-Skillern, J. (2006) 'Social and Commercial Entrepreneurship: Same, Different or Both?', *Entrepreneurship theory and practice*. Wiley Online Library, 30(1), pp. 1–22. doi: 10.1111/j.1540-6520.2006.00107.x.
- Autio, E. et al. (2014) 'Entrepreneurial innovation: The importance of context', *Research Policy*, 43(7), pp. 1097–1108. doi: 10.1016/j.respol.2014.01.015.
- Azmat, F. and Samaratunge, R. (2009a) 'Responsible Entrepreneurship in Developing Countries: Understanding the Realities and Complexities', *Journal of Business Ethics*, 90, pp. 437–452. doi: 10.1007/s10551-009-0054-8.
- Azmat, F. and Samaratunge, R. (2009b) 'Responsible Entrepreneurship in Developing Countries: Understanding the Realities and Complexities', *Journal of Business Ethics*, 90, pp. 437–452. doi: 10.1007/s10551-009-0054-8.
- Bacq, S. and Janssen, F. (2011) 'The multiple faces of social entrepreneurship: A review of definitional issues based on geographical and thematic criteria', *Entrepreneurship & Regional Development*. Routledge, 23(5–6), pp. 373–403. doi: 10.1080/08985626.2011.577242.
- Bajde, D. (2013) 'Marketized philanthropy', *Marketing Theory*. SAGE PublicationsSage UK: London, England, 13(1), pp. 3–18. doi: 10.1177/1470593112467265.
- Baldassarre, B. et al. (2017) 'Bridging sustainable business model innovation and user-driven innovation: A process for sustainable value proposition design', *Journal of Cleaner Production*. Elsevier, 147, pp. 175–186. doi: 10.1016/J.JCLEPRO.2017.01.081.
- Balland, P.-A., Boschma, R. A. and Frenken, K. (2015) 'Proximity and Innovation : From Statics to Dynamics', *Regional Studies*. Taylor & Francis, 49(6), pp. 907–920. doi: 10.1080/00343404.2014.883598.
- Bank, N., Fichter, K. and Klofsten, M. (2017) 'Sustainability-profiled incubators and securing the inflow of tenants – The case of Green Garage Berlin', *Journal of Cleaner Production*. Elsevier, 157, pp. 76–83. doi: 10.1016/J.JCLEPRO.2017.04.123.
- Barba-Sánchez, V. and Atienza-Sahuquillo, C. (2010) 'Integration of the environment in managerial strategy: application of the resource-based theory of competitive advantage, dynamic capabilities and corporate social responsibilities', *African Journal of Business Management*, 4(6), pp. 1155–1165.

- Bargsted, M. *et al.* (2013) 'Psychosocial Characterization of Social Entrepreneurs: A Comparative Study', *Journal of Social Entrepreneurship*, 4(3), pp. 331–346. doi: 10.1080/19420676.2013.820780.
- Batson, C. D. (1987) 'Prosocial motivation: Is it ever truly altruistic?', *Advances in Experimental Social Psychology*, 20(C), pp. 65–122. doi: 10.1016/S0065-2601(08)60412-8.
- Batson, C. D. *et al.* (1989) 'Religious prosocial motivation: Is it altruistic or egoistic?', *Journal of Personality and Social Psychology*, 57(5), pp. 873–884. doi: 10.1037/0022-3514.57.5.873.
- Batson, C. D. (1990) 'How social an animal? The human capacity for caring.', *American Psychologist*, 45(3), pp. 336–346. doi: 10.1037/0003-066X.45.3.336.
- Battilana, J., Leca, B. and Boxenbaum, E. (2009) 'How Actors Change Institutions: Towards a Theory of Institutional Entrepreneurship', *Academy of Management Annals*, 3(1), pp. 65–107. doi: 10.5465/19416520903053598.
- Baum, J. A. C., Calabrese, T. and Silverman, B. S. (2000) 'Don't Go It Alone: Alliance Network Composition and Startups' Performance in Canadian Biotechnology', *Strategic Management Journal*, 21(3), pp. 267–294. Available at: <http://www.jstor.org/stable/3094188> (Accessed: 18 December 2017).
- Baum, J. R. and Locke, E. A. (2004) 'The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth', *Journal of Applied Psychology*, 89(4), pp. 587–598. doi: 10.1037/0021-9010.89.4.587.
- Baumeister, R. F. and Leary, M. R. (1997) 'Writing Narrative Literature Reviews', *Review of General Psychology*, 1(3), pp. 311–320. Available at: http://endoexperience.com/documents/literature_reviews_researched.pdf (Accessed: 7 September 2017).
- Bazeley, P. and Jackson, K. (2013) *Qualitative Data Analysis with NVivo*. 2nd edn. London: Sage Publications Ltd. Available at: <https://books.google.co.uk/books?hl=de&lr=&id=Px8cJ3suqccC&oi=fnd&pg=PP2&dq=coding+nvivo+reading+rereading&ots=mj5zvTYP3y&sig=LZC4krlPvOzi06NAJncdyzCfdjg#v=onepage&q=rereading&f=false> (Accessed: 10 January 2019).
- Beall, J. (2008) 'The Weaknesses of Full-Text Searching', *The Journal of Academic Librarianship*, 34(5), pp. 438–444. Available at: <http://tefkos.comminfo.rutgers.edu/Courses/e530/Readings/Beal2008fulltextsearching.pdf> (Accessed: 4 July 2017).
- De Beelde, I. and Tuybens, S. (2015) 'Enhancing the Credibility of Reporting on Corporate Social Responsibility in Europe', *Business Strategy and the Environment*, 24(3), pp. 190–216. doi: 10.1002/bse.1814.
- Bellace, J. R. (2014) 'Hoisted on their own petard? Business and human rights', *Journal of Industrial Relations*. SAGE PublicationsSage UK: London, England, 56(3), pp. 442–457. doi: 10.1177/0022185614523162.
- Berger, A. and Brem, A. (2016) 'Innovation Hub How-To: Lessons From Silicon Valley', *Global Business and Organizational Excellence*, 35(5), pp. 58–70. doi: 10.1002/joe.21698.
- Berry, J. (2002) 'Validity and Reliability Issues In Elite Interviewing', *PS: Political Science & Politics*, 35(4), pp. 679–682. doi: doi:10.1017/S1049096502001166.
- Bertazzi, P. (GRI), Lund Hansen, O. (UN G. C. and Didden, M. (WBCSD) (2015) *SDG Compass: The guide for business action on the SDGs*. Available at: www.sdgcompass.org (Accessed: 6 May 2019).
- Bilgin, M. (2009) 'The PEARL Model: Gaining Competitive Advantage Through Sustainable Development', *Journal of Business Ethics*, 85, pp. 545–554. doi: 10.1007/s10551-009-0210-1.

- Bishop, J. D. (2012) 'The Limits of Corporate Human Rights Obligations and the Rights of For-Profit Corporations', *Business Ethics Quarterly*. Cambridge University Press, 22(01), pp. 119–144. doi: 10.5840/beq20122217.
- Blei, D. M., Griffiths, T. L. and Jordan, M. I. (2010) 'The nested Chinese restaurant process and Bayesian nonparametric inference of topic hierarchies', *Journal of the ACM*, 57(2). Available at: <http://www.cs.columbia.edu/~blei/papers/BleiGriffithsJordan2009.pdf> (Accessed: 29 January 2018).
- Blei, D. M. and Lafferty, J. D. (2007) 'A Correlated Topic Model of Science', *The Annals of Applied Statistics*, 1(1), pp. 17–35. doi: 10.1214/07-AOAS114.
- Blei, D. M., Ng, A. Y. and Jordan, M. I. (2003) 'Latent Dirichlet Allocation', *Journal of Machine Learning Research*, 3, pp. 993–1022.
- Bocken, N. M. P. (2015) 'Sustainable venture capital - Catalyst for sustainable start-up success?', *Journal of Cleaner Production*, 108, pp. 647–658. doi: 10.1016/j.jclepro.2015.05.079.
- Böcker, L. and Meelen, T. (2017) 'Sharing for people, planet or profit? Analysing motivations for intended sharing economy participation', *Environmental Innovation and Societal Transitions*. Elsevier, 23, pp. 28–39. doi: 10.1016/j.eist.2016.09.004.
- Boluk, K. and Mottiar, Z. (2014) 'Motivations of social entrepreneurs: Blurring the social contribution and profits dichotomy', *Social Enterprise Journal*. Emerald Group Publishing Limited, 10(1), pp. 53–68. doi: <http://dx.doi.org/10.1108/MRR-09-2015-0216>.
- Boschma, R. A. and Frenken, K. (2006) 'Why is economic geography not an evolutionary science? Towards an evolutionary economic geography', *Journal of Economic Geography*, 6, pp. 273–302. doi: 10.1093/jeg/lbi022.
- Boschma, R. A. and Frenken, K. (2009) *The spatial evolution of innovation networks: a proximity perspective*. 0905. Utrecht. Available at: <http://econ.geo.uu.nl/peeg/peeg0905.pdf> (Accessed: 13 March 2019).
- Bosma, N. et al. (2011) *Entrepreneurship and Role Models*. 11-061/3. Amsterdam and Rotterdam. Available at: <http://hdl.handle.net/10419/86685> (Accessed: 12 November 2018).
- Bosma, N. et al. (2015) *GEM Special Topic Report - Social Entrepreneurship*.
- Braam, G. J. M. et al. (2016) 'Determinants of corporate environmental reporting: the importance of environmental performance and assurance', *Journal of Cleaner Production*. Elsevier, 129, pp. 724–734. doi: 10.1016/j.jclepro.2016.03.039.
- Branzei, O. et al. (2018) 'Going pro-social: Extending the individual-venture nexus to the collective level', *Journal of Business Venturing*, 33(5), pp. 551–565. doi: 10.1016/j.jbusvent.2018.06.007.
- Brewer, J. and Gibson, S. W. (2014) *Necessity entrepreneurs : microenterprise education and economic development*.
- Brock, D. C. (2012) 'From automation to Silicon Valley: the automation movement of the 1950s, Arnold Beckman, and William Shockley', *History and Technology*. Routledge, 28(4), pp. 375–401. doi: 10.1080/07341512.2012.756236.
- Bruton, G. D., Ahlstrom, D. and Li, H.-L. (2010) 'Institutional Theory and Entrepreneurship: Where Are We Now and Where Do We Need to Move in the Future?', *Entrepreneurship Theory and Practice*. John Wiley & Sons, Ltd (10.1111), 34(3), pp. 421–440. doi: 10.1111/j.1540-6520.2010.00390.x.
- Buchanan, M. (2014) *Forecast: What Physics, Meteorology, and the Natural Sciences Can Teach Us About Economics*. New York: Bloomsbury.
- Buenstorf, G. and Cordes, C. (2008) 'Can sustainable consumption be learned? A model of cultural evolution', *Ecological Economics*, 67, pp. 646–657. doi: 10.1016/j.ecolecon.2008.01.028.

- Bunderson, J. S. and Thompson, J. A. (2009) 'The Call of the Wild: Zookeepers, Callings, and the Double-edged Sword of Deeply Meaningful Work', *Administrative Science Quarterly*, 54(1), pp. 32–57. doi: 10.1002/9781118785317.weom020145.
- Burchell, J. and Cook, J. (2007) 'Stakeholder dialogue and organisational learning: changing relationships between companies and NGOs', *Business Ethics: A European Review*. Blackwell Publishing Ltd, 17(1), pp. 35–46. doi: 10.1111/j.1467-8608.2008.00518.x.
- Burchell, J. and Cook, J. (2011) 'Banging on open doors? Stakeholder dialogue and the challenge of business engagement for UK NGOs', *Environmental Politics*. Routledge, 20(6), pp. 918–937. doi: 10.1080/09644016.2011.617176.
- Burchell, J. and Cook, J. (2013) 'Sleeping with the Enemy? Strategic Transformations in Business–NGO Relationships Through Stakeholder Dialogue', *Journal of Business Ethics*. Springer Netherlands, 113(3), pp. 505–518. doi: 10.1007/s10551-012-1319-1.
- Busenitz, L. W., Gómez, C. and Spencer, J. W. (2000) 'Country institutional profiles: Unlocking entrepreneurial phenomena', *Academy of Management Journal*, 43(5), pp. 994–1003. doi: 10.2307/1556423.
- Calderon, A., Harris, J. D. and Kirsch, P. A. (2016) 'Health interventions used by major resource companies operating in Colombia', *Resources Policy*, 47, pp. 187–197. doi: 10.1016/j.resourpol.2015.02.003.
- Callon, M., Courtial, J. P. and Laville, F. (1991) 'Co-Word Analysis as a Tool for Describing the Network of Interactions Between Basic and Technological Research: The Case of Polymer Chemistry', *Scientometrics*, 22(1), pp. 155–205. Available at: <https://link.springer.com/content/pdf/10.1007%2FBF02019280.pdf> (Accessed: 31 January 2018).
- Campagnolo, L. et al. (2018) 'The Ex-Ante Evaluation of Achieving Sustainable Development Goals', *Social Indicators Research*. Springer Netherlands, 136(1), pp. 73–116. doi: 10.1007/s11205-017-1572-x.
- Campin, S., Barraket, J. and Luke, B. (2013) 'micro-Business Community Responsibility in Australia: Approaches, Motivations and Barriers', *Journal of Business Ethics*, 115(3), pp. 489–513. doi: 10.1007/s10551-012-1396-1.
- Cao, J. et al. (2008) 'A density-based method for adaptive LDA model selection', *Neurocomputing*, 72, pp. 1775–1781. doi: 10.1016/j.neucom.2008.06.011.
- Cao, J. X., Ding, Y. and Zhang, H. (2016) 'Social Capital, Informal Governance, and Post-IPO Firm Performance: A Study of Chinese Entrepreneurial Firms', *Journal of Business Ethics*. Springer Netherlands, 134(4), pp. 529–551. doi: 10.1007/s10551-014-2383-5.
- Cardon, M. S. et al. (2009) 'THE NATURE AND EXPERIENCE OF ENTREPRENEURIAL PASSION', *Academy of Management Review*. Academy of Management Briarcliff Manor, NY, 34(3), pp. 511–532. doi: 10.5465/amr.2009.40633190.
- Cardon, M. S. et al. (2012) 'Exploring the Heart: Entrepreneurial emotion is a hot topic', *Entrepreneurship: Theory and Practice*, 36(1), pp. 1–10. doi: 10.1111/j.1540-6520.2011.00501.x.
- Cardon, M. S., Glauser, M. and Murnieks, C. Y. (2017) 'Passion for what? Expanding the domains of entrepreneurial passion', *Journal of Business Venturing Insights*. Elsevier Inc., 8(May 2017), pp. 24–32. doi: 10.1016/j.jbvi.2017.05.004.
- Carroll, A. B. (1979) 'A Three-Dimensional Conceptual Model of Corporate Performance', *The Academy of Management Review*, 4(4), pp. 497–505. Available at: <http://www.jstor.org/stable/257850> (Accessed: 22 June 2017).

- Carroll, A. B. (1991) 'The Pyramid of Corporate Social Responsibility: Toward the Moral Management of Organizational Stakeholders', *Business Horizons*, 34(4), pp. 39–48.
- Carroll, A. B. (1999) 'Corporate Social Responsibility Evolution of a Definitional Construct', *Business & Society*. Sage Publications, 38(3), pp. 268–295. doi: <https://doi.org/10.1177/000765039903800303>.
- Carsrud, A. and Brännback, M. (2011) 'Entrepreneurial Motivations: What Do We Still Need to Know?', *Journal of Small Business Management*, 49(1), pp. 9–26. doi: 10.1111/j.1540-627X.2010.00312.x.
- Certo, S. T. and Miller, T. (2008) 'Social entrepreneurship: Key issues and concepts', *Business Horizons*. Elsevier Limited, 51(4), pp. 267–271. doi: 10.1016/j.bushor.2008.02.009.
- Cha, W. and Abebe, M. A. (2016) 'Board of directors and industry determinants of corporate philanthropy', *Leadership & Organization Development Journal*. Emerald Group Publishing Limited, 37(5), pp. 672–688. doi: 10.1108/LODJ-09-2014-0189.
- Chang, J. et al. (2009) 'Reading Tea Leaves: How Humans Interpret Topic Models', *Neural Information Processing Systems*. Available at: <https://www.umiacs.umd.edu/~jbjg/docs/nips2009-rtl.pdf> (Accessed: 30 January 2018).
- Chen, Y.-H., Wen, X.-W. and Luo, M.-Z. (2016) 'Corporate Social Responsibility Spillover and Competition Effects on the Food Industry', *Australian Economic Papers*, 55(1), pp. 1–13. doi: 10.1111/1467-8454.12058.
- Chinedu, S. (2017) *How to Get Available Government Grants and Loans for Agriculture in Nigeria, Next Nigerian Entrepreneur*. Available at: <https://www.nextnaijaentrepreneur.com/government-grants-loans-agriculture/> (Accessed: 11 January 2019).
- Cho, C. H., Roberts, R. W. and Patten, D. M. (2010) 'The language of US corporate environmental disclosure', *Accounting, Organizations and Society*. Pergamon, 35(4), pp. 431–443. doi: 10.1016/J.AOS.2009.10.002.
- Chow, C. and Rubin, L. (2013) 'Building Lean Startups at the Bottom of the Pyramid (*Innovations Case Narrative: YouthBank and Generation Enterprise*)', *Innovations: Technology, Governance, Globalization*, 8(3–4), pp. 71–84. doi: 10.1162/INOV_a_00188.
- Christensen, C. (1997) *Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Boston, United States: Harvard Business School Publishing.
- Christopoulos, D. and Vogl, S. (2015) 'The Motivation of Social Entrepreneurs: The Roles, Agendas and Relations of Altruistic Economic Actors', *Journal of Social Entrepreneurship*. Routledge, 6(1), pp. 1–30. doi: 10.1080/19420676.2014.954254.
- Chung, J. Y., Yeo-Chang, Y. and Cho, D.-S. (2012) 'Evolutionary governance choice for corporate social responsibility: a forestry campaign case in South Korea', *International Journal of Sustainable Development & World Ecology*. Taylor & Francis, 19(4), pp. 339–348. doi: 10.1080/13504509.2012.658098.
- Chung, T.-L. et al. (2015) 'Who's behind the screen? Segmenting social venture consumers through social media usage', *Journal of Retailing and Consumer Services*, 28, pp. 288–295. doi: 10.1016/j.jretconser.2015.01.006.
- Clark, K. D., Newbert, S. L. and Quigley, N. R. (2017) 'The motivational drivers underlying for-profit venture creation : Comparing social and commercial entrepreneurs', *International Small Business Journal*, 00(0), pp. 1–22. doi: 10.1177/0266242617731139.
- Clarkson, M. (1995) 'A Stakeholder Framework for Analyzing and Evaluating Corporate Social Performance', *Academy of Management Review*, 20(1), pp. 92–117. Available at: <http://www.jstor.org/stable/pdf/258888.pdf?refreqid=excelsior%3A1b7a5f73dabaaab84cc6159c227470d2> (Accessed: 27 June 2017).

- Clarkson, P. M. *et al.* (2008) 'Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis', *Accounting, Organizations and Society*, Pergamon, 33(4–5), pp. 303–327. doi: 10.1016/J.AOS.2007.05.003.
- Cohen, B. and Winn, M. I. (2007) 'Market imperfections, opportunity and sustainable entrepreneurship', *Journal of Business Research*, 22, pp. 29–49. doi: 10.1016/j.jbusvent.2004.12.001.
- Collins, C. J., Hanges, P. J. and Locke, E. A. (2004) 'The Relationship of Achievement Motivation to Entrepreneurial Behavior: A Meta-Analysis', *Human Performance*, 17(1), pp. 95–117. doi: 10.1207/S15327043HUP1701_5.
- Conant, D. (2013) *Why philanthropy is R&D for business*, *McKinsey Quarterly*.
- Coren, M. (2018) 'Women founders and investors are finally breaking up the ultimate boys club in Silicon Valley — Quartz at Work', *Quartz*. Available at: <https://qz.com/work/1372702/female-founders-and-investors-are-finally-breaking-up-the-ultimate-boys-club-in-silicon-valley/> (Accessed: 2 April 2019).
- Cornelius, N. *et al.* (2008) 'Corporate Social Responsibility and the Social Enterprise', *Journal of Business Ethics*, 81, pp. 355–370. doi: 10.1007/s10551-007-9500-7.
- Corner, P. D. and Ho, M. (2010) 'How Opportunities Develop in Social Entrepreneurship', *Entrepreneurship Theory and Practice*. John Wiley & Sons, Ltd (10.1111), 34(4), pp. 635–659. doi: 10.1111/j.1540-6520.2010.00382.x.
- Costanigro, M., Deselnicu, O. and McFadden, D. T. (2015) 'Product differentiation via corporate social responsibility: consumer priorities and the mediating role of food labels', *Agriculture and Human Values*. Springer Netherlands, 33(3), pp. 597–609. doi: 10.1007/s10460-015-9640-9.
- Crunchbase (no date) 2018. Available at: <https://www.crunchbase.com/> (Accessed: 15 May 2018).
- Curran, G. (2017) 'Social licence, corporate social responsibility and coal seam gas: framing the new political dynamics of contestation', *Energy Policy*. Elsevier, 101, pp. 427–435. doi: 10.1016/j.enpol.2016.10.042.
- D'Amico, E. *et al.* (2016) 'Factors Influencing Corporate Environmental Disclosure', *Business Strategy and the Environment*, 25(3), pp. 178–192. doi: 10.1002/bse.1865.
- Dacin, M. T., Dacin, P. A. and Tracey, P. (2011) 'Social Entrepreneurship: A Critique and Future Directions', *Organization Science*, 22(5), pp. 1203–1213. doi: 10.1287/orsc.1100.0620.
- Dacin, P. A., Dacin, M. T. and Matear, M. (2010) 'Social Entrepreneurship: Why We Don't Need a New Theory and How We Move Forward', *Source: Academy of Management Perspectives*, 24(3), pp. 37–57. Available at: <http://www.jstor.org/stable/29764973> (Accessed: 6 February 2017).
- Dagiliene, L., Leitonienė, S. and Grecikova, A. (2014) 'Increasing Business Transparency by Corporate Social Reporting: Development and Problems in Lithuania', *Engineering Economics*, 25(1), pp. 54–61. doi: 10.5755/j01.ee.25.1.2356.
- Dahlsrud, A. (2008) 'How Corporate Social Responsibility is Defined: an Analysis of 37 Definitions', *Corporate Social Responsibility and Environmental Management*, 15(1), pp. 1–13. doi: 10.1002/csr.
- Dauvergne, P. and Lister, J. (2010) 'The Prospects and Limits of Eco-Consumerism: Shopping Our Way to Less Deforestation?', *Organization & Environment*, 23(2), pp. 132–154. doi: 10.1177/1086026610368370.
- David, R. J., Sine, W. D. and Haveman, H. A. (2013) 'Seizing Opportunity in Emerging Fields: How Institutional Entrepreneurs Legitimated the Professional Form of Management Consulting', *Organization Science*, 24(2), pp. 356–377. doi: 10.1287/orsc.1120.0745.
- Davidsson, P. and Wiklund, J. (2001) 'Levels of analysis in entrepreneurship research: Current research practice and suggestions for the future', *Entrepreneurship Theory & Practice*, 25(4), pp. 81–

100. Available at: <http://eprints.qut.edu.au/5568/1/5568.pdf> (Accessed: 6 September 2017).
- Dawkins, C. E. (2012) 'Labored Relations: Corporate Citizenship, Labor Unions, and Freedom of Association', *Business Ethics Quarterly*, 22(3), pp. 473–500. doi: 10.5840/beq201222331.
- Dean, T. J. and McMullen, J. S. (2007) 'Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action', *Journal of Business Venturing*, 22, pp. 50–76. doi: 10.1016/j.jbusvent.2005.09.003.
- Dees, J. G. (1998) *The Meaning of 'Social Entrepreneurship'*.
- Defourny, J. and Nyssens, M. (2008) 'Social enterprise in Europe: recent trend and developments', *Social Enterprise Journal*, 4(3), pp. 202–228. doi: <http://dx.doi.org/10.1108/MRR-09-2015-0216>.
- Dempsey, S. E. and Sanders, M. L. (2010) 'Meaningful work? Nonprofit marketization and work/ life imbalance in popular autobiographies of social entrepreneurship', *Organization*, 17(4), pp. 437–459. doi: 10.1177/1350508410364198.
- Die Welt (2018) 'Eine Billion Euro: So viel gibt Deutschland für sein Sozialsystem aus', *Die Welt*, 3 August. Available at: <https://www.welt.de/politik/deutschland/article180495688/Eine-Billion-Euro-So-viel-gibt-Deutschland-fuer-sein-Sozialsystem-aus.html> (Accessed: 13 September 2019).
- DiMaggio, P. (1988) 'Interest and agency in institutional theory', in *Research on Institutional Patterns: Environment and Culture*. Ballinger Publishing Co. Available at: <https://nyu-staging.pure.elsevier.com/en/publications/interest-and-agency-in-institutional-theory> (Accessed: 19 March 2019).
- DiMaggio, P. and Powell, W. (1983) 'The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields', *American Sociological Review*, 48(2), pp. 147–160. Available at: <https://www.gwern.net/docs/sociology/1983-dimaggio.pdf> (Accessed: 19 March 2019).
- Dixon, S. E. A. and Clifford, A. (2007) 'Ecopreneurship – a new approach to managing the triple bottom line', *Journal of Organizational Change Management*, 20(3), pp. 326–345. doi: 10.1108/09534810710740164.
- Doern, R. and Goss, D. (2013) 'From barriers to barring: Why emotion matters for entrepreneurial development', *International Small Business Journal*, 31(5), pp. 496–519. doi: 10.1177/0266242611425555.
- Dreyer, N. (2018) 'Die Social Entrepreneurship-Szene in Deutschland Teil 1: Startups, Unternehmen und Events – Gründerküche', *Die Gründerküche*. Available at: <https://www.gruenderkueche.de/fachartikel/die-social-entrepreneurship-szene-in-deutschland-teil-1-startups-unternehmen-und-events/>.
- Du, X. (2015) 'Is Corporate Philanthropy Used as Environmental Misconduct Dressing? Evidence from Chinese Family-Owned Firms', *Journal of Business Ethics*. Springer Netherlands, 129(2), pp. 341–361. doi: 10.1007/s10551-014-2163-2.
- Durán Sánchez, A. et al. (2017) 'Bibliometric analysis of publications on wine tourism in the databases Scopus and WoS', *European Research on Management and Business Economics*, 23, pp. 8–15. doi: 10.1016/j.iedeen.2016.02.001.
- El Ebrashi, R. (2013) 'Social entrepreneurship theory and sustainable social impact', *Social Responsibility Journal*. doi: 10.1108/SRJ-07-2011-0013.
- Edelman, L. F. et al. (2010) 'Start-up motivations (Edelman et al 2010)', 48(2), pp. 174–196.

- Einwiller, S., Ruppel, C. and Schnauber, A. (2016) 'Harmonization and differences in CSR reporting of US and German companies', *Corporate Communications: An International Journal*. Emerald Group Publishing Limited, 21(2), pp. 230–245. doi: 10.1108/CCIJ-09-2014-0062.
- Elkington, J. (1997) *Cannibals with Forks. The Triple Bottom Line of 21st Century Business*. Oxford, UK: Capstone Publishing Ltd. Available at: http://appli6.hec.fr/amo/Public/Files/Docs/148_en.pdf (Accessed: 27 June 2017).
- Environmental Performance Index* (2018). Available at: <https://epi.envirocenter.yale.edu/> (Accessed: 12 February 2018).
- Erina, I., Shatrevich, V. and Gaile-Sarkane, E. (2017) 'Impact of stakeholder groups on development of a regional entrepreneurial ecosystem', *European Planning Studies*. Routledge, 25(5), pp. 755–771. doi: 10.1080/09654313.2017.1282077.
- European Commission (2003) *Responsible Entrepreneurship: A Collection of Good Practice Cases Among Small and Medium-sized Enterprises Across Europe*, Enterprise Publications. doi: 10.1007/s10551-009-0054-8.
- Eveleens, C. P., van Rijnsoever, F. J. and Niesten, E. (2016) 'How network-based incubation helps start-up performance: a systematic review against the background of management theories', *Journal of Technological Transfer*. doi: 10.1007/s10961-016-9510-7.
- Farla, J. et al. (2012) 'Sustainability transitions in the making: A closer look at actors, strategies and resources', *Technological Forecasting and Social Change*, 79(6), pp. 991–998. doi: 10.1016/j.techfore.2012.02.001.
- Fassin, Y. (2008) 'SMEs and the fallacy of formalising CSR', *Business Ethics: A European Review*. Blackwell Publishing Ltd, 17(4), pp. 364–378. doi: 10.1111/j.1467-8608.2008.00540.x.
- Feinerer, I. and Hornik, K. (2017) 'tm'. Available at: <https://cran.r-project.org/web/packages/tm/tm.pdf> (Accessed: 4 July 2017).
- Feld, B. (2012) *Startup Communities: Building an Entrepreneurial Ecosystem in Your City*. 1st edn. Hoboken, New Jersey: John Wiley & Sons. Available at: [https://books.google.de/books?hl=de&lr=&id=tFNAYRBjsuIC&oi=fnd&pg=PT12&dq=Feld,+B.++\(2012\).+Startup+Communities:+Building+an+Entrepreneurial+Ecosystem+in+Your+City+ot+s=58rqTtUaCc&sig=OmNBr_3ip-oYsxAcSJ2ihqcl1cg#v=onepage&q=success&f=false](https://books.google.de/books?hl=de&lr=&id=tFNAYRBjsuIC&oi=fnd&pg=PT12&dq=Feld,+B.++(2012).+Startup+Communities:+Building+an+Entrepreneurial+Ecosystem+in+Your+City+ot+s=58rqTtUaCc&sig=OmNBr_3ip-oYsxAcSJ2ihqcl1cg#v=onepage&q=success&f=false).
- Fisman, R. and Wang, Y. (2015) *The Mortality Cost of Political Connections*. Cambridge, MA. doi: 10.3386/w21266.
- Florida, R., Mellander, C. and Stolarick, K. (2008) 'Inside the black box of regional development - Human capital, the creative class and tolerance', *Journal of Economic Geography*, 8(5), pp. 615–649. doi: 10.1093/jeg/lbn023.
- Folarin, F., Arwolo, S. and Olugbenro, Y. (2019) 'Social Security in Nigeria – is there light at the end of the tunnel?' Deloitte. Available at: <https://www2.deloitte.com/ng/en/pages/tax/articles/inside-tax-articles/social-security-in-nigeria.html> (Accessed: 13 September 2019).
- Forbes, D. L. (2011) 'Toward a unified model of human motivation.', *Review of General Psychology*, 15(2), pp. 85–98. doi: 10.1037/a0023483.
- Forcadell, F. J. and Aracil, E. (2017) 'European Banks' Reputation for Corporate Social Responsibility', *Corporate Social Responsibility and Environmental Management*, 24(1), pp. 1–14. doi: 10.1002/csr.1402.
- Freistein, K. and Mahler, B. (2016) 'The potential for tackling inequality in the Sustainable Development Goals', *Third World Quarterly*. Routledge, 37(12), pp. 2139–2155. doi: 10.1080/01436597.2016.1166945.

- Fuller, T. and Tian, Y. (2006) 'Social and symbolic capital and responsible entrepreneurship: an empirical investigation of SME narratives', *Journal of Business Ethics*, 67, pp. 287–304. Available at: <http://link.springer.com/article/10.1007/s10551-006-9185-3> (Accessed: 25 November 2016).
- Gambrell, J. (2012) 'In Nigerian mega-city, gridlock is a great unifier - Deseret News', *Associated Press*, 1 October. Available at: <https://www.deseret.com/2012/10/1/20439160/in-nigerian-mega-city-gridlock-is-a-great-unifier#in-this-photograph-taken-sept-5-2012-traffic-backs-up-along-a-busy-road-in-lagos-nigeria-authorities-are-making-yet-another-stab-at-taming-the-chaos-in-lagos-stre> (Accessed: 27 August 2019).
- Gast, J., Gundolf, K. and Cesinger, B. (2017) 'Doing business in a green way: A systematic review of the ecological sustainability entrepreneurship literature and future research directions', *Journal of Cleaner Production*, 147, pp. 44–56. doi: 10.1016/j.jclepro.2017.01.065.
- Gebauer, J. E. et al. (2008) 'Pleasure and pressure based prosocial motivation: Divergent relations to subjective well-being', *Journal of Research in Personality*, 42(2), pp. 399–420. doi: 10.1016/j.jrp.2007.07.002.
- Geels, F. W. et al. (2017) 'Sociotechnical transitions for deep decarbonization', *Science*. American Association for the Advancement of Science, 357(6357), pp. 1242–1244.
- Gelissen, J. (2007) 'Explaining Popular Support for Environmental Protection A Multilevel Analysis of 50 Nations', *Environment and Behavior*, 39(3), pp. 392–415. doi: 10.1177/0013916506292014.
- Gerhards, J. and Lengfeld, H. (2008) 'Support for European union environmental policy by citizens of EU-member and accession states', *Comparative Sociology*, 7(2), pp. 215–241. doi: 10.1163/156913308X289050.
- Germak, A. J. and Robinson, J. A. (2014) 'Exploring the Motivation of Nascent Social Entrepreneurs', *Journal of Social Entrepreneurship*. Routledge, 5(1), pp. 5–21. doi: 10.1080/19420676.2013.820781.
- Ghalwash, S., Tolba, A. and Ismail, A. (2017a) 'What Motivates Social Entrepreneurs to Start Social Ventures ? An Exploratory Study in the Context of a Developing Economy', *Social Enterprise Journal*. Emerald Publishing Limited, 13(3), pp. 268–298. doi: 10.1108/SEJ-05-2016-0014.
- Ghalwash, S., Tolba, A. and Ismail, A. (2017b) 'What motivates social entrepreneurs to start social ventures?', *Social Enterprise Journal*. Emerald Publishing Limited, 13(3), pp. 268–298. doi: 10.1108/SEJ-05-2016-0014.
- Giannarakis, G., Konteos, G. and Sariannidis, N. (2014) 'Financial, governance and environmental determinants of corporate social responsible disclosure', *Management Decision*. Emerald Group Publishing Limited, 52(10), pp. 1928–1951. doi: 10.1108/MD-05-2014-0296.
- Gioia, D. A., Corley, K. G. and Hamilton, A. L. (2012) 'Seeking Qualitative Rigor in Inductive Research', *Organizational Research Methods*, 16(1), pp. 15–31. doi: 10.1177/1094428112452151.
- Glaeser, E. L. and Sacerdote, B. I. (2008) 'Education and Religion', *Journal of Human Capital*. The University of Chicago Press, 2(2), pp. 188–215. doi: 10.1086/590413.
- Global Entrepreneurship Monitor (2017) 'GEM 2016/2017–Global Report 2016/17. Global Entrepreneurship Monitor'. Global Entrepreneurship Research Association.
- Godfrey, P. C. and Hatch, N. W. (2007) 'Researching Corporate Social Responsibility: An Agenda for the 21st Century', *Journal of Business Ethics*, 70(1), pp. 87–98. doi: 10.1007/s10551-006-9080-y.
- Gonenc, H. and Scholtens, B. (2017) 'Environmental and Financial Performance of Fossil Fuel Firms: A Closer Inspection of their Interaction', *Ecological Economics*. Elsevier B.V., 132, pp. 307–328. doi: 10.1016/j.ecolecon.2016.10.004.

- Gough, K. V and Langevang, T. (2016) 'Introduction: Youth entrepreneurship in sub-Saharan Africa', in Gough, K. V and Langevang, T. (eds) *Young Entrepreneurs in Sub-Saharan Africa*. 1st edn. London: Routledge, p. 272.
- Green, J. and Thorogood, N. (2004) *Qualitative methods for health research*. Available at: https://books.google.com.br/books?hl=de&lr=&id=qg0tAgAAQBAJ&oi=fnd&pg=PP1&ots=JESXMTvOu7&sig=UdUNWmF_8Ms6fLn658fxsBJK45w#v=onepage&q=saturation&f=false (Accessed: 1 January 2019).
- Griffiths, M. D., Gundry, L. K. and Kickul, J. R. (2013) 'The socio-political, economic, and cultural determinants of social entrepreneurship activity', *Journal of Small Business and Enterprise Development*. Edited by C. Henry. Emerald Group Publishing Limited, 20(2), pp. 341–357. doi: 10.1108/14626001311326761.
- Griffiths, T. and Steyvers, M. (2004) 'Finding scientific topics', *Proceedings of the National Academy of Sciences*, 101(Suppl. 1), pp. 5228–5235. Available at: http://www.pnas.org/content/101/suppl_1/5228.full.pdf (Accessed: 29 June 2017).
- Grimmer, J. and Stewart, B. M. (2013) 'Text as Data: The Promise and Pitfalls of Automatic Content Analysis Methods for Political Texts', *Political Analysis*, 21(3), pp. 267–297. doi: 10.1093/pan/mps028.
- Grün, B. and Hornik, K. (2017) 'topicmodels'. Available at: <https://cran.r-project.org/web/packages/topicmodels/topicmodels.pdf> (Accessed: 4 July 2017).
- Guerreiro, J., Rita, P. and Trigueiros, D. (2016) 'A Text Mining-Based Review of Cause-Related Marketing Literature', *Journal of Business Ethics*, 139(1), pp. 111–128. doi: 10.1007/s10551-015-2622-4.
- Guest, G., Bunce, A. and Johnson, L. (2006) 'How Many Interviews Are Enough? An Experiment with Data Saturation and Variability and a good number of journals in the', *Field Methods*, 18(1), pp. 59–82. doi: 10.1177/1525822X05279903.
- Gunnarsson, K. and Josephson, M. (2011) 'Entrepreneurs' Self-reported Health, Social Life, and Strategies for Maintaining Good Health', *Journal of Occupational Health*, 53, pp. 205–213. Available at: https://www.jstage.jst.go.jp/article/joh/53/3/53_L10017/_pdf (Accessed: 19 August 2017).
- Gutberlet, J. et al. (2016) 'Socio-environmental entrepreneurship and the provision of critical services in informal settlements', *Environment and Urbanization*. SAGE Publications UK: London, England, 28(1), pp. 205–222. doi: 10.1177/0956247815623772.
- Hahn, T. (2015) 'Reciprocal Stakeholder Behavior', *Business & Society*, 54(1), pp. 9–51. doi: 10.1177/0007650312439029.
- Hale, A. and Wills, J. (2007) 'Women Working Worldwide: Transnational networks, corporate social responsibility and action research', *Global Networks*, 7(4), pp. 453–476. doi: 10.1111/j.1471-0374.2007.00179.x.
- Hall-Phillips, A. et al. (2016) 'I (heart) social ventures: Identification and social media engagement', *Journal of Business Research*, 69, pp. 484–491. doi: 10.1016/j.jbusres.2015.05.005.
- Hall, D. T. and Chandler, D. E. (2005) 'Psychological success: When the career is acalling', *Journal of Organizational Behavior*, 26(2), pp. 155–176. doi: 10.1002/job.301.
- Hannan, M. T. and Freeman, J. (1986) 'Where Do Organizational Forms Come From?', *The Eastern Sociological Society*, 1(1), pp. 50–72.
- Hansen, E. G. and Schaltegger, S. (2013) '100 per cent organic? A sustainable entrepreneurship perspective on the diffusion of organic clothing', *Corporate Governance*, 15(5), pp. 583–598. doi: 10.1108/CG-06-2013-0074.

- Harper-Anderson, E. (2018) 'Intersections of Partnership and Leadership in Entrepreneurial Ecosystems: Comparing Three U.S. Regions', *Economic Development Quarterly*, 32(2), pp. 119–134. doi: 10.1177/0891242418763727.
- Harris, J. D., Sapienza, H. J. and Bowie, N. E. (2009) 'Ethics and entrepreneurship', *Journal of Business Venturing*, 24, pp. 407–418. doi: 10.1016/j.jbusvent.2009.06.001.
- Haugh, H. (2005) 'A research agenda for social entrepreneurship', *Social Enterprise Journal*, 1(1), pp. 1–12.
- Hechavarría, D. M. (2015) 'The impact of culture on national prevalence rates of social and commercial entrepreneurship', *International Entrepreneurship Management Journal*. Available at: https://www.researchgate.net/profile/Diana_Hechavarria/publication/282859532_The_impact_of_culture_on_national_prevalence_rates_of_social_and_commercial_entrepreneurship/links/561fab1108ae70315b55092f/The-impact-of-culture-on-national-prevalence-rates-of- (Accessed: 9 February 2018).
- Hechavarría, D. M. (2016a) 'Mother nature's son?', *International Journal of Gender and Entrepreneurship*. Emerald Group Publishing Limited, 8(2), pp. 137–172. doi: 10.1108/IJGE-10-2015-0038.
- Hechavarría, D. M. (2016b) 'Mother nature's son? The impact of gender socialization and culture on environmental venturing', *International Journal of Gender and Entrepreneurship*, 8(2), pp. 137–172. doi: 10.1108/IJGE-10-2015-0038.
- Hechavarría, D. M. et al. (2017) 'Taking care of business: the impact of culture and gender on entrepreneurs' blended value creation goals', *Small Business Economics*, 48, pp. 225–257. doi: 10.1007/s11187-016-9747-4.
- Hechavarría, D. M. and Ingram, A. E. (2016) 'The entrepreneurial gender divide', *International Journal of Gender and Entrepreneurship*, 8(3), pp. 242–281. doi: 10.1108/IJGE-09-2014-0029.
- Helmig, B., Spraul, K. and Ingenhoff, D. (2016) 'Under Positive Pressure', *Business & Society*. SAGE Publications Sage CA: Los Angeles, CA, 55(2), pp. 151–187. doi: 10.1177/0007650313477841.
- Henry, Z. (2018) 'Women Entrepreneurship Report: Why This Midwestern City Has the Highest Concentration of Women Entrepreneurs in America', *Inc. Magazine*. Available at: <https://www.inc.com/magazine/201810/zoe-henry/destination-chicago-illinois-startup-hub.html>.
- Heras-Saizarbitoria, I., Molina-Azorín, J. F. and Dick, G. P. M. (2011) 'ISO 14001 certification and financial performance: selection-effect versus treatment-effect', *Journal of Cleaner Production*, 19, pp. 1–12. doi: 10.1016/j.jclepro.2010.09.002.
- Hofmann, A. (2014) 'Entrepreneur's Pledge – so soll Gründen sozialer werden', *Gründerszene*, 19 December. Available at: <https://www.gruenderszene.de/allgemein/entrepreneur-s-pledge-waldemar-zeiler> (Accessed: 1 November 2017).
- Hofstede, G. et al. (2004) 'Culture's role in entrepreneurship: self-employment out of dissatisfaction', in Brown, T. E. and Ulijn, J. (eds) *Innovation, Entrepreneurship and Culture: The Interaction between Thecnology, Progress and Economic Growth*. Cheltenham, UK: Edward Elgar. doi: 10.4337/9781845420550.00014.
- Hoogendoorn, B. (2016) 'The Prevalence and Determinants of Social Entrepreneurship at the Macro Level', *Journal of Small Business Management*, 54(S1), pp. 278–296. doi: 10.1111/jsbm.12301.
- Hoogendoorn, B., Pennings, E. and Thurik, R. (2010) *What Do We Know about Social Entrepreneurship? An Analysis of Empirical Research*, *International Review of*

- Entrepreneurship*. Available at: [http://www.seipa.edu.pl/s/p/artykuly/92/928/Social Ent What do we know 2010 GOOD.pdf](http://www.seipa.edu.pl/s/p/artykuly/92/928/Social%20Ent%20What%20do%20we%20know%20GOOD.pdf) (Accessed: 12 November 2018).
- De Hoogh, A. H. B. *et al.* (2005) 'Leader motives, charismatic leadership, and subordinates' work attitude in the profit and voluntary sector', *Leadership Quarterly*, 16(1), pp. 17–38. doi: 10.1016/j.leaqua.2004.10.001.
- Hörisch, J. (2015) 'Crowdfunding for environmental ventures: an empirical analysis of the influence of environmental orientation on the success of crowdfunding initiatives', *Journal of Cleaner Production*, 107, pp. 636–645. doi: 10.1016/j.jclepro.2015.05.046.
- Hörisch, J., Kollat, J. and Brieger, S. A. (2017) 'What influences environmental entrepreneurship? A multilevel analysis of the determinants of entrepreneurs' environmental orientation', *Small Business Economics*. Springer US, 48(1), pp. 47–69. doi: 10.1007/s11187-016-9765-2.
- van Huijstee, M. and Glasbergen, P. (2008) 'The practice of stakeholder dialogue between multinationals and NGOs', *Corporate Social Responsibility and Environmental Management*. John Wiley & Sons, Ltd., 15(5), pp. 298–310. doi: 10.1002/csr.171.
- Hur, W.-M., Kim, H. and Kim, H. K. (2018) 'Does customer engagement in corporate social responsibility initiatives lead to customer citizenship behaviour? The mediating roles of customer-company identification and affective commitment', *Corporate Social Responsibility and Environmental Management*, (November 2017), pp. 1–12. doi: 10.1002/csr.1636.
- Hur, W.-M., Kim, H. and Woo, J. (2014) 'How CSR Leads to Corporate Brand Equity: Mediating Mechanisms of Corporate Brand Credibility and Reputation', *Journal of Business Ethics*. Springer Netherlands, 125(1), pp. 75–86. doi: 10.1007/s10551-013-1910-0.
- Ide, T. (2015) 'Why do conflicts over scarce renewable resources turn violent? A qualitative comparative analysis', *Global Environmental Change*, 33, pp. 61–70. doi: 10.1016/j.gloenvcha.2015.04.008.
- Isenberg, D. (2011) *The Entrepreneurship Ecosystem Strategy as a New Paradigm for Economic Policy* : Daniel Isenberg , Ph . D . Professor of Management Practice , Babson Global Executive Director , the Babson Entrepreneurship Ecosystem Project, The Babson Entrepreneurship Ecosystem Project. Babson Park: MA. doi: 10.1093/rfs/hhr098.
- Jackson, L. A., Singh, D. and Parsa, H. G. (2015) 'Tourism firms' environmental rankings and financial performance: a multidimensional scaling approach', *Journal of Sustainable Tourism*, 23(10), pp. 1426–1444. doi: 10.1080/09669582.2015.1044534.
- Johnson, B. R. (1990) 'Toward a Multidimensional Model of Entrepreneurship: The Case of Achievement Motivation and the Entrepreneur', *Entrepreneurship Theory and Practice*, 14(3), pp. 39–54. doi: 10.1177/104225879001400306.
- Jose, A. and Lee, S.-M. (2007) 'Environmental Reporting of Global Corporations: A Content Analysis based on Website Disclosures', *Journal of Business Ethics*, 72, pp. 307–321. doi: 10.1007/s10551-006-9172-8.
- Jušcius, V. and Snieška, V. (2008) 'Influence of Corporate Social Responsibility on Competitive Abilities of Corporations', *Engineering Economics*, 3(58). Available at: <http://www.inzeko.ktu.lt/index.php/EE/article/viewFile/11548/6229> (Accessed: 14 August 2017).
- Karp, D. G. (1996) 'Values and their Effect on Pro-Environmental Behavior', *Environment and Behavior*, 28(1), pp. 111–133. doi: 10.1177/0013916596281006.
- Kim, H., Lee, S. H. and Yang, K. (2015) 'The heuristic-systemic model of sustainability stewardship: facilitating sustainability values, beliefs and practices with corporate social responsibility

- drives and eco-labels/indices', *International Journal of Consumer Studies*, 39(3), pp. 249–260. doi: 10.1111/ijcs.12173.
- Kimmitt, J., Scarlata, M. and Dimov, D. (2016) 'An empirical investigation of the interplay between microcredit, institutional context, and entrepreneurial capabilities', *Venture Capital*. Routledge, 18(3), pp. 257–276. doi: 10.1080/13691066.2016.1191127.
- Kirchherr, J. et al. (2017) "'Learning it the Hard Way": Social safeguards norms in Chinese-led dam projects in Myanmar, Laos and Cambodia', *Energy Policy*, 102, pp. 529–539. doi: 10.1016/j.enpol.2016.12.058.
- Kirchherr, J. and Charles, K. (2018) 'Enhancing the sample diversity of snowball samples: Recommendations from a research project on anti-dam movements in Southeast Asia'. doi: 10.1371/journal.pone.0201710.
- Kohler, T. (2016) 'Corporate accelerators: Building bridges between corporations and startups', *Business Horizons*. Elsevier Ltd, 59(3), pp. 347–357. doi: 10.1016/j.bushor.2016.01.008.
- Kollmuss, A. and Agyeman, J. (2002) 'Mind the Gap: Why do people act environmentally and what are the barriers to pro-environmental behavior?', *Environmental Education Research*, 8(3), pp. 239–260. doi: 10.1080/13504620220145401.
- Kostova, T. (1997) 'Country Institutional Profiles: Concept and Measurement.', in *Academy of Management Proceedings*. Briarcliff Manor, NY 10510: Academy of Management, pp. 180–184. doi: 10.5465/ambpp.1997.4981338.
- KPMG and United Nations Global Compact (no date) *SDG Industry Matrix | UN Global Compact*. Available at: <https://www.unglobalcompact.org/library/3111> (Accessed: 6 May 2019).
- Krause, J. (2015) 'The potential of an environmentally friendly business strategy - Research from the Czech Republic', *International Journal of Engineering Business Management*, 7(1), pp. 1–6. doi: 10.5772/60064.
- Krestel, R., Fankhauser, P. and Nejd, W. (2009) 'Latent Dirichlet Allocation for Tag Recommendation', in *Proceedings of the third ACM conference on Recommender systems*. ACM,. doi: 10.1145/1639714.1639726.
- Krištofik, P., Lament, M. and Musa, H. (2016) 'The Reporting of Non-Financial Information and the Rationale for its Standardisation', *Business Administration and Management*, 19(2), pp. 157–175. doi: 10.15240/tul/001/2016-2-011.
- Kuratko, D. F., Hornsby, J. S. and Naffziger, D. W. (1997) 'An examination of owner's goals in sustaining entrepreneurship', *Journal of Small Business Management*, 35(1), p. 24. Available at: <http://search.proquest.com/openview/a6cf211c0fcb53e8a16b9732d4ed1665/1?pq-origsite=gscholar&cbl=49244> (Accessed: 23 July 2019).
- Laeis, G. C. M. and Lemke, S. (2016) 'Social entrepreneurship in tourism: applying sustainable livelihoods approaches', *International Journal of Contemporary Hospitality Management*. Emerald Group Publishing Limited, 28(6), pp. 1076–1093. doi: 10.1108/IJCHM-05-2014-0235.
- Lam, P. and Law, A. (2016) 'Crowdfunding for renewable and sustainable energy projects: An exploratory case study approach', *Renewable and Sustainable Energy Reviews*, 60, pp. 11–20. doi: 10.1016/j.rser.2016.01.046.
- Langevang, T., Namatovu, R. and Dawa, S. (2012) 'Beyond necessity and opportunity entrepreneurship: motivations and aspirations of young entrepreneurs in Uganda', *International Development Planning Review*, 34(4), pp. 439–460. doi: 10.3828/idpr.2012.26.
- Laure Humbert, A. and Drew, E. (2010) 'Gender, entrepreneurship and motivational factors in an Irish context', *International Journal of Gender and Entrepreneurship*, 2(2), pp. 173–196. doi: 10.1108/17566261011051026.

- Lee, S. Y., Florida, R. and Acs, Z. J. (2004) 'Regional Studies Creativity and Entrepreneurship: A Regional Analysis of New Firm Formation', *Regional Studies*, 38(8), pp. 879–891. doi: 10.1080/0034340042000280910.
- Legewie, N. (2013) 'An Introduction to Applied Data Analysis with Qualitative Comparative Analysis (QCA)', *Forum: Qualitative Social Research*. Deutsche Forschungsgemeinschaft, 14(3), p. Art. 15. Available at: <http://www.qualitative-research.net/index.php/fqs/article/view/1961/3594> (Accessed: 27 March 2018).
- Leslie, L. M., Snyder, M. and Glomb, T. M. (2013) 'Who gives? Multilevel effects of gender and ethnicity on workplace charitable giving.', *Journal of Applied Psychology*, 98(1), pp. 49–62. doi: 10.1037/a0029943.
- Li, D. et al. (2017) 'Corporate environmental performance, environmental information disclosure, and financial performance: Evidence from China', *Human and Ecological Risk Assessment: An International Journal*, 23(2), pp. 323–339. doi: 10.1080/10807039.2016.1247256.
- Li, W. and McCallum, A. (2006) 'Pachinko allocation: DAG-structured mixture models of topic correlations', in *Proc. Int'l. Conf. on Machine Learning*, pp. 577–584. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.86.8142&rep=rep1&type=pdf> (Accessed: 31 January 2018).
- Lijphart, A. (1971) 'Comparative politics and comparative method', *American Political Science Review*, 65, pp. 682–693.
- van der Linden, S. (2018) 'Warm glow is associated with low- but not high-cost sustainable behaviour', *Nature Sustainability*, 1(1), pp. 28–30. doi: 10.1038/s41893-017-0001-0.
- Lock, I. and Seele, P. (2016) 'The credibility of CSR (corporate social responsibility) reports in Europe. Evidence from a quantitative content analysis in 11 countries', *Journal of Cleaner Production*. Elsevier, 122, pp. 186–200. doi: 10.1016/j.jclepro.2016.02.060.
- Lockett, A., Moon, J. and Visser, W. (2006) 'Corporate Social Responsibility in Management Research: Focus, Nature, Salience and Sources of Influence*', *Journal of Management Studies*, 43(1), pp. 115–136.
- Loiseau, E. et al. (2016) 'Green economy and related concepts: An overview', *Journal of Cleaner Production*, 139, pp. 361–371. doi: 10.1016/j.jclepro.2016.08.024.
- Longenecker, J. G., McKinney, J. A. and Moore, C. W. (2004) 'Religious Intensity, Evangelical Christianity, and Business Ethics: An Empirical Study', *Journal of Business Ethics*, 55, pp. 373–386. Available at: <https://link.springer.com/content/pdf/10.1007/s10551-004-0990-2.pdf> (Accessed: 26 March 2018).
- Lukeš, M. and Stephan, U. (2012) 'Nonprofit leaders and for-profit entrepreneurs: Similar people with different motivation', *Ceskoslovenska Psychologie*, 56(1), pp. 41–55.
- Lyon, T. P. and Montgomery, A. W. (2015) 'The Means and End of Greenwash', *Organization & Environment*, 28(2), pp. 223–249. doi: 10.1177/1086026615575332.
- Mahoney, L. S. et al. (2013) 'A research note on standalone corporate social responsibility reports: Signaling or greenwashing?', *Critical Perspectives on Accounting*. Academic Press, 24(4–5), pp. 350–359. doi: 10.1016/j.cpa.2012.09.008.
- Mair, J. and Marti, I. (2009) 'Entrepreneurship in an around institutional voids: A case study from Bangladesh', *Journal of Business Venturing*, 24, pp. 419–435. doi: 10.1016/j.jbusvent.2008.04.006.
- Mair, J. and Martí, I. (2006) 'Social entrepreneurship research: A source of explanation, prediction, and delight', *Journal of Worl Business*. Elsevier, 41(1), pp. 36–44. doi: 10.1016/j.jwb.2005.09.002.

- Mair, J., Robinson, J. and Hockerts, K. (2006) *Social Entrepreneurship*. Basingstoke: Palgrave Macmillan. Available at: <http://jeffreyrobinsonphd.com/wp-content/uploads/2017/06/Social-Entrepreneurship-Palgrave-Macmillan-1.pdf> (Accessed: 20 June 2018).
- Malecki, E. (2018) 'Entrepreneurship and entrepreneurial ecosystems', *Geography Compass*, 12(e12359). doi: 10.1111/gec3.12359.
- Manika, D. et al. (2015) 'The Impact of Individual Attitudinal and Organisational Variables on Workplace Environmentally Friendly Behaviours', *Journal of Business Ethics*, 126(4), pp. 663–684. doi: 10.1007/s10551-013-1978-6.
- Marcus, A., Malen, J. and Ellis, S. (2013) 'The Promise and Pitfalls of Venture Capital as an Asset Class for Clean Energy Investment: Research Questions for Organization and Natural Environment Scholars', *Organization & Environment*, 26, pp. 31–60. doi: 10.1177/1086026612474956.
- Marques, J. C. (2016) 'Private Regulatory Fragmentation as Public Policy: Governing Canada's Mining Industry', *Journal of Business Ethics*. Springer Netherlands, 135(4), pp. 617–630. doi: 10.1007/s10551-014-2377-3.
- van Marrewijk, M. (2003) 'Concepts and Definitions of CSR and Corporate Sustainability: Between Agency and Communion', *Journal of Business Ethics*, 44, pp. 95–105. doi: 10.1023/A:1023331212247.
- Martin, R. L. and Osberg, S. (2007) 'Social Entrepreneurship: The Case for Definition', *Stanford Social Innovation Review*, Spring, pp. 29–39. Available at: http://www.ssireview.org/articles/entry/social_entrepreneurship_the_case_for_definition/.
- Maslow, A. H. (1943) 'A theory of human motivation.', *Psychological Review*, 50(4), pp. 370–396. doi: 10.1037/h0054346.
- Mason, C. and Brown, R. (2014) *Entrepreneurial Ecosystems and Growth Oriented Entrepreneurship, Entrepreneurial Ecosystems and Growth of Women's Entrepreneurship*. doi: 10.4337/9781785364624.
- Matsunaga, Y., Naoto, Y. and Okuyama, N. (2010) 'What Determines the Size of the Nonprofit Sector?: A Cross-Country Analysis of the Government Failure Theory', *Voluntas*, 21, pp. 180–201. doi: 10.1007/s11266-010-9125-9.
- McAdam, M. (2013) *Female Entrepreneurship*. Oxford: Routledge. Available at: <https://books.google.de/books?id=oaZMYcGWcCIC&pg=PA103&lpg=PA103&dq=McAdam+and+Treanor,+2012&source=bl&ots=w7XxEyUTnA&sig=ACfU3U2apPTm9sMkHvudgJYhV1WBawJpNA&hl=de&sa=X&ved=2ahUKEwjRvufbuKLhAhXB-KQKHdlzDNUQ6AEwAHoECAYQAQ#v=onepage&q=McAdam%2520and%2520Treanor%25> (Accessed: 27 March 2019).
- McClelland, D. C. (1961) *The achieving society*. 1st edn. Available at: <https://books.google.fi/books?id=RI2wZw9AFE4C&printsec=frontcover&hl=de#v=onepage&q&f=false> (Accessed: 31 July 2019).
- McPhail, K. and Adams, C. A. (2016) 'Corporate respect for human rights: meaning, scope, and the shifting order of discourse', *Accounting, Auditing & Accountability Journal*. Edited by K. McPhail and John Ferguson. Emerald Group Publishing Limited, 29(4), pp. 650–678. doi: 10.1108/AAAJ-09-2015-2241.
- McWilliams, A. and Siegel, D. S. (2011) 'Creating and Capturing Value: Strategic Corporate Social Responsibility, Resource-Based Theory, and Sustainable Competitive Advantage', *Journal of Management*, 37(5), pp. 1480–1495. doi: 10.1177/0149206310385696.
- Menegus, B. (2016) *Lyft Thinks It's 'Exciting' That a Driver Was Working While Giving Birth*, *Gizmodo*.

- Menon, Ajay and Menon, Anil (1997) 'Enviropreneurial Marketing Strategy: The Emergence of Corporate Environmentalism as Market Strategy', *Journal of Marketing*, 61(1), pp. 51–67. Available at: <http://www.jstor.org/stable/1252189> (Accessed: 27 June 2017).
- Meyskens, M. and Bird, L. (2015) 'Crowdfunding and value creation', *Entrepreneurship Research Journal*, 5(2), pp. 155–166. doi: 10.1515/erj-2015-0007.
- Michelon, G., Pilonato, S. and Ricceri, F. (2015) 'CSR reporting practices and the quality of disclosure: An empirical analysis', *Critical Perspectives on Accounting*. Academic Press, 33, pp. 59–78. doi: 10.1016/j.cpa.2014.10.003.
- Miller, R. L. and Brewer, J. D. (2003) *The A-Z of social research : a dictionary of key social science research concepts*. Thousand Oaks, United States: SAGE Publications. Available at: https://books.google.com.br/books?hl=de&lr=&id=q8-QD-y2k20C&oi=fnd&pg=PP2&ots=Jg_64olu_1&sig=pb_m-UaUkyYZdxcEdJWLcxcbzLc&redir_esc=y#v=onepage&q=snowball&f=false (Accessed: 1 January 2019).
- Miller, T. et al. (2012) 'Venturing for others with heart and head: How compassion encourages social entrepreneurship.', *Academy of Management Review*, 37(4), pp. 778–788. doi: 10.5465/amr.2010.0456.
- Morgan, D. L. (1993) 'Qualitative Content Analysis: A Guide to Paths not Taken', *Qualitative Health Research*, 3(1), pp. 112–121. doi: 10.1177/104973239300300107.
- Morgenpost (2017) 'Bundestagswahl 2017 in Berlin – Ergebnis-Karte aller Wahllokale'. Available at: <https://interaktiv.morgenpost.de/berlinwahlkarte2017/> (Accessed: 19 November 2018).
- Muhammad, N. et al. (2015) 'The relationship between environmental performance and financial performance in periods of growth and contraction: evidence from Australian publicly listed companies', *Journal of Cleaner Production*, 102, pp. 324–332. doi: 10.1016/j.jclepro.2015.04.039.
- Muhammad, N., Ullah, F. and Warren, L. (2016) 'An institutional perspective on entrepreneurship in a conflict environment', *International Journal of Entrepreneurial Behavior & Research*. Emerald Group Publishing Limited, 22(5), pp. 698–717. doi: 10.1108/IJEBR-04-2016-0112.
- Müller, M. U. (2018) 'Ada Health: App statt Arzt', *Der Spiegel*, 28 September.
- Murguia, J. M. and Lence, S. H. (2015) *Investors' Reaction to Environmental Performance: A Global Perspective of the Newsweek's 'Green Rankings'*, *Environmental and Resource Economics*. doi: 10.1007/s10640-014-9781-0.
- Murzintcev, N. (2016) 'ldatuning'. Available at: <https://github.com/nikita-moor/ldatuning> (Accessed: 4 July 2017).
- De Neve, G. (2014) 'Fordism, flexible specialization and CSR: How Indian garment workers critique neoliberal labour regimes', *Ethnography*, 15(2), pp. 184–207. doi: 10.1177/1466138112463801.
- Newth, J. (2016) 'Social Enterprise Innovation in Context: Stakeholder Influence through Contestation', *Entrepreneurship Research Journal*. De Gruyter, 6(4), pp. 369–399. doi: 10.1515/erj-2014-0029.
- Nicholls, A. (2006) *Social Entrepreneurship: New Models of sustainable social change*. Edited by A. Nicholls. Oxford: Oxford University Press.
- Nilsson, M., Griggs, D. and Visbeck, M. (2016) 'Map the interactions between sustainable development goals: Mans Nilsson, Dave Griggs and Martin Visbeck present a simple way of rating relationships between the targets to highlight priorities for integrated policy', *Nature*. Nature Publishing Group, 534(7607), pp. 320–323.

- Nissan, E. and Castañ, M.-S. (2012) 'Drivers of non-profit activity: a cross-country analysis', *Small Business Economics*, 38, pp. 303–320. doi: 10.1007/s11187-010-9276-5.
- North, D. C. (1990) *Institutions, Institutional Change and Economic Performance, Institutions, Institutional Change and Economic Performance*. Cambridge University Press. doi: 10.1017/cbo9780511808678.
- O'Reilly, M. (2011) *New Grants for C.A.R.E, Residents Reports and Budget – Indigo Trust, The Indigo Trust*. Available at: <https://indigotrust.org.uk/2011/10/13/new-grants-for-c-a-r-e-residents-reports-and-budget/> (Accessed: 27 November 2018).
- O'Reilly, M. and Parker, N. (2012) "'Unsatisfactory Saturation": a critical exploration of the notion of saturated sample sizes in qualitative research', *Qualitative Research*, 13(2), pp. 190–197. doi: 10.1177/1468794112446106.
- Office for ICT Innovation and Entrepreneurship (2017) *About OIIE*. Available at: <http://ictinnovation.gov.ng/about-oiie/> (Accessed: 11 December 2018).
- Ooms, J. and Sites, D. (2017) 'Google's Compact Language Detector 2 [R package cld2 version 1.1]'. Comprehensive R Archive Network (CRAN). Available at: <https://cran.r-project.org/web/packages/cld2/index.html> (Accessed: 27 December 2017).
- Ostrander, S. A. (2007) 'The Growth of Donor Control: Revisiting the Social Relations of Philanthropy', *Nonprofit and Voluntary Sector Quarterly*. Sage PublicationsSage CA: Los Angeles, CA, 36(2), pp. 356–372. doi: 10.1177/0899764007300386.
- Panwar, R. et al. (2016) 'The effect of small firms' competitive strategies on their community and environmental engagement', *Journal of Cleaner Production*, 129, pp. 578–585. doi: 10.1016/j.jclepro.2016.03.141.
- Park, J. et al. (2016) 'Loyalty to social ventures in social media: The role of social cause involvement, identification, and commitment', *Journal of Nonprofit & Public Sector Marketing*. Taylor & Francis, 28(3), pp. 185–208. doi: 10.1080/10495142.2015.1015378.
- Parsons, R., Lacey, J. and Moffat, K. (2014) 'Maintaining legitimacy of a contested practice: How the minerals industry understands its "social licence to operate"', *Resources Policy*, 41, pp. 83–90. doi: 10.1016/j.resourpol.2014.04.002.
- Pegg, S. and Zabbey, N. (2013) 'Oil and water: the Bodo spills and the destruction of traditional livelihood structures in the Niger Delta', *Community Development Journal*. Oxford University Press, 48(3), pp. 391–405. doi: 10.1093/cdj/bst021.
- Peredo, A. M. and McLean, M. (2006) 'Social entrepreneurship: A critical review of the concept', *Journal of World Business*, 41(1), pp. 56–65.
- Perry, P. and Towers, N. (2013) 'Conceptual framework development', *International Journal of Physical Distribution & Logistics Management*. Edited by C. W. Autry. Emerald Group Publishing Limited, 43(5/6), pp. 478–501. doi: 10.1108/IJPDLM-03-2012-0107.
- Perry, P., Wood, S. and Fernie, J. (2015) 'Corporate Social Responsibility in Garment Sourcing Networks: Factory Management Perspectives on Ethical Trade in Sri Lanka', *Journal of Business Ethics*. Springer Netherlands, 130(3), pp. 737–752. doi: 10.1007/s10551-014-2252-2.
- Pew Research Center (2016) *Religion and Education Around the World*. Available at: <https://www.pewforum.org/2016/12/13/religion-and-education-around-the-world/> (Accessed: 2 April 2019).
- Piepenbrink, A. and Nurmammadov, E. (2015) 'Topics in the literature of transition economies and emerging markets', *Scientometrics*, 102, pp. 2107–2130. doi: 10.1007/s11192-014-1513-2.

- Pitelis, C. (2012) 'Clusters, entrepreneurial ecosystem co-creation, and appropriability: A conceptual framework', *Industrial and Corporate Change*, 21(6), pp. 1359–1388. doi: 10.1093/icc/dts008.
- Prieto-Carrón, M. (2008) 'Women Workers, Industrialization, Global Supply Chains and Corporate Codes of Conduct', *Journal of Business Ethics*, 83, pp. 5–17. doi: 10.1007/s10551-007-9650-7.
- PWC (2016) *19th Annual Global CEO Survey: Redefining business success in a changing world*. Available at: <http://www.pwc.com/gx/en/ceo-survey/2016/landing-page/pwc-19th-annual-global-ceo-survey.pdf> (Accessed: 17 August 2017).
- Qiu, Y., Shaikat, A. and Tharyan, R. (2016) 'Environmental and social disclosures: Link with corporate financial performance', *The British Accounting Review*. Academic Press, 48(1), pp. 102–116. doi: 10.1016/j.BAR.2014.10.007.
- R Core Team (2017) 'R: A Language and Environment for Statistical Computing'. Vienna, Austria: R Foundation for Statistical Computing. Available at: <http://www.r-project.org/> (Accessed: 30 August 2017).
- Ragin, C. (2009) *Redesigning Social Inquiry: Fuzzy Sets and Beyond*. Chicago: University of Chicago Press. Available at: https://smile.amazon.de/Redesigning-Social-Inquiry-Fuzzy-Beyond-ebook/dp/B002KW4JPS/ref=tmm_kin_swatch_0?_encoding=UTF8&qid=&sr= (Accessed: 27 March 2018).
- Rahdari, A., Sepasi, S. and Moradi, M. (2016) 'Achieving sustainability through Schumpeterian social entrepreneurship: The role of social enterprises', *Journal of Cleaner Production*, 137, pp. 347–360. doi: 10.1016/j.jclepro.2016.06.159.
- Raineri, N. and Paillé, P. (2016) 'Linking Corporate Policy and Supervisory Support with Environmental Citizenship Behaviors: The Role of Employee Environmental Beliefs and Commitment', *Journal of Business Ethics*, 137(1), pp. 129–148. doi: 10.1007/s10551-015-2548-x.
- Rao, H. (1994) 'the Social Construction of Reputation : Certification and Contests , Legitimation , the Survival of Organizations in the American Automobile Industry : 1895-1912', *Strategic Management Journal*, 15, pp. 29–44.
- Remneland-Wikhamn, B. (2011) 'Path dependence as a barrier for “soft” and “open” innovation', *International Journal of Business Innovation and Research*, 5(6), pp. 714–730. doi: 10.1504/IJBIR.2011.043207.
- van Rijnsoever, F. J. (2020) 'Meeting, mating, and intermediating: How incubators can overcome weak network problems in entrepreneurial ecosystems', in *Research Policy*. Elsevier B.V. doi: 10.1016/j.respol.2019.103884.
- Van Rijnsoever, F. J. (2017) '(I Can ’ t Get No) Saturation : A simulation and guidelines for sample sizes in qualitative research', *PLOS One*, 12(7), pp. 1–17. doi: 10.1371/journal.pone.0181689.
- Ritsilä, J. (1999) 'Regional differences in environments for enterprises', *Entrepreneurship & Regional Development*, 11(3), pp. 187–202. doi: 10.1080/089856299283164.
- Robinson, J. (2006) 'Navigating Social and Institutional Barriers to Markets: How Social Entrepreneurs Identify and Evaluate Opportunities', in Mair, J., Robinson, J., and Hockerts, K. (eds) *Social Entrepreneurship*. Houndmills, Basingstoke, Hampshire: Palgrave Macmillan, pp. 95–120.
- De Roeck, K. et al. (2014) 'Understanding employees' responses to corporate social responsibility: mediating roles of overall justice and organisational identification', *The International Journal of Human Resource Management*, 25(1), pp. 91–112. doi: 10.1080/09585192.2013.781528.
- Rogers, R. (2011) 'Why Philanthro-Policymaking Matters', *Society*. Springer-Verlag, 48(5), pp. 376–381. doi: 10.1007/s12115-011-9456-1.

- da Rosa, F. S. *et al.* (2015) 'Environmental impact management of Brazilian companies: analyzing factors that influence disclosure of waste, emissions, effluents, and other impacts', *Journal of Cleaner Production*. Elsevier, 96, pp. 148–160. doi: 10.1016/J.JCLEPRO.2013.10.035.
- Ruskin, J., Seymour, R. G. and Webster, C. M. (2016) 'Why Create Value for Others? An Exploration of Social Entrepreneurial Motives', *Journal of Small Business Management*. John Wiley & Sons, Ltd (10.1111), 54(4), pp. 1015–1037. doi: 10.1111/jsbm.12229.
- Saebi, T., Foss, N. J. and Linder, S. (2019) 'Social Entrepreneurship Research: Past Achievements and Future Promises', *Journal of Management*. SAGE PublicationsSage CA: Los Angeles, CA, 45(1), pp. 70–95. doi: 10.1177/0149206318793196.
- Salton, G. and McGill, M. (1983) *Introduction to Modern Information Retrieval*. McGraw-Hill.
- San, O. T. *et al.* (2015) 'Influence of Environmental Disclosures on the Financial Performance of Public Listed Malaysian Manufacturing Companies', *Asia-Pacific Management Accounting Journal*, 10(1), pp. 107–136.
- Santos, F. M. (2012) 'A Positive Theory of Social Entrepreneurship', *Journal of Business Ethics*, 111(3), pp. 335–351. doi: 10.1007/s10551-012-1413-4.
- Saxenian, A. (1983) 'The urban contradictions of Silicon Valley: regional growth and the restructuring of the semiconductor industry', *International Journal of Urban and Regional Research*. Wiley/Blackwell (10.1111), 7(2), pp. 237–262. doi: 10.1111/j.1468-2427.1983.tb00592.x.
- Scarlata, M., Zacharakis, A. and Walske, J. (2016) 'The effect of founder experience on the performance of philanthropic venture capital firms', *International Small Business Journal*, 34(5), pp. 618–636. doi: 10.1177/0266242615574588.
- Schaltegger, S. and Wagner, M. (2011) 'Sustainable entrepreneurship and sustainability innovation: Categories and interactions', *Business Strategy and the Environment*, 20(4), pp. 222–237. doi: 10.1002/bse.682.
- Scherer, A. G., Baumann-Pauly, D. and Schneider, A. (2013) 'Democratizing Corporate Governance', *Business & Society*, 52(3), pp. 473–514. doi: 10.1177/0007650312446931.
- Schiek, D. (2014) 'Das schriftliche Interview in der qualitativen Sozialforschung The Written Interview in Qualitative Social Research', *Zeitschrift für Soziologie*, 43(5), pp. 379–395. Available at: <https://www.degruyter.com/downloadpdf/j/zfsoz.2014.43.issue-5/zfsoz-2014-0505/zfsoz-2014-0505.pdf> (Accessed: 10 January 2019).
- Schmid, H. (1995) 'TreeTagger'. Available at: <http://www.cis.uni-muenchen.de/~schmid/tools/TreeTagger/> (Accessed: 4 July 2017).
- Schneider, C. and Wagemann, C. (2012) *Set-Theoretic Methods for the Social Sciences (Strategies for Social Inquiry)*. 1st edn. Cambridge: Cambridge University Press. Available at: https://www.amazon.com/Set-Theoretic-Methods-Sciences-Strategies-Inquiry-ebook/dp/B009ZRNS76/ref=tmm_kin_swatch_0?_encoding=UTF8&qid=&sr= (Accessed: 27 March 2018).
- Schumpeter, J. A. (1934) *Capitalism, Socialism and Democracy*. New York: Harper and Row. Available at: <http://www.u.arizona.edu/~zshipley/pol437/docs/Schumpeter.pdf> (Accessed: 31 July 2019).
- Scott, W. R. (2008) 'Three pillars of institutions', in *Institutions and organizations: ideas and interests*, pp. 55–85. Available at: https://us.sagepub.com/sites/default/files/upm-binaries/56769_Chapter_3_Scott_Institutions_and_Organizations_4e.pdf (Accessed: 19 August 2019).
- Seelos, C. and Mair, J. (2004) *Social Entrepreneurship. The Contribution of Individual Entrepreneurs to Sustainable Development*, IESE Business School Working Paper. doi: 10.2139/ssrn.701181.

- Sethi, S. P. and Rovenpor, J. L. (2016) 'The Role of NGOs in Ameliorating Sweatshop-like Conditions in the Global Supply Chain: The Case of Fair Labor Association (FLA), and Social Accountability International (SAI)', *Business and Society Review*, 121(1), pp. 5–36. doi: 10.1111/basr.12079.
- Shailer, G. (2004) *An Introduction to Corporate Governance in Australia*. Sydney, Australia: Pearson Education.
- Shapira, R. (2012) 'Corporate Philanthropy as Signaling and Co-optation', *Fordham Law Review*, 80(5), pp. 1889–1939.
- Sharir, M. and Lerner, M. (2006) 'Gauging the success of social ventures initiated by individual social entrepreneurs', *Journal of World Business*, 41, pp. 6–20. doi: 10.1016/j.jwb.2005.09.004.
- Shaw, E. and Carter, S. (2007) 'Social entrepreneurship: Theoretical antecedents and empirical analysis of entrepreneurial processes and outcomes', *Journal of Small Business and Enterprise Development*, 14(3 (Social Responsibility Journal)), pp. 418–434. doi: 10.1108/14626000710773529.
- Shnayder, L., Van Rijnsoever, F. J. and Hekkert, M. P. (2015) 'Putting Your Money Where Your Mouth Is: Why Sustainability Reporting Based on the Triple Bottom Line Can Be Misleading', *PLOS One*, 10(3). doi: 10.1371/journal.pone.0119036.
- SocEntCity (2017) *A Deeper Dive - Social Enterprise Ecosystems in the U.S.* SocEntCity.org. Available at: [https://socentcity.org/sites/default/files/report/Social Enterprise Ecosystems - Year 2.pdf](https://socentcity.org/sites/default/files/report/Social%20Enterprise%20Ecosystems%20-%20Year%202.pdf) (Accessed: 10 April 2018).
- Spigel, B. (2017) 'The Relational Organization of Entrepreneurial Ecosystems', *Entrepreneurship Theory and Practice*, 44(1), pp. 49–72. doi: 10.1111/etap.12167.
- Stam, E. (2014) *The Dutch entrepreneurial ecosystem*, *Birch Research*. doi: <http://dx.doi.org/10.2139/ssrn.2473475>.
- Stam, E. (2015) 'Entrepreneurial Ecosystems and Regional Policy: A Sympathetic Critique', *European Planning Studies*, 23(9), pp. 1759–1769. doi: 10.1080/09654313.2015.1061484.
- Stam, E. and Spigel, B. (2018) 'Entrepreneurial Ecosystems', in: *Blackburn, R., De Clercq, D., & Heinonen, J. (eds) The SAGE Handbook of Small Business and Entrepreneurship*. London: SAGE. pp.407–422.
- Startup Genome Project (2017) *Global Startup Ecosystem Report 2017, Startup Genome Report*. Available at: <http://d1i53wesras4r4.cloudfront.net/reports/GlobalStartupEcosystemReport2017.pdf%5Cnhttps://startupgenome.com/>.
- Startup Genome Project (2019) *Global Startup Ecosystem Report 2019, Startup Genome Report*. doi: 10.1096/fj.00.
- Steinz, H. J., Van Rijnsoever, F. J. and Nauta, F. (2016) 'How to Green the red Dragon: A Start-ups' Little Helper for Sustainable Development in China', *Business Strategy and the Environment*. John Wiley & Sons, Ltd, 25(8), pp. 593–608. doi: 10.1002/bse.1899.
- Stephan, U. and Drencheva, A. (2017) 'The person in social entrepreneurship: A systematic review of research on the social entrepreneurial personality', in *The Wiley Handbook of Entrepreneurship*, pp. 205–230.
- Stuebs, M. and Sun, L. (2010) 'Business Reputation and Labor Efficiency, Productivity, and Cost', *Journal of Business Ethics*, 96(2), pp. 265–283. doi: 10.1007/s10551-010-0464-7.
- Sud, M., Vansandt, C. V. and Baugous, A. M. (2009) 'Social entrepreneurship: The role of institutions', *Journal of Business Ethics*, 85(SUPPL. 1), pp. 201–216. doi: 10.1007/s10551-008-9939-1.
- Sugimoto, C. R. et al. (2011) 'The shifting sands of disciplinary development: Analyzing North American Library and Information Science dissertations using latent Dirichlet allocation',

- Journal of the American Society for Information Science and Technology*, 62(1), pp. 185–204. doi: 10.1002/asi.21435.
- Sun, L. and Stuebs, M. (2013) 'Corporate Social Responsibility and Firm Productivity: Evidence from the Chemical Industry in the United States', *Journal of Business Ethics*, 118(2), pp. 251–263. doi: 10.1007/s10551-012-1579-9.
- Tan, J. and Tang, Y. (2016) 'Donate Money, but Whose? An Empirical Study of Ultimate Control Rights, Agency Problems, and Corporate Philanthropy in China', *Journal of Business Ethics*. Springer Netherlands, 134(4), pp. 593–610. doi: 10.1007/s10551-014-2386-2.
- Taormina, R. J. and Kin-Mei Lao, S. (2007) 'Measuring Chinese entrepreneurial motivation', *International Journal of Entrepreneurial Behavior & Research*. Emerald Group Publishing Limited, 13(4), pp. 200–221. doi: 10.1108/13552550710759997.
- Terpstra, D., Rozell, E. and Robinson, R. (1993) 'The Influence of Personality and Demographic Variables on Ethical Decisions Related to Insider Trading', *The Journal of Psychology*, 127(4), pp. 375–389.
- Testa, F. et al. (2016) 'Factors Affecting Environmental Management by Small and Micro Firms: The Importance of Entrepreneurs' Attitudes and Environmental Investment', *Corporate Social Responsibility and Environmental Management*, 23(6), pp. 373–385. doi: 10.1002/csr.1382.
- The Economist (2018a) 'Silicon Valley is changing, and its lead over other tech hubs narrowing'.
- The Economist (2018b) 'Taking off: A new breed of German startups', *The Economist*, 16 June. Available at: <https://www.economist.com/business/2018/06/16/a-new-breed-of-german-startups>.
- The United Nations (2017) *The Sustainable Development Goals Report*. New York City. Available at: <https://unstats.un.org/sdgs/files/report/2017/TheSustainableDevelopmentGoalsReport2017.pdf> (Accessed: 19 February 2018).
- Thiel, P. (2015) *Zero to One: Notes on Start Ups, or How to Build the Future*. London, United Kingdom: Ebury Publishing.
- Thiem, A., Spoel, R. and Dus, A. (2016) 'Enhancing Sensitivity Diagnostics for Qualitative Comparative Analysis: A Combinatorial Approach', *Political Analysis*, 24, pp. 104–120. doi: 10.1093/pan/mpv028.
- Thomas, A. S. and Mueller, S. L. (2000) 'A Case for Comparative Entrepreneurship: Assessing the Relevance of Culture', *Journal of International Business Studies*, 31(2), pp. 287–301. Available at: <https://about.jstor.org/terms> (Accessed: 28 August 2019).
- Thompson, N. A., Herrmann, A. M. and Hekkert, M. P. (2015) 'How sustainable entrepreneurs engage in institutional change: insights from biomass torrefaction in the Netherlands', *Journal of Cleaner Production*, 106, pp. 608–618. doi: 10.1016/j.jclepro.2014.08.011.
- Thorgren, S., Wincet, J. and Sirén, C. (2013) 'The Influence of Passion and Work-Life Thoughts on Work Satisfaction', *Human Resource Development Quarterly*, 24(4), pp. 469–492. doi: 10.1002/hrdq.21172.
- Tiba, S., van Rijnsoever, F. J. and Hekkert, M. P. (2018) 'Firms with benefits: A systematic review of responsible entrepreneurship and corporate social responsibility literature', *Corporate Social Responsibility and Environmental Management*. Wiley-Blackwell, pp. 1–20. doi: 10.1002/csr.1682.
- Tiba, S., Van Rijnsoever, F. J. and Hekkert, M. P. (no date a) *Sustainability Startups and Where to Find Them*.
- Tiba, S., Van Rijnsoever, F. J. and Hekkert, M. P. (no date b) *THE LIGHTHOUSE EFFECT: HOW SUCCESSFUL ENTREPRENEURS INFLUENCE THE SUSTAINABILITY-ORIENTATION OF STARTUP ECOSYSTEMS*.

- Tickle, L. (2016) 'How entrepreneurs are embracing social responsibility', *The Guardian*. Available at: <https://www.theguardian.com/small-business-network/kia-fleet-partner-zone/2016/may/16/giving-back-how-entrepreneurs-are-embracing-social-responsibility> (Accessed: 1 November 2017).
- Titov, I. and McDonald, R. (2008) 'Modeling Online Reviews with Multi-grain Topic Models', in ACM (ed.) *Proceedings of the 17th international conference on World Wide Web*. Available at: <https://arxiv.org/pdf/0801.1063.pdf> (Accessed: 7 February 2018).
- Tokoro, N. (2007) 'Stakeholders and Corporate Social Responsibility (CSR): A New Perspective on the Structure of Relationships', *Asian Business & Management*. Palgrave Macmillan UK, 6(2), pp. 143–162. doi: 10.1057/palgrave.abm.9200218.
- Toman, M., Tesar, R. and Jezek, K. (2006) 'Influence of Word Normalization on Text Classification', in *Proceedings of InScit 4*, pp. 354–358. Available at: <http://textmining.zcu.cz/publications/inscit20060710.pdf> (Accessed: 16 January 2018).
- Treisman, L. (2015) 'Tech-savvy Nigerian NGOs forcing politicians to act', *Aljazeera*, 24 February, pp. 1–5. Available at: <https://www.aljazeera.com/indepth/features/2015/02/tech-savvy-nigerian-ngos-forcing-politicians-act-150224052244986.html>.
- Truffer, B. and Coenen, L. (2012) 'Environmental Innovation and Sustainability Transitions in Regional Studies', *Regional Studies*. Newcastle / Tyne, 46(1), pp. 1–21. doi: 10.1080/00343404.2012.646164.
- Turaga, R. M. R., Howarth, R. B. and Borsuk, M. E. (2010) 'Pro-environmental behavior: Rational choice meets moral motivation', *Annals of the New York Academy of Sciences*, 1185(1), pp. 211–224. Available at: <http://psihologietm.ro/download/Turaga.pdf> (Accessed: 31 July 2019).
- UN (2015) *UN forum highlights 'fundamental' role of private sector in advancing new global goals*.
- Uys, J., Schutte, C. and Van Zyl, W. (2011) 'Trends in an International Industrial Engineering research Journal: A Textual Information Analysis Perspective', in *Proceedings of the 41st International Conference on Computers & Industrial Engineering*. Los Angeles, California. Available at: https://www.researchgate.net/profile/Wilhelm_Uys/publication/266287188_TRENDS_IN_A_N_INTERNATIONAL_INDUSTRIAL_ENGINEERING_RESEARCH_JOURNAL_A_TEXTUAL_INFORMATION_ANALYSIS_PERSPECTIVE/links/5507d7f70cf27e990e0855d3.pdf (Accessed: 11 February 2018).
- Valdez, M. E. and Richardson, J. (2013) 'Institutional determinants of macro-level entrepreneurship', *Entrepreneurship: Theory and Practice*, 37(5), pp. 1149–1175. doi: 10.1111/etap.12000.
- de Villiers, C. and Alexander, D. (2014) 'The institutionalisation of corporate social responsibility reporting', *The British Accounting Review*. Academic Press, 46(2), pp. 198–212. doi: 10.1016/J.BAR.2014.03.001.
- Voltmer, E. et al. (2011) 'Work-related behavior and experience patterns of entrepreneurs compared to teachers and physicians', *International Archives of Occupational and Environmental Health*, 84(5), pp. 479–490. doi: 10.1007/s00420-011-0632-9.
- Waddock, S. (2004) 'Parallel Universes: Companies, Academics, and the Progress of Corporate Citizenship', *Business and Society Review*. Blackwell Publishing Ltd, 109(1), pp. 5–42. doi: 10.1111/j.0045-3609.2004.00002.x.
- Wang, H. and Choi, J. (2013) 'A New Look at the Corporate Social—Financial Performance Relationship: The Moderating Roles of Temporal and Interdomain Consistency in Corporate Social Performance.', *Journal of Management*, 39(2), pp. 416–441. doi: 10.1177/0149206310375850.

- Wang, H., Choi, J. and Li, J. (2008) 'Too Little or Too Much? Untangling the Relationship Between Corporate Philanthropy and Firm Financial Performance', *Organization Science*. INFORMS, 19(1), pp. 143–159. doi: 10.1287/orsc.1070.0271.
- Wang, T. and Bansal, P. (2012) 'Social Responsibility in New Ventures: Profiting from a Long-Term Orientation', *Strategic Management Journal*, 33, pp. 1135–1153. doi: 10.2307/23260265.
- Wang, Y. and Berens, G. (2015) 'The Impact of Four Types of Corporate Social Performance on Reputation and Financial Performance', *Journal of Business Ethics*, 131(2), pp. 337–359. doi: 10.1007/s10551-014-2280-y.
- Watson, K., Hogarth-Scott, S. and Wilson, N. (1998) 'Small business start-ups: success factors and support implications', *International Journal of Entrepreneurial Behavior & Research*. MCB UP Ltd, 4(3), pp. 217–238. doi: 10.1108/13552559810235510.
- Weaver, G. and Agle, B. (2002) 'Religiosity and Ethical Behavior in Organizations: A Symbolic Interactionist Perspective', *Academic of Management Review*, 27(1), pp. 77–97. Available at: <http://www.jstor.org/stable/pdf/4134370.pdf?refreqid=excelsior%3Ace3bbb8b385db3fea3513a677c4593c1> (Accessed: 26 March 2018).
- Van Weele, M. A. et al. (2016) 'Start-EU-up! Lessons from international incubation practices to address the challenges faced by Western European start-ups', *Journal of Technology Transfer*. doi: 10.1007/s10961-016-9538-8.
- Van Weele, M. A., van Rijnsoever, F. J. and Nauta, F. (2017) 'You can't always get what you want: How entrepreneur's perceived resource needs affect the incubator's assertiveness', *Technovation*. Elsevier, 59, pp. 18–33. doi: 10.1016/j.technovation.2016.08.004.
- Van Weele, M. A., Steinz, H. J. and Van Rijnsoever, F. J. (2014) 'Start-ups down under: How start-up communities facilitate Australian entrepreneurship', *Druid conference 2014*, pp. 1–24.
- Welpe, I. M. et al. (2012) 'Emotions and Opportunities: The Interplay of Opportunity Evaluation, Fear, Joy, and Anger as Antecedent of Entrepreneurial Exploitation', *Entrepreneurship Theory and Practice*, 36(1), pp. 69–96. doi: 10.1111/j.1540-6520.2011.00481.x.
- Wirtz, P. (2011) 'The cognitive dimension of corporate governance in fast growing entrepreneurial firms', *European Management Journal*. Pergamon, 29(6), pp. 431–447. doi: 10.1016/J.EMJ.2011.06.004.
- Wood, D. J. (1991) 'Corporate Social Performance Revisited', *Academy of Management Review*, 16(4), pp. 691–718.
- World Population Review (2019) *Lagos Population 2019*, *World Population Review*. Available at: <http://worldpopulationreview.com/world-cities/lagos-population/> (Accessed: 29 July 2019).
- Wry, T. and York, J. G. (2017) 'An identity-based approach to social enterprise', *Academy of Management Review*, 42(3), pp. 437–460. doi: 10.5465/amr.2013.0506.
- Yadav, R., Kumar Dokania, A. and Swaroop Pathak, G. (2016) 'The influence of green marketing functions in building corporate image', *International Journal of Contemporary Hospitality Management*, 28(10), pp. 2178–2196. doi: 10.1108/IJCHM-05-2015-0233.
- Yang, S.-L. (2016) 'Corporate social responsibility and an enterprise's operational efficiency: considering competitor's strategies and the perspectives of long-term engagement', *Quality & Quantity*, 50(6), pp. 2553–2569. doi: 10.1007/s11135-015-0276-z.
- Yitshaki, R. and Kropp, F. (2016) 'Motivations and Opportunity Recognition of Social Entrepreneurs', *Journal of Small Business Management*. John Wiley & Sons, Ltd (10.1111), 54(2), pp. 546–565. doi: 10.1111/jsbm.12157.
- York, J. G. and Venkataraman, S. (2010) 'The entrepreneur–environment nexus: Uncertainty, innovation, and allocation', *Journal of Business Venturing*, 25, pp. 449–463. doi: 10.1016/j.jbusvent.2009.07.007.

- Zahra, S. A. *et al.* (2009) 'A typology of social entrepreneurs: Motives, search processes and ethical challenges', *Journal of Business Venturing*, 24, pp. 519–532. doi: 10.1016/j.jbusvent.2008.04.007.
- Zheng, B., Mclean, D. C. and Lu, X. (2006) 'Identifying biological concepts from a protein-related corpus with a probabilistic topic model', *BMC Bioinformatics*, 7(58). doi: 10.1186/1471-2105-7-58.
- Zils, M. (2014) *Moving toward a circular economy*.
- Zou, J. and Zou, J. (2015) 'Selective Engagement in Corporate Social Responsibility: A Stakeholder Perspective', *Frontiers of Business Research in China*, 9(3), pp. 371–399. doi: 10.3868/S070-004-015-0015-3.

Appendix to the chapters

Appendix to Paper 1: Firms with Benefits

[1] Notes on the Selection of Relevant Texts

In order to determine which of the downloaded entries are relevant to each of the two literature streams, we trained a first LDA in which topics related to each of the two literature streams discussed in this paper, Entrepreneurship and CSR, could be identified. The quality of these topics was assessed by reading the top abstracts associated with them. The topics were then used to discover documents within the corpus which are particularly relevant to either stream – thus rectifying the homonym problem of the keyword search (Beall, 2008) – and to focus the further analysis only on those texts that are about either CSR or entrepreneurship. To do so, we determined a minimum threshold for the probability that at least one of these topics should have in an abstract for it to be considered relevant to the analysis. For this we manually determined if a paper should be included or excluded for 100 randomly chosen abstracts. We then tested different values for the topic probabilities on these 100 abstracts to determine the appropriate threshold. At a threshold of 0.025 we found the highest match (>90%) between manual and automatic allocation (Abuhay *et al.*, 2017). As a result, 6,266 (2,395 Entrepreneurship and 3,871 CSR) papers out of the original corpus are considered in the analysis. Further, the relative proportion of Entrepreneurship and CSR topics in the abstracts of the 285 papers, which appeared in both searches, was used to determine whether a paper is more relevant to the former or the latter literature stream and papers were allocated accordingly. This overlap was previously manually checked to determine whether it is the site of dialogue between the two fields. However, no text was found which placed an emphasis on the simultaneous discussion of both topics.

[2] Notes on Data Cleaning

Texts were cleaned by transforming them to lower case, removing punctuation, special characters, numbers, individual characters, stop words and common differences between British and American spelling, as well as lemmatising each word with the software *TreeTagger* (Schmid, 1995). Lemmatisation is a process which produces the basic form of a word (e.g. *be* is the basic word form of *is*, *are* and *was*) (Toman, Tesar and Jezek, 2006) and can thus significantly reduce the size of the vocabulary and speed up the algorithms used. Lemmatisation was used as a more sophisticated alternative to stemming as it is better able to deal with different declinations of a word, preserves

more of its meaning and can thus generate richer results (Grimmer and Stewart, 2013). Following the lemmatisation we calculated the term frequency-inverse document frequency which indicates the relevance of a word to a document and only kept words within each document with at least the median score (0.0023) to exclude terms that occur in many documents and thus have little meaning as well as very rare terms (Piepenbrink and Nurmamammadov, 2015; Grün and Hornik, 2017). Since very rare words in the corpus add little insights but significant complexity to the LDA we further excluded all words that do not appear in at least 5 abstracts (Griffiths and Steyvers, 2004).

Appendix to chapter 3: Sustainability Startups and Where to Find Them

Table A.1 Raw Data Matrix.

Ecosystem	Share sustainable enterprises	Share Women Founders	Environmental Performance Index (EPI)	Share of population religious	Early Stage Funding per Startup (USD k)	GDP/capita (USD k)	Social Expenditure (share of GDP)
SILICON	9,3%	18,0%	84,72	45%	762	81,4	19,3%
LONDON	7,5%	15,0%	87,38	79%	451	38,7	21,5%
BOSTON	14,4%	16,0%	84,72	47%	495	81,3	19,3%
TELAVIV	5,0%	8,0%	78,14	95%	509	41,4	16,1%
BERLIN	6,2%	13,0%	84,26	37%	483	26,3	25,3%
LA	8,9%	16,0%	84,72	59%	450	61,9	19,3%
SEATTLE	12,9%	13,0%	84,72	41%	332	81,4	19,3%
PARIS	6,7%	10,0%	88,20	72%	270	57,3	31,5%
SINGAPORE	7,6%	12,0%	87,04	85%	276	48,0	11,4%
AUSTIN	10,0%	12,0%	84,72	46%	410	57,5	19,3%
STOCKHOLM	2,0%	12,0%	90,43	72%	325	65,0	27,1%
VANCOUVER	10,2%	12,0%	85,06	51%	334	44,0	17,2%
TORONTO	9,3%	18,0%	85,06	79%	443	53,0	17,2%
SYDNEY	9,3%	22,0%	87,22	56%	254	64,0	19,1%
CHICAGO	10,5%	34,0%	84,72	64%	271	63,8	19,3%
AMSTERDAM	7,1%	14,0%	82,03	38%	144	45,9	22,0%
BANGALORE	10,2%	10,0%	53,58	100%	229	5,2	1,5%
BARCELONA	7,7%	14,0%	88,91	67%	223	31,7	24,6%
ESTONIA	6,1%	16,0%	88,59	29%	272	17,7	17,4%
HELSINKI	7,4%	8,0%	90,68	75%	358	55,0	30,8%
MELBOURNE	10,7%	18,0%	87,22	69%	157	53,8	19,1%

NEWZEALAND	6,5%	21,0%	88,00	58%	301	39,8	19,5%
SEOUL	5,0%	16,0%	70,61	54%	174	26,5	10,4%
HOUSTON	14,3%	21,0%	84,72	64%	110	80,8	19,3%
LAGOS	11,5%	14,0%	58,27	100%	77,8	3,6	0,3%
MONTREAL	5,0%	12,0%	85,06	85%	123	38,0	17,2%
ATLANTA	10,6%	17,0%	84,72	66%	367	58,0	19,3%
NYC	8,4%	19,0%	84,72	61%	568	65,0	19,3%

Table A.2. Calibrated Raw Data Matrix.

ecosystem	resp	womenfound	epi	religious	funding	gdpcap	socexp
SILICON	0.67	0.67	0.67	0.33	1	1	0.67
LONDON	0.33	0.33	1	0.67	0.67	0.67	0.67
BOSTON	1	0.67	0.67	0.33	0.67	1	0.67
TELAVIV	0	0	0.33	1	0.67	0.67	0.67
BERLIN	0.33	0.33	0.67	0	0.67	0.33	0.67
LA	0.67	0.67	0.67	0.33	0.67	0.67	0.67
SEATTLE	1	0.33	0.67	0	0.33	1	0.67
PARIS	0.33	0	1	0.67	0.33	0.67	1
SINGAPORE	0.33	0.33	1	0.67	0.33	0.67	0.33
AUSTIN	0.67	0.33	0.67	0.33	0.67	0.67	0.67
STOCKHOLM	0	0.33	1	0.67	0.33	0.67	0.67
VANCOUVER	0.67	0.33	0.67	0.33	0.33	0.67	0.67
TORONTO	0.67	0.67	0.67	0.67	0.67	0.67	0.67
SYDNEY	0.67	1	1	0.33	0.33	0.67	0.67
CHICAGO	0.67	1	0.67	0.33	0.33	0.67	0.67
AMSTERDAM	0.33	0.33	0.67	0	0	0.67	0.67
BANGALORE	0.67	0	0	1	0.33	0	0
BARCELONA	0.33	0.33	1	0.33	0.33	0.33	0.67
ESTONIA	0.33	0.67	1	0	0.33	0.33	0.67
HELSINKI	0.33	0	1	0.67	0.33	0.67	1
MELBOURNE	0.67	0.67	1	0.33	0	0.67	0.67
NEWZEALAND	0.33	1	1	0.33	0.33	0.67	0.67
SEOUL	0.33	0.67	0.33	0.33	0	0.33	0.33
HOUSTON	1	1	0.67	0.33	0	1	0.67
LAGOS	0.67	0.33	0	1	0	0	0
MONTREAL	0	0.33	0.67	0.67	0	0.67	0.67
ATLANTA	0.67	0.67	0.67	0.33	0.33	0.67	0.67
NYC	0.67	0.67	0.67	0.33	0.67	0.67	0.67

Table A.3 Truth Table Main Analysis.

womenfound	religions	gdpcap	socexp	number	sust	raw consist.	PRI consist.	SYM consist
1	0	1	1	10	1	0.909008	0.801980	0.801980
1	1	1	1	1	1	0.900151	0.602410	0.602410
0	0	1	1	4	1	0.879373	0.626866	0.626866
1	0	0	1	1	0	0.848714	0.000000	0.000000
1	0	0	0	1	0	0.848714	0.000000	0.000000
0	0	0	1	2	0	0.797583	0.000000	0.000000
0	1	0	0	2	0	0.790143	0.340000	0.407186
0	1	1	0	1	0	0.763345	0.198795	0.198795
0	1	1	1	6	0	0.620301	0.098214	0.098214
1	0	1	0	0				
1	1	1	0	0				
1	1	0	1	0				
1	1	0	0	0				
0	0	1	0	0				
0	0	0	0	0				
0	1	0	1	0				

Appendix Paper 4: The Lighthouse Effect

A – First and second-order codes

TABLE A.1: CULTURAL FACTORS

Second order codes	First order codes	Representative quote
Culture within an EE determines how startups operate and lighthouses are instrumental in shaping this culture	Nigerian society seen as socially oriented	"Nigerians are very kind people with a very strong social bond. That is just part of our culture." (LHF1) "Empathy is really an African thing. In the West, you don't take in your brother's son to live in your house. In Africa, that's always part of our culture." (LHF2)
	Nigerian society seen as not socially oriented	"Nigeria is not an altruistic society, people don't do things for the betterment of their neighbour, really – at least in Lagos" (LIF1) "Well I wouldn't say there is a culture for [sustainability], people find it difficult to believe that training at [our company] is for free. Because it is strange for people, to think so. They ask, "Why would you offer training at no cost?" (LST3) "I think there isn't a lot of, in terms of environmental, just environmental awareness, right. There is really not that much like societal awareness into keeping your surroundings just clean and all the benefits that come from that." (LCF2)
	Strong sustainability startup scene in Lagos	"There are a lot of problems here, a lot of things that are wrong, and before now, people just complained and complained but there has been a paradigm shift in that: I could actually do something to change the state of things" (LSF1)

	<p>today "the [social entrepreneurship] culture is very pervasive" (LIF1)</p> <p>"Social impact was not really a thing until three years ago. Now it's huge" (LSF5)</p> <p>"There is a culture to do social business because everywhere in Africa there is corruption, there is poverty, there are so many problems. We all are looking for ways to eradicate these issues. If there is a startup that wants to solve any of these problems I think that is good work. So, if you are solving problems in the health sector, the educational or agri-sector that is brilliant." (LST2)</p>
Berlin society seen as socially oriented	<p>„I think, if I look at the startup ecosystem, it often revolves around money. If I look at Berlin culture more broadly, it isn't like that" (BSF1)</p> <p>"We have a huge nucleus of students and a culture of socially interested people who like, say they come to Berlin to do something differently or they come to have a break so they all have free time." (BSF5)</p> <p>"I think, Berlin generally attracts people who also think about society or the public." (BIT3)</p>
Berlin not the place for sustainability entrepreneurship	<p>"Because you also have all the tech that is coming here it's not the place where you say, 'Okay, I want to start a social enterprise: I have to go to Berlin'. You can still do it in Munich or wherever" (BIF2).</p> <p>"The fact that we started our business here was less because we thought that this is the best cluster for social entrepreneurship. Rather we thought it's the best cluster for digital startups." (BSF1)</p> <p>"In the Silicon Valley these [sustainability] topics are currently extremely hyped [...]. In Berlin on the other hand, I have to admit, I haven't encountered this kind of thing in the normal startup field" (BCT1).</p>
Sustainability lighthouses inspire other sustainability startups	<p>"It's not like the startup world is such a homogenous scene. The individual startup probably doesn't even think about their responsibility to society. I don't think that there is this kind of political element. I have never seen or heard anything like it." (BIT2)</p> <p>"Lighthouses help; so, if you have one case in the media that people talk about, that influences, motivates people, inspires people to do the same. The problem is, I don't know yet of any large German light house case." (BSF7)</p> <p>"The whole point is, if you can see an example of what you are probably conceptualizing, I mean, what you have been thinking around, when you see somebody living it, it makes it easier to step up and do it" (LCF2)</p> <p>"I think, us winning competitions and sharing our successes on social media influences other people to say: 'Oh, wow, I can do this'" (LSF5)</p> <p>"Because of the social startups CcHub started with initially, from BudgIT to Wecyclers [...] Those startups gave the mindset for people to start thinking around their environment, coming up with business ideas that can be integrated with social objectives. Startups like Prepclass came out of this idea. [...] What really happened was that people started thinking around problems within society." (LSF2)</p>

TABLE A.2: SOCIAL FACTORS

Second order codes	First order codes	Representative quote
Social attributes reinforce existing structures in EE impacting the share of sustainability startups we see	Successful sustainability entrepreneurs as mentors in Lagos	<p>"When we started and whenever we needed help, we'd go to his place, we'd go to his house or go to his office and he helped us out in a lot of ways" (LSF4).</p> <p>"So, right now we are looking for a co-founder and I am going through Andela [a social startup] to find them" (LSF5).</p>
	Investors care about sustainability aspect in Lagos	<p>"So, when you're building a business plan, you have sustainability in it. If you don't build it in, you don't get the funding. So, it's actually enhancing some of these investments. And for businesses that don't have it, they don't get investment... this is especially true for startups." (LNF1)</p> <p>"I think [businesses with a social mission receive more funding]. To give an example, I know for a fact that if your business is around agriculture and helping to create social impact, also in the health sector, in the educational sector, yeah you have a very good chance of getting funding." (LST2)</p> <p>"I know a lot of international funds that are now trying to consider impact, I know a lot of international endowment funds and large pools of capital who want to see impact embedded in their investors." (LIF1)</p> <p>"Externally or internationally it is probably easier if you have a social enterprise because the perception for most funders is like: "Oh, we are looking for a business that has social impact and that's where we want to invest in"." (LCF1)</p> <p>"Yes, many of [the investors] focus on job creation so the SDGs, many of them insist in fact that if you are going to be part of their programme, you must be solving one of the 17 SDGs. [...] So almost all of them insist on one of the goals." (LSF1)</p>
	Few supporters of sustainability startups in Berlin	<p>"Yeah, there's no real advantage to founding a social enterprise in Berlin compared to somewhere else." (BIF2)</p> <p>"There were never any touchpoints where being in Berlin was an advantage. It probably would have been better to be somewhere in the countryside, away from all the distractions." (BSF6)</p> <p>"The Impact Lab was being used quite a lot but it's not supported that much anymore. While I was there they actually got rid of the co-working space which kind of broke the neck of many founders, because that was the real value-add of the whole thing." (BSF4)</p> <p>"At the Axel Springer accelerator which supported us there were basically no other social or care startups in the last three years." (BST2)</p>
	Investors do not care about sustainability in Berlin	<p>"Well, we always struggled to find investors who say: "Yes, the social mission is also important to me and it's a reason for us to invest."" (BSF1)</p> <p>"When we are talking to traditional investors on the commercial market there are a lot of things that are nice to have but in the end it's all about return-on-investment and everything else is secondary." (BCT2)</p> <p>"So far the financial support is minimal. If you look at the public resources available to social enterprises you find almost nothing in Germany." (BIF1)</p> <p>"In conversations with investors I always got different kinds of questions. They ask how much revenue you make every month, what proof of this you have and how well-inclined your customers are to you, not about your sustainability." (BCF1)</p> <p>"Social responsibility is not one of the primary criteria in our funding programme. It plays a role but only in relation to the goals of the European Social Fund which co-finances our programme." (BIT1)</p> <p>"Actually the investor base is not that strong in Berlin for impact investments [...] And for social enterprises, there is nothing special about the ecosystem here, I would say. The money is not here anyway." (BIF2)</p>

"The orientation in these programs is definitely not reduced to social factors. Rather such orientation is often being called into question because they are often seen as unstable business models." (BSF4)

TABLE A.3: MATERIAL FACTORS

Government not supportive of sustainability startups	Government and regulatory environment not supportive of sustainability startups in both ecosystems	<p>"Yeah, well, in the news and in the papers, I read [that the government supports sustainability startups] – but in reality... [laughs]. I realized that I don't want to chase support but continue to develop the team. Now, If I need to get support from the government or somebody out there I need to keep chasing them. I will always be out there and not here, where it really matters." (LST3).</p> <p>"Sometimes the government shies away from talking with other support providers, because they know they haven't done a whole lot." (LNF1)</p> <p>"I think the issues are known to government, but we have issues peculiar to business. The agri-space needs help. Are we going to wait for the government? No! What can we do? We seize the moments. " (LSF3)</p> <p>"I think, the typical barriers for doing anything in Nigeria are just the regulations, getting registration, bureaucracy, maybe some elements of corruption." (LHF1)</p> <p>"Well, tax has not been good for us, no tax holiday, so what has been good for us? " (LSF4)</p> <p>"Years ago, there was an initiative launched by the ministry of labour which was supposed to make funding available to social entrepreneurs. But that topic has died completely. And I wouldn't really know of any examples where the government is actively supporting this issue today. It's possible that they exist but I'm not aware of it." (BSF1)</p> <p>"We currently don't have the big tools for change like an own legal form, tax regulation or a reform of the legal framework for charitable organizations." (BNW1)</p> <p>"If you are at the point where you place any hope in politics as a startup founder, you are really lost." (BSF6)</p>
	Government actively trying to hinder sustainability startups in Lagos	<p>"So, Lagos is very notorious for stealing ideas. So, you go the government and then the tell you "Oh, we like your idea, give us your proposal" and then they give it to their friends to implement. I have kind of given up on trying to lobby...I think it is a waste of time." (LSF5)</p> <p>"Last year we started a fight. What was the fight? The government wanted to pass a bill regulating a number of social entrepreneurs that can exist."(LNT1)</p> <p>"So, in Lagos, for example, right now and if you're doing anything and if you clash with the Lagos government, you need to go." (LHF2)</p>
	Government sees startups as means to economic ends, not sustainability	<p>"Okay, so basically when my office was created [...] we wanted to encourage [young people] to become job creators, become entrepreneurs instead of just waiting for the government to give them jobs. And also, we wanted them to help build the economy of the country and change Nigeria" (LGT1)</p> <p>"Berlin supports startups because they offer the potential of creating jobs here in Berlin, also for the long-term and to secure</p>

Presence of opportunities as important factor for development of sustainability startups	Having a lot of problems in Lagos creates opportunities for sustainability startups	<p>those jobs." (BIT2)</p> <p>"Social responsibility is not one of the main factors in our programme. When assessing startups we first look at innovativeness, market opportunities and the team. [...] We only take sustainability and social factors into consideration in a second round and actually it is rarely the case that they are being violated. They would, for example, have to explicitly write that they are planning to discriminate against people in their venture in order to be excluded." (BIT1)</p> <p>"Many others are just tired of seeing people suffering and not being able to do anything about it. You can't live in this much neglect and just stuff not being right and not wanting to fix anything, it's only rational." (LHF1)</p> <p>"There are a lot of problems here, a lot of things that are wrong, but before now, people just complained and complained but there has been a paradigm shift in that: I could actually do something to change the state of things." (LSF1)</p> <p>"Lagos is the place where you have got the population, you got a lot of problems that only technology can actually address. It is a place where there is opportunity for you to do what you want to do." (LST3)</p> <p>"So if you want to do a social project - because your target is actually people from the lower class that is actually having a lot of impact in terms of social projects -, because you have a large number of people on this side that is why I think Lagos is a really good place to test your social ideas." (LSF2)</p> <p>"Technology is solving a lot of the things that the government is supposed to solve, and like private sectors as well, and that is where a lot of businesses are coming in as well. Like the things that people are just generally supposed to have whether it be subsistence or whether it be so that they can compete globally, the government is totally inapt. The private sector is really taking over." (LIF1)</p>
	The strong welfare state in Germany hinders development of sustainability startups	<p>"All in all, I also think that the philosophy in Germany is still that everything that has something to do with social matters should be handled and indeed is often handled by the state" (BSF1).</p> <p>"I think, if we looked at the statistics and compared Germany with India (even if they are difficult to compare) we would probably see that there are actually more social enterprises in India than in Germany. That is because the German state is much more active in the social space and simply offers certain services that are not really there in India or in many other countries where the state is less strong." (BIF1)</p> <p>"Because in the UK, the state doesn't take care of social aspects that much anymore, so there's a high need for social startups and a high demand as well. I guess that's different to Germany. And sometimes people try to solve social problems entrepreneurially, but we ask, 'Why you would do that?' because it's the job of the government to do it actually - especially in education." (BSF2)</p> <p>"Well of course in Germany, given the welfare state, I mean that has an influence on how strong our social enterprises are seen." (BIF2)</p>

B – Semi-structured interview guideline for startup founders

Good morning/afternoon,

nice to meet you and thank you so much for agreeing to do this interview with me. My name is Sarah Tiba. I am an innovation scientist at the Copernicus Institute of Sustainable Development at Utrecht University, the Netherlands. I am currently conducting research on startup ecosystems and factors that shape these.

The purpose of this interview today is to better understand your firm's role in Berlin' startup ecosystem and how this role has developed. I am also interested in your general views regarding this ecosystem. This interview consists of approximately 15 mostly open-ended questions. It will take around 25-45 minutes.

If possible, I would like to record the interview. While the results of this research will be published in an academic and thus public journal, you will always remain anonymous, i. e. anything you share with me in this interview remains confidential and your name or the name of the company will never appear on any public record.

Do you have any questions on this? If not, let us proceed.

- 1) Could you please tell us more about yourself (name, role in the firm)?
- 2) What is it that your business does? What do you sell?
- 3) We would also be grateful if you could share with us the latest figures regarding your startups annual revenue and number of employees.
- 4) *[If this hasn't been answered yet]* To what extent do you consider your firm to deliver something good to the world? Please explain.
- 5) Please tell us a bit more about the history of your company. We are particularly interested in understanding why you decided to launch this specific business?

Why are you in Berlin/Lagos?

- 6) a. What makes Berlin/Lagos a good place for businesses like yours?
b. What makes it hard to develop a business like yours in Berlin/Lagos?
- 7) Looking at the founders in Berlin/Lagos what role would you say
 - a. Education plays
 - b. Experience abroad plays
 - c. Gender plays
- 8) Let us go back to your firm. We are keen to learn with whom you interact most to set up and run your business (e. g. a specific incubator or other startups) and what this interaction entails.
- 9) Has the choice of your business idea been influenced by any other people? If so, how?

10) Has your startup been supported financially or otherwise by anyone (e.g. investors, incubators, government)? How has this influenced your business?

11) Do you have any touchpoints with social/sustainability entrepreneurs/investors/incubators in Berlin/Lagos? Do you have an idea what their motives were in starting a sustainable enterprise? How, if at all, do they differ from yours?

12) Are you aware of any cases where the orientation of a startup towards sustainability was impacted either positively or negatively by any other actor in the ecosystem?

13) We estimate that around (6% of startups in Berlin/12% of startups in Lagos) are what we call sustainability startups – this is a relatively (low/high) share of sustainable startups when compared to other cities, e. g. Boston/Berlin. Do you share that impression? Please explain.

14) *[If this hasn't been mentioned before]* Are there any government policies that particularly support or hinder (sustainable) startups in Berlin/Lagos or any specific factors that drive sustainability in your point of view?

15) What policies could the local (city) government adopt in your point of view to further increase the share of sustainable startups in this ecosystem?

16) Are you as a company, or personally, taking any actions (e.g. through interactions with policy-makers) to improve the conditions in Berlin/Lagos for startups like yours?

17) 6%/12% startups in Berlin/Lagos are sustainable, as outlined earlier. Where do you think this share will stand 10 years from now? Please explain your opinion.

Thank you very much for all the information. This is most appreciated, and it will greatly help us with our research. We will share the papers that are developed out of this research with you once they are published.

Furthermore: Is there any other organisation you know that may be relevant for us to interview for this research? If so, we would be more than grateful if you could refer us.

Also: Would it be okay if we reached out again for a quick follow-up if any more question come up regarding your firm and your views on this ecosystem?

Always feel free to contact us for questions!

Goodbye!

Addenda

Publication status of the chapters

	Publication status
Chapter Two	Tiba, S., van Rijnsoever, F.J., & Hekkert, M.P. (2019) Firms with benefits: A systematic review of responsible entrepreneurship and corporate social responsibility literature. <i>Corporate Social Responsibility and Environmental Management</i> , 26(2), 265-284
Chapter Three	Tiba, S., van Rijnsoever, F.J., & Hekkert, M.P. (forthcoming) Sustainability startups and where to find them: Investigating the Share of Sustainability Startups across Entrepreneurial Ecosystems and the Causal Drivers of Differences Submitted & currently under revision: <i>PlosOne</i>
Chapter Four	Tiba, S., van Rijnsoever, F.J., & Hekkert, M.P. (2020) The lighthouse effect: How successful entrepreneurs influence the sustainability-orientation of startup ecosystems. <i>Journal of Cleaner Production</i> , 264
Chapter Five	Tiba, S., van Rijnsoever, F.J., & Hekkert, M.P. (forthcoming) Goodfellas: On the motivations of sustainability entrepreneurs – evidence from Germany and Nigeria In preparation for journal submission

Summary

Sustainability startups are promising vehicles on a path toward the achievement of the Sustainable Development Goals. While much has been written about these companies over the past decades, relatively little is known about the conditions under which they sprout. This fundamentally poses two questions: First, whether there are some contexts, or entrepreneurial ecosystems (EEs), that are more conducive to the development of sustainability startups than others. And, second, where such EEs can be found what distinguishes them from other ecosystems. This thesis thus addresses the following research question:

How and why does the share of sustainability startups differ between EEs?

The answer to this question emerged from four separate studies. The first lays the groundwork both for the formulation and the answer to this question. First, the chapter points toward the fact that scholars may benefit from placing a greater emphasis on how sustainability startups shape and are shaped by factors they interact with such as regulation, employees, customers or stakeholders. This confirms the importance of considering not only sustainability startups in isolation but also within their contexts, e.g. their entrepreneurial ecosystems. Second, the chapter helps in the conceptualisation of a sustainability startup by emphasising that for-profit business models should also be considered.

The second study answers the first part of the main research question showing that the share of sustainability startups differs markedly between EEs around the world with Boston, Houston, Seattle and Lagos topping the list leaving traditionally celebrated EEs like the Silicon Valley far behind. Furthermore, it is shown that each ecosystem has different focus sectors within the field of sustainability startups, for example, health care in Boston or education in Lagos. In showing this chapter 3 it addresses the 'how' part of the main research question.

Studies 2, 3 and 4 subsequently also answer the 'why' part by illuminating different aspects of the main research question. Study 2 suggests that strong economic development (material factor) either in combination with a high share of female founders (social factors) or with a low share of religious people (cultural factor) will foster sustainability-oriented EEs. This idea that an interaction of different material, social and cultural EE attributes foster sustainability startups is also confirmed by study 3. Here it is further shown that many of the most relevant EE attributes are shaped by so-called lighthouses, entrepreneurs who have already found success in an EE. Study 4, finally, shows that not only the success of founders but also their motivation to setup a sustainability startup differs by EE. This motivation is in turn shaped by the institutional context they are situated in.

Taken together this thesis argues that EEs and their attributes can help or hinder the development of sustainability startups. They do this primarily in two ways. First, by providing conditions that can impact the success of sustainability startups and, second, by influencing the motivations of budding entrepreneurs to start sustainability startups in the first place. Through these mechanisms we can explain much of the variation in sustainability-orientation between EEs.

Samenvatting

Start-ups op het gebied van duurzaamheid zijn veelbelovende ontwikkelingen op weg naar het bereiken van de Duurzame Ontwikkelingsdoelstellingen. Hoewel er de afgelopen decennia veel over deze bedrijven is geschreven, is er relatief weinig bekend over de omstandigheden waaronder ze ontstaan. Dit roept twee fundamentele vragen op. De eerste vraag is of er bepaalde contexten, of ondernemingsgerichte ecosystemen (EE's), zijn die bevorderlijker voor de ontwikkeling van start-ups op het gebied van duurzaamheid dan andere zijn. De tweede vraag is waar dergelijke EE's te vinden zijn en wat ze van andere ecosystemen onderscheidt. Daarom heeft deze scriptie de volgende onderzoeksvraag:

Hoe en waarom verschilt het aandeel start-ups op het gebied van duurzaamheid tussen verschillende EE's?

Het antwoord op deze vraag is gebaseerd op vier afzonderlijke onderzoeken. Het eerste onderzoek legt de basis voor zowel de formulering van als het antwoord op deze vraag. Ten eerste wordt er in het hoofdstuk op gewezen dat wetenschappers mogelijk meer nadruk leggen op de manier waarop start-ups op het gebied van duurzaamheid vorm krijgen en gevormd worden door factoren waar ze mee te maken hebben, zoals regelgeving, werknemers, klanten of stakeholders. Dit bevestigt het belang om start-ups op het gebied van duurzaamheid niet alleen afzonderlijk maar ook binnen hun context te beschouwen, bijvoorbeeld binnen ondernemingsgerichte ecosystemen. Ten tweede helpt het hoofdstuk bij de conceptualisering van een start-up op het gebied van

duurzaamheid door te benadrukken dat er ook rekening met commerciële businessmodellen moet worden gehouden.

Het tweede onderzoek beantwoordt het eerste deel van de hoofdonderzoeksvraag en laat zien dat het aandeel start-ups op het gebied van duurzaamheid tussen EE's over de hele wereld aanzienlijk verschilt. Boston, Houston, Seattle en Lagos staan bovenaan de lijst en laten traditioneel gelauwerde EE's zoals Silicon Valley ver achter zich. Verder is aangetoond dat start-ups op het gebied van duurzaamheid binnen ieder ecosysteem op verschillende hoofdsectoren zijn gericht, bijvoorbeeld gezondheidszorg in Boston of onderwijs in Lagos. Vervolgens wordt er in hoofdstuk 3 op het gedeelte 'hoe' van de hoofdonderzoeksvraag ingegaan.

De onderzoeken 2, 3 en 4 beantwoorden vervolgens ook het gedeelte 'waarom' door verschillende aspecten van de hoofdonderzoeksvraag te belichten. Onderzoek 2 wijst erop dat een sterke economische ontwikkeling (materiële factor) in combinatie met een groot aandeel vrouwelijke oprichters (sociale factor) of met een klein aandeel religieuze personen (culturele factor) op duurzaamheid gerichte EE's zal bevorderen. Het concept dat een samenspel van verschillende materiële, sociale en culturele eigenschappen van een EE start-ups op het gebied van duurzaamheid bevordert, wordt tevens door onderzoek 3 bevestigd. Dit onderzoek toont verder aan dat veel van de meest relevante eigenschappen van een EE worden gevormd door zogenaamde 'lighthouses', oftewel ondernemers die al succesvol binnen een EE zijn. Tot slot toont onderzoek 4 aan dat niet alleen het succes van de oprichters, maar ook hun motivatie om een start-up op het gebied van duurzaamheid op te richten per EE verschilt. Deze motivatie wordt op haar beurt gevormd door de institutionele context die voor hen relevant is.

Samengevat betoogt deze scriptie dat EE's en hun eigenschappen de ontwikkeling van start-ups op het gebied van duurzaamheid kunnen helpen of belemmeren. Ze doen dit voornamelijk op twee manieren. Ten eerste door voorwaarden te scheppen die het succes van start-ups op het gebied van duurzaamheid kunnen beïnvloeden en ten tweede door de motivatie van beginnende ondernemers te beïnvloeden om überhaupt een start-up op het gebied van duurzaamheid op te richten. Aan de hand van deze mechanismen kunnen we een groot deel van de variatie tussen EE's verklaren als het om de oriëntatie op het gebied van duurzaamheid gaat.

Acknowledgments

This thesis would evidently not exist today were it not for the support, generosity, patience, open ears and cheering on of others. This is their section.

Marko, thank you for your trust. From the moment I first visited the Copernicus Institute your confidence in my ability to succeed has seemed unwavering. I always greatly enjoyed our discussions academic and beyond. Your ability to see potential even in the foggiest of my ideas has been a great source of motivation for me. Your pragmatism has been a source of clarity. And your knowledge has been a source of inspiration. I will truly miss working with you.

Frank, I am grateful for your openness and patience. Throughout my PhD journey you always encouraged me to learn, discover and pursue finding not only an answer but the best answer. Both your rigour and your sense of humour are core ingredients of this thesis. I am extremely fortunate to have had you guiding me through this process.

Beyond my two supervisors I also had some brilliant colleagues in the Copernicus Institute who had open doors when I was stuck in some unfamiliar method or needed a fresh perspective on something I had written. Maryse, thank you for allowing me to repeatedly interrupt your work and helping me through a phase of great methodological confusion. Allard, without you most of the computations in this thesis would still be running and I would be years away from writing these words. Thank you for everything. Wouter and Jarno, thank you for your prompt and insightful comments on parts of this thesis.

I am also grateful to the founders, incubators, hubs, and policy-makers in Berlin and Lagos who generously gave me their time, insights and often contacts to further this research endeavour. Particular thanks to Joshua, Vincent and Leonard. You all went above and beyond to help me understand your ecosystems and I am lucky to have had you as my local guides. Particularly in Lagos, a place I had never been before, I was overwhelmed by the warm welcome of the local startup community. I feel very fortunate to have met so many passionate, creative and driven people who are truly committed to making a positive contribution to their communities.

Chris and Kevin thank you for being the best office neighbours I could have hoped for and for becoming my guides to life as a PhD and everything Dutch. During my time at the Copernicus Institute I was also very lucky to be part of such a vibrant, welcoming, generous, intelligent and fun group of people as the “Innovation Lads & Ladies”. Thank you all for welcoming me to Utrecht with open arms, for the fikas, the dinners and the many other delightful distractions from writing this thesis.

The greatest thanks are owed to my family. Julian, thank you for being there through everything, always. Mama, Papa, Jojo, David, without your love, encouragement and support I wouldn't have done and experienced half as much as I have. Danke.

About the Author

Sarah Tiba was born on the 3rd of December 1986 in Düsseldorf, Germany. Sarah holds a BSc in Economics with Political Science from the University of Birmingham and an MPhil in European Politics from the University of Oxford.

Living and working in Berlin after the completion of her studies, she became increasingly interested in the local startup scene as well as questions around its sustainability. When embarking on her PhD she thus decided to explore this topic further by making sustainability startups and their entrepreneurial ecosystems her subject of investigation. Her research conducted at the Copernicus Institute of Sustainable Development at Utrecht University has been published in peer-reviewed journals.