

DEGROWTH: A VIABLE BUSINESS MODEL?

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Student's name: Margot Vandevoort

Signature:

A handwritten signature in black ink, appearing to read 'Margot Vandevoort', with a long horizontal flourish extending to the right.

Foreword

I would like to start by thanking my promotor, Brent Bleys, for inspiring me to take on this project, guiding me through it and yet allowing me to define my own path.

I would like to thank my parents for granting me the opportunity to study whilst encouraging me every step of the way. Thanks to Boris for never allowing me to fall out of love with the subject, to Lena for creating the perfect 'thesis-atmosphere' and to Amber and my father for their feedback on my writing style.

Furthermore, I want to thank Interface, MUDjeans and Fairphone for their collaboration to this paper.

Finally, I am grateful for the valuable lessons writing this master's dissertation has thought me.

Obviously, the techniques of writing an academic paper, for me the very first one, allowed me to grow and become a more critical person. Secondly and more importantly, the subject itself thought me the value and urgency of considering alternative futures. Together with visions and believes I have always had, it led to the decision of applying for a second master program in environmental economics. A next step I'm looking forward to taking.

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List of used abbreviations

CVC	Collaborative value creation
CSR	Corporate social responsibility
GDP	Gross domestic product
LCA	Life cycle assessment
MIPS	Materials intensity per service unit

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1. Introduction

A recent political and economic movement, arisen from ecological economics, named degrowth, calls for a fundamental transformation of our lives and an extensive cultural change away from consumerism and the ever-existing paradigm of growth (Kallis, Kerschner and Martinez, 2012; O'Neill, 2012; Victor, 2008; Jackson, 2009).

Degrowth proponents do not believe that growth is an appropriate policy goal. On the contrary, they question the gross domestic product growth or GDP growth as they regard it as the main reason for two problems (O'Neill, 2012). Firstly, an environmental problem arises when aiming for growth. When the economy grows, so do resource extractions and waste emissions. Planet earth, however, doesn't grow along. Up until a certain point this doesn't raise any problems but when our global economy surpasses '*the safe operating space*' for humanity, we are putting a higher burden on the planet than it can bear (Rockström et al, 2009). One can never have infinite growth in a finite system. Secondly, there is a social motivation to stop aiming for growth, which is based on the idea that an increase in consumption does not always lead to an increase in prosperity (Jackson, 2009). Richard Layard (2005) shows in his book '*Happiness lessons from a new science*' that additional money doesn't result in additional happiness beyond an average income of \$20 000 a year. This is well known as the '*Easterlin paradox*' or '*happiness-income paradox*' because above a level that satisfies basic needs, growth does no longer improve psychological wellbeing. (Easterlin, McVey, Switek, Sawangfa and Zweig, 2010)

Degrowth is still embryonic and even though it is widely understood that fundamental changes to our entire economy are required, to this point there is very little understanding of what these changes will entail (Schneider, Kallis and Martinez-Alier, 2010; Kallis et al., 2012; Van den Bergh, 2011). The majority of researchers has been discussing degrowth from a macro point of view. Not surprisingly since that is where it originated. However, there is an increasing demand for an analysis of the possibilities of implementing such changes bottom-up (Kallis, 2011; Bleys, Block, Defloor and Paredis, 2015). In this regard corporations can play an important role to motivate consumers to consume both less and more sustainably.

The aim of this paper is to investigate whether firms can operate according to the ideas of the movement and hence play a role in implementing degrowth. Therefore, the following research question is formulated:

Can degrowth be a viable business model for a firm?

By answering the research question, this paper tries to fill some of the knowledge gaps about degrowth and motivate whether degrowth is indeed a viable way for a firm to do business.

The remainder of this paper is structured as follows. Paragraph 2 clarifies the concepts of degrowth and business models and provides an overview of the existing literature on businesses in degrowth. Paragraph 3 describes the methods used for the analysis. The results of both the literature review and case study analysis are shown in paragraph 4. It explains the important building blocks for a business model and proposes a coherent framework. The extent to which the case study companies implement this framework is assessed. Finally, the findings are presented in paragraph 5 and included in a debate to answer the research question. The last section concludes the major findings of this paper followed by the limitations and areas for future research.

2. Degrowth and business

2.1. Degrowth, the meaning and history of the concept

Degrowth has been described in various ways, and to this day there is not yet an agreement on a single definition. Degrowth can be described as a collective process of downscaling of production and consumption that increases human well-being and enhances ecological conditions at the local and global level, in the short and long run (Schneider et al., 2010). Although degrowth does not focus on reducing GDP intentionally but on decreasing material and energy throughput, it will most likely result in a GDP decline (Kallis, 2011). The aim is to meet basic human needs and ensure a high quality of life while reducing the ecological impact of the global economy to a sustainable level, equitably distributed among nations. Therefore, degrowth proponents believe a shift away from capitalism and a transition towards more localized economies are needed (Fournier, 2008; Kallis, 2011; Foster, 2011).

The debate about the limits to growth is not new. Adam Smith, sometimes seen as the father of economics, defined the stationary state of an economy as the logical endpoint of an economy striving for profit within the boundaries of its resources and laws. Even he already knew we wouldn't be able to grow till perpetuity. (Zweig, 1979). The actual discussion started when Thomas Robert Malthus predicted at the end of the 18th century that agriculture would not be able to maintain the quickly growing population (Zweig, 1979). He turned out to be wrong -at least at the time- since many technological innovations enabled the industry to meet the increasing demands. But it quickly became clear that the results he expected, would however still come at a later stage since nowadays we are struggling to meet the demands of that ever-growing population.

John Stuart Mill wrote a chapter *the stationary state* in the mid 19th century where he explains the virtues of ending growth and bringing things to a more stable state (Mill cited in Zweig, 1979)

The density of population necessary to enable mankind to obtain all advantages of co-operation and social intercourse has in all the most populous countries been attained. It is no good for a man to be kept perforce at all times in the presence of his species. A world from which solitude is extirpated is a very poor ideal . . . With ever)' rood of land brought into cultivation. . . every hedgerow or superfluous tree rooted out, every flowery waste or dell ploughed up. . . there is no satisfaction in contemplating the world with nothing left to the spontaneous activity of nature.

If the earth must lose that great portion of pleasantness which it owes to things that the unlimited increase of wealth would extirpate from it, for the mere purpose of enabling it to support a larger, but not better or a happier population, I sincerely hope, for the sake of posterity, that they will be content to be stationary, long before necessity compels them to it. It is scarcely necessary to remark that a stationary condition of capital and population implies no stationary state of human improvement. . . Only thus can the conquests made from the powers of nature by the intellect and energy of scientific discoverers, become the property of the species, and the means of improving and elevating the universal lot.

This discussion became very prominent after the Club of Rome, an organization of individuals who share a common concern for the future of humanity and strive to make a difference, came together in 1972 and issued a report that was called '*The limits to growth*' (Meadows, Meadows and Randers,

1972). The report tells us that infinite growth in a finite system, the Earth, is impossible and that as a result the system will collapse at a certain point.

The subject continued to gain importance, amongst others thanks to ecological economist Herman Daly. He suggested the '*threshold hypotheses*': above a certain level of income (the threshold) the cost of growth surpasses the benefits (Daly, 1991). Thus, he introduced the idea of a steady-state economy, an economy consisting of a constant stock of physical wealth (capital) and a constant population size (Daly, 1991). The concept is different from economic stagnation because it is the result of deliberate political actions.

Degrowth proponents even go a step further and motivate that degrowth is necessary, because we are already surpassing the safe operating space of four out of the nine planetary boundaries (Steffen et al. 2015). Mathematician Nicholas Georgescu-Roegen (1975) was the first scientist to promote this vision, in his paper '*Energy and economic myths*' where he debated the report on '*Limits to growth*' by Meadows et al (1972) and the thesis about the steady state economy by Herman Daly (1973). He applied the second law of thermodynamics to the economy and thereby proved that exponential growth on a finite planet is impossible. He called the political movement '*décroissance*', referring to a river going back to its normal flow after a disastrous flood. (Georgescu-Roegen, 1975; Martinez-Alier et al., 2010). The English word 'degrowth' became frequently used only after the first international conference degrowth in Paris in 2008 (Demaria, Schneider, Sekulova and Martinez-Alier, 2013).

More recently leading authors in the degrowth movements are ecological economist Serge Latouche from '*Farewell to growth*' in 2009 and Tim Jackson from '*Prosperity without growth*' in 2009.

Steady-state and degrowth are two separate concepts, both based on separate assumptions. For instance, in the vision of the steady-state, market mechanisms can be used to stabilize resource use, while the degrowth movement is more skeptical about this and of capital institutions in general. Additionally, degrowth proponents stress more on social outcomes than is the case for steady-state. However, both concepts can be used complementary (Martinez-Alier, 2012; Kallis et al., 2012). This concretely means we would need to implement a period of degrowth, especially in developed countries, before moving towards a steady state. We thus need to start by decreasing the flow of materials before we can stabilize it at a sustainable level.

As with every idea that questions a standing truth, degrowth has attracted a lot of criticism (Van Den Bergh, 2011). The main concern is that the decline in economic activity will result in higher unemployment, lowering the consumption even further and thus again resulting in a decrease of economic activity. Lower consumption might not necessarily decrease prosperity but unemployment certainly does. Proponents of degrowth, however, argue that there are solutions to this problem, such as a shorter working week (Jackson, 2017; O'Neill, 2012).

Another point of criticism that often arises, is the uncertainty whether a decrease in GDP will effectively result in a decline of consumption. Additionally, Van den Bergh (2011) questions if even when it does result in an overall decline of consumption whether this decline is mostly in 'bad consumption'. Bad consumption is a term used for the more environmentally unfriendly sectors (Van den Bergh, 2011). Here, it makes sense to note once again that degrowth aims to decline material and energy throughput, which will probably result in a decrease of GDP growth, the latter however is not the initial goal (Kallis, 2011; Hardt and O'Neill, 2017).

It also makes sense to note that the concept '*sustainable development*', which is now widely understood and used by citizens and companies all over the world, is a giant oxymoron from the degrowth point of view (Alier, 2009). In this context, we know that economic growth is environmentally unsustainable, so no kind of 'development' can be sustainable (Demaria et al., 2013). Economic growth, even disguised as sustainable development, will lead to social and ecological collapse. It is thus better to promote different social values and to start adapting to forced degrowths that are likely to occur, in order to find a prosperous way down (Odum and Odum, 2001). This does not mean we can't draw on earlier research on sustainability. A lot does overlap with the degrowth objective. However, one of the most important aims of degrowth, a reduction of material and energy throughput, is not incorporated.

Since current literature on degrowth has rarely focussed on a micro point of view this paper aims to provide a framework which can help firms make the necessary radical changes. In order to draw on research about degrowth in business, the next section provides some information about businesses themselves and more importantly about the concept of a business model. Afterwards, an overview of the findings about implementation of degrowth – and other related concepts – in firms is provided.

2.2. Business model

According to Osterwalder, Pigneur and Tucci “A business model is a conceptual tool containing a set of objects, concepts and their relationships with the objective to express the business logic of a specific firm.” (Osterwalder, Pigneur and Tucci, 2005, p. 3). It describes the rationale of how an organization creates, delivers and captures value. (Osterwalder and Pigneur, 2010).

The model is an abstraction of the business, concerned with multiple aspects: first, how the firm defines its competitive strategy through the design of the product or service it offers to the market, second, how much it charges for it and what it costs to produce, third, how it differentiates itself from other firms by the value proposition, and fourth, how the firm integrates its own value chain with those of other firms in a value network (Rasmussen, 2007). In other words, it defines the way in which a firm does business and always consists of the following three ingredients (Bocken and Short, 2016). The most important aspect of successfully running an enterprise, is undoubtedly the value proposition (the product or service the firm offers). Next, one needs to define the value creation and delivery (the activities, resources, suppliers and partners that contribute to the creation process of a value generating product or service) and finally the value capture (the cost and revenue streams that define how much of that created value can be captured by the firm and key stakeholders) (Bocken, Short, Rana and Evans, 2014).

Moreover, business models can serve as a lever for change in two ways. Firstly, the strategic marketing of processes, products and service for innovations is established in the business model. Second, a model itself can continuously be transformed in order to give the firm a competitive advantage by altering the terms of competition (Boons and Lüdeke-Freund, 2013). Consequently, business models are often seen as mediators for innovations. They connect production with consumption but also grasp the expectations from non-business stakeholders (Boons and Lüdeke-Freund, 2013). Thus, the innovation of current business models lies at the foundation of the necessary changes to the way business is done (Magretta, 2002; Bocken and Short, 2016).

It is thus of great importance to install business models that incorporate the planetary restrictions that companies and humanity as a whole are faced with, as they can serve as an important tool to tackle the downgrading of the environment and contribute to the transition towards degrowth.

The majority of existing business models however, are inherently based on the profit motive. Moreover, adjustments to the traditional business models, as were repeatedly proposed in the

context of sustainable or green businesses (Stubbs and Cocklin, 2008), are insufficient. Rather a radically different alternative has to be proposed.

2.3. Literature on degrowing businesses

In order to broadly implement degrowth it has been suggested that next to an overall degrowth context, firms can contribute to this transition (Kallis, 2011). In order for that to happen the degrowth idea has to be operationalized for businesses (Khmara and Kronenberg, 2018). Authors however, have hardly focused on this subject. Even business models for sustainability remain relatively vague, and the latter still tend to fit into the framework of neoclassical economics and its green growth or green economics paradigms (Boons, Montalvo, Quist and Wagner, 2013). Consequently, it will not come as a surprise that the research body on degrowth businesses is even smaller. However, a small niche of literature is arising. I summarize the most important research regarding enterprises in a degrowth context.

The existing literature on degrowth in businesses can be divided into two overarching streams, one focusses on companies that don't grow and another group of scholars has provided some insight on how the other cornerstones of degrowth might be implemented in an organization. The latter group thus focuses on the actual objectives of a firm in the degrowth course. Following these will probably result in a GDP decline and evidently in lower average company sales, the focus of the first stream of research.

Businesses that don't desire to grow

The first stream of literature focuses on what it entails to strive for non-growth strategy. This isn't necessarily aspired because of considerations that fit the degrowth discourse, notwithstanding it certainly applies to the context. For instance, some entrepreneurs keep their companies small for conveniences, such as bearing less risk, less work, and being able to keep the same organizational structure. Though other entrepreneurs willingly neglect company growth for social and environmental motivations (Liesen et al, 2015). To this end, Burlingham (2016) gives a pleading of '*bigger is not necessarily better*'. He analyses 14 privately owned companies that do not desire to grow. These companies are defined as companies that are not primarily aiming for a maximization of traditional management indicators such as sales, market share, profit or employee numbers, but want to remain roughly constant in size. He thereby reasons that other paths to success exist apart from sales growth (Burlingham, 2016).

Businesses that implement degrowth objectives

Another stream of literature axiomatically builds upon other examples of doing business differently, such as social enterprises, communities, cooperatives, sufficiency-driven businesses... The first major contribution in this area was made by Johannisova, Crabtree and Fraňková (2013). They identify examples of social enterprises possibly suited to fit into a degrowth environment and thus are one of the first scholars linking degrowth with business. Their focus is on defining 'the economy' within a degrowth context, mainly by including non-monetized sectors, and the way social enterprises fit into this framework.

Even though initially in macroeconomic context, Jackson (2016) argues that corporations have an important role to play in the reduction of consumerism and therefore they will need to drastically change. He argues that even production firms in a degrowth context will have to create a unique value proposition through the services it offers its consumers.

'Sufficiency' was proposed as a driver of business model innovation for sustainability (Bocken and Short, 2016). Bocken and Short (2016) motivate that in order to manage consumption, businesses need to move beyond eco-efficiency (which is rather close to the conventional business case) to more radical alternatives, such as sufficiency. The authors assess how companies use sufficiency, defined as the focus on reducing absolute demand by influencing and mitigating consumption behavior, based on six case studies. This might not be a degrowth concept per se, it still provides us with a case study analysis of one of the most important pillars of the degrowth paradigm.

Another concept not entirely similar to degrowth, but definitely part of the overarching framework is collaborative value creation (CVC) on which Hankammer and Kleer (2017) focused. Moreover, they explore the link between collaborative value creation and its enabling technologies and degrowth. They illustrate that several elements of CVC could be used to accomplish degrowth objectives, although they do not necessarily lead to their attainment.

Wells (2017) links degrowth to technological innovation, business model innovation and corporate governance based on a case study for Riversimple. He argues that many technologies have qualities that would allow application in a traditional growth sense, as well as in a degrowth sense. For the case of Riversimple, radical technology innovations are achieved and as a result even within existing legal frameworks, social practices, cultural expectations and physical infrastructures, a totally

different business model is created. One that, according to the author, can contribute to the transition towards degrowth.

Finally, Khmara and Kronenberg (2018) provide an operationalization of degrowth in the context of business activity. They develop a set of assessment criteria based on a review of literature and test them. For this they use Pantagonia, a firm also included in this case study analysis. The established criteria assume an entirely new business environment, driven by alternative objectives and values, focused on collaborative value creation, democratic governance, and reducing environmental pressures. The derivation of degrowth criteria and the analysis of their practical application based on case study is similar to the method provided in this paper. However, this work contributes by simultaneously evaluating different companies.

This summary of literature is provided, not only to enable a clear understanding of what it should entail for a firm to operate in a degrowth context, but more importantly, these findings are used in this paper to assess the criteria a degrowth company has to be in compliance with. Again, it is understood that corporations have an important role to play in the transitional pathway to a degrowing future. The exact operationalization of these companies' business models however, remains relatively vague (Schneider et al, 2010; Kallis et al, 2012). This paper tries to fill that knowledge gap by establishing an overarching framework.

Moreover, degrowth proponents believe public policies aimed at reducing environmental harm and tackling problems are insufficient. This can mainly be attributed to two reasons: policies can be ineffective and the level of political acceptance remains rather low (Schneider et al., 2010). As a solution, government intervention and policy actions are not neglected, however a combination of different approaches to implement the necessary radical changes is desired. Yet, the role of firms in the transition pathway has not been investigated (Liesen et al., 2010; Khmara and Kronenberg, 2018; Hardt and O'Neill, 2017). This could be attributed to the fact that to this day no enterprise operates completely in accordance with the degrowth paradigm. The next paragraph discusses some arguments explaining the difficulty of this transition.

2.4. Pitfalls for degrowth enterprises

Even though many proponents of degrowth have advocated the importance of enterprises operating in accordance with degrowth objective, there are several reasons that might partly clarify the lack of both research and practical examples in this field.

First and foremost, degrowth is a course to be taken for the economy as a whole, aiming to restrict economic activity within ‘the safe operating boundaries’ for humanity (Rockström et al., 2009; Steffen et al., 2015). This however, does not exclude the possibility that some companies, industries and countries can still grow. (Jackson, 2016; Kallis et al, 2012). For instance, to reduce inequality it is desired that poorer nations are still able to grow, at the expense of highly developed countries. The same applies for industries and for individual companies. Concerning the latter, one single entity, with a positive contribution to society and the environment, can still grow at the cost of other, for instance more polluting companies in the industry. This raises questions about the appropriate levels of growth for each individual firm or industry. Evidently, more research is needed on this subject as it is crucial to agree on what needs to be reduced and to what extent (Khmara and Kronenberg, 2018).

Secondly, there is no unanimity on the question of profits. It is comprehensible that degrowth companies should still be able to generate profits, since evidently profits are necessary for the existence of the company. To this end, though, it is important to examine how these profits are distributed and definitely whether they are prioritized over other interest (Wells, 2016). Hence, several scholars have asked for different performance indicators, that go beyond financial factors and economic performance of the firm. Upward and Jones (2016) propose an alternative metric, ‘*tri-profit*’ defined as “the conceptual net sum of the costs (harms) and revenues (benefits) arising as a result of a firm’s activities in each of the environmental, social, and economic contexts in a given time period measured in units appropriate to each” (Upward and Jones, 2016, p.106). Yet alternatives for a degrowth company are non-existent thereby making it impossible for a company with completely different business models to assess that model with a well-adapted metric.

Thirdly, company legal structures are not adapted to alternative economies since the focus is often on short term shareholder valuation (Bocken and Short, 2016). Again, different sets of metrics might help solve this problem.

Businesses have been recognized to contribute to the transition towards a degrowing economy (Kallis, 2011; Johanisova et al, 2013; Wells, 2016). Be that as it may, their power to entirely change

business as usual for the economy as a whole is limited. This is mainly due to the fact that consumers need to change their behavior in conjunction. However, the latter often seek variety and novelty (Bocken and Short, 2016). Thus, as long as some companies that do not engage in degrowth still produce new items and in doing so the supply flow is sustained, it might be hard to raise sufficient awareness amongst consumers and to discourage them to continue looking for 'wants' instead of solely answering to 'needs'. Correspondingly, consumers tend to use products as a 'language of goods' and thus use them in non-material ways as well (Jackson, 2016).

Finally, the average consumer appears to be rather bad at considering future benefits and costs and consequently often under-values the future benefits of a sustainable product significantly (Bocken and Short, 2016). This implies that products with premium prices, even though they might appear to be relatively cheaper over the long term, are still neglected when cheaper products are available. Companies of course, are aware of this and use their prices as competition mechanisms. This hinders degrowth companies in the course of competition, which might partly explain why their power to change the economy could be limited.

3. Material and methods

This paper, exploratory in nature, attempts to assess whether operating within a degrowth paradigm is possible for a firm and thus business might contribute to an overall transition towards this new paradigm.

To investigate whether companies can follow a degrowth course, I firstly constitute seven criteria that provide the basis for the evaluation of the case study companies. These criteria are established based on the characteristics of degrowth provided by scholars in previous academic research. The primary sources of information for this are provided by Jackson (2016), Hankammer and Kleer (2017), Bocken and Short (2016) and Khmara and Kronenberg (2018). Depending on their work I derived the most important aspects of the movement and aggregated them into seven business model criteria. Consequently, each criterion is further operationalized. For this, a more elaborated body of literature is consulted, both from a macro and micro point of view, to create a more coherent framework. The obtained criteria mutually complement each other and the list is tentative because degrowth is still a concept in the making (Hankammer and Kleer, 2016).

Secondly, to further conceptualize a degrowth business model, a case-study approach is chosen, because this is ultimately suited to obtain a holistic, real-world perspective and is suited to address ‘how’ and ‘why’ questions focusing on new events (Yin, 2014).

The companies themselves were selected through careful screening of articles and scientific papers.

Companies claiming to have an extraordinary approach to environmental boundaries have been collected. All applied a pioneering role with respect to environmental and social aspects, taking efforts further than competitors. Moreover, I only included companies that had been acknowledged for these approaches by other parties, outside the organization.

Afterwards based on the availability of data a selection was made and that group was further reduced to take into account the companies’ industries and gather a heterogeneous sample of companies. A group of 6 companies was obtained: Patagonia, Fairphone, Interface, Clif Bar & company, MUD jeans and Riversimple.

Thirdly, information about the companies was derived mainly from publicly available sources. This includes both primary and secondary information. Table 1 depicts the general information of each company included in the analysis.

Table 1 – General company information

	Patagonia	Fairphone	MUD jeans	Interface	Clif bar & company	Riversimple
Sector	Textiles, Fashion and Creative Industries	Electrical and electronic engineering industries	Textiles, Fashion and Creative Industries	Construction	Food and drink industry	Automotive industry
Main activity	Outdoor clothing	Smartphones	Denim Jeans	Floor-coverings	Energy and nutrition bars	Hydrogen cars
Headquarter	Ventura, California, United States	Amsterdam, The Netherlands	Almere, The Netherlands	Atlanta, Georgia, United States	Emeryville, California, United States	Llandrindod Wells, United Kingdom
Employees	2,120	Around 75	13	3,092	1111	23
Founding year	1973	2013	2012	1973	1992	2007
Founder	Yvon Chouinard	Bas van Abel	Bert van Son	Ray Anderson	Gary Erickson	Hugo Spowers
CEO	Rose Marcario	Bas van Abel	Bert van Son	Jay Gould	Kevin Cleary	/
Ownership structure	Privately owned	Privately owned	Privately owned	Listed on NASDAQ exchange	Privately owned	Privately owned

Sources: Patagonia.com; Fairphone.com; MUDjeans.com; Interface.com; Clifbar.com: riversimple.com

Additionally, all companies were contacted with the question to participate to the research project through an in-depth interview. However, not every company responded positively. Two of the companies did not reply at all. Both Fairphone and MUDjeans agreed to a group video call, on the premise that the questions were limited to only five. Interface agreed to a private interview, yet with a limitation to the amount of questions. Finally, Patagonia also wanted to make a contribution to the project but eventually revoked. Table 2 gives an overview of the interviews conducted. Moreover, the questions asked in the interviews can be found in the attachments, enclosed at the end of this paper.

Table 2 – Overview of the company interviews

Company	Interviewee	Role within the organization	Date and time	Duration	Medium	Amount of interviewers
Patagonia	Was not prepared to collaborate					
Fairphone	Chingchih Chang	Project Officer	Tuesday May 1, 2018 at 14.45h	50min	Google hangouts	2
	Miquel Ballester	Founding team and Resource Efficiency Manager				
MUDjeans	Bert van Son	Founder and CEO	Monday May 7, 2018 at 16.00h	110min	Zoom	17
Interface	Geanne van Arkel	Head of Sustainable Development, Interface EMEA	Tuesday May 1, 2018 at 10.00h	45min	Phone call	1
Clif Bar & Co	Did not reply to the research request					
Riversimple	Did not reply to the research request					

Fourthly, the companies' business models were screened based on the degrowth criteria established beforehand and a discussion is given on whether or not they might fit the degrowth paradigm.

Finally, I discuss the results based on the analysis of the criteria from the case studies and insights from literature. Moreover, some suggestions regarding businesses contribution to the transitional pathway are proposed.

Even though a similar methodology to the one of Khmara and Kronenberg (2018) is applied, this paper makes a contribution since it operationalizes degrowth across multiple companies.

4. Results and analysis

4.1. Degrowth criteria

This section explains the seven criteria and how they have been established base on arguments from degrowth proponents.

4.1.1. Growth in sales is not a goal of the company

Limits and reductions in the scale of production and consumption are the key to achieving a future of low material use (Schneider et al., 2010). Bocken and Short (2016) motivate that in order to manage consumption, we need to move beyond eco-efficiency toward an approach such as sufficiency, which focuses on reducing absolute demand by influencing and mitigating consumption behavior. This approach is equally necessary from a degrowth point of view.

Consequently, it is necessary to establish how degrowth will be operationalized. Degrowth proponents recognize that not all nations, nor all companies need to degrow to the same extent, or even degrow at all. In order to create welfare with lower levels of material throughput, the poorer nations should not decrease their consumption levels to the same extent as rich developed countries. On the contrary, degrowth should only happen for the latter group, while developing countries may still grow to a level of economy that is sustainable in the long term, both for those people as for the society as a whole (Victor and Rosenbluth, 2007; Jackson, 2009, 2016). Whilst this is motivated from the macro point of view, it applies similarly within a single industry. Those companies that could eventually represent degrowth, or at least the related sufficiency-driven business model, should still grow in order to make a meaningful system-level impact (Bocken and Short, 2016). Moreover, consumption can be regarded as a degrowth strategy itself. For instance, sustainable consumption is considered to have beneficial impact on the transformation of both individual everyday practices and political and economic institutions (Demaria et al., 2013; Wahlen and Laamanen, 2015).

In order to accurately establish what exactly needs to degrow (both which companies or industries as well as what kind of metric that should be used to assess the progress) more research is needed.

However, in this paper the criterion is conceptualized as follows: growth in the amount of products sold by itself cannot be the company's goal. This choice is based on the fact that it directly reduces

production and consumption levels. Growth in profits on the other hand, with the aim to gain more influence and enlarge the positive impact is considered a goal that fits within the degrowth discussion. Mainly, because it is argued that profits are necessary for the existence of a company (Wells, 2016). One only needs to assess whether they are prioritized over other non-financial interests (Bocken and short, 2016). In other words, whether the business makes profits to exist or rather exists to make profits.

It should be noted however, that the specific establishment of this criterion is a choice rather than an objective derivative from literature. As Van den Bergh (2011) points out, there are many interpretations of degrowth and a lot of ambiguity is still present with respect to what in effect needs to degrow (Schneider et al 2010; Kallis, 2011; Herath, 2016). Moreover, since the operationalization of degrowth is conducted to fit a business model in the long run, it focusses on omitting growth rather than implementing degrowth. Continuously reducing sales volumes would indeed lead to disruption. Therefore, this framework is actually more fitted for a steady-state economy.

4.1.2. Adopt a role as ambassador of the environment

As priorly discussed, the degrowth movement is mainly a macroeconomic concept. However, scholars believe a bottom-up approach for the implementation is needed (Kallis, 2011, Bleys et al., 2015). To achieve this, firms do not only need to adapt to the degrowth context themselves but moreover they should promote their way of doing business and incentivize other companies to follow a similar path in order to succeed in implementing the idea in the entire economy. Since degrowth is mainly a political movement, an ambassador role and engagement in grassroots activities are vital (Wells, 2016; Kmara and Kronenberg, 2018).

4.1.3. Reduction of environmental impacts at all stages of product/service lifecycle

The degrowth paradigm originated as an answer to arising environmental problems and the limits of the planet (Kallis et al., 2012; O'Neill, 2012; Victor and Rosenbluth, 2007; Jackson, 2009). Next to a reduction of consumption, a shift in consumption to products with lower environmental impact is desired (Hardt and O'Neill, 2017). Thereby, building on existing concepts such as sustainability and green growth. Consequently, a company operating in a degrowth environment can only contribute if the ultimate basic requirements are met. This is an all-embracing criterion, referring to for instance a reduction of material and resource use (Bocken and Short, 2016; Jackson, 2009), a decline in externalities stemming from production processes and a reduction of waste generation. In order to

broadly implement changes, the entire value chain needs to be altered thus suppliers and retailers should be involved in the process.

4.1.4. Making products that last and are repairable

To achieve an overall reduction in material throughput, products have to be designed for longevity. A longer lifespan indeed contributes significantly to the evolution towards sustainable consumption (Cooper, 2008) and hence partly towards degrowth. Moreover, less emphasis should be put on creating the desire to own the latest version of a product (Bocken and Short, 2016). To achieve a decline in excess customer demand, products need to be reused over time or across multiple people. Khmara and Kronenberg (2017) built on this innovation and operationalize it as a degrowth criterion in their analysis. I similarly include the aspect in this evaluation exercise.

4.1.5. Shift to additional value adding through service

Since degrowth is a movement motivating the reduction of material throughput while still aiming for maximum prosperity, other approaches to add to welfare have been proposed, such as a more prominent role for service within a business (Jackson, 2016). Even manufacturing companies should add to the value they provide their customers, not only by producing better and definitely not more, but also by backing their products with services, that enhance durability, repairability, reusability experience... Moreover, a shift has to take place in which functionality is delivered rather than ownership (Bocken and Short, 2016).

4.1.6. Collaborative value creation

A concept not entirely similar to degrowth, but definitely part of the overarching framework is collaborative value creation (CVC). Austin and Seitanidi (2012) define collaborative value as “the transitory and enduring benefits relative to the costs that are generated due to the interaction of the collaborators and that accrue to organizations, individuals, and society” (Austin and Seitanidi, 2012a p. 728). To that end, they see the collaboration activities as investments that generate returns, in terms of both social and economic value for your mutual benefit, instead of regarding them as expenses. Hankammer and Kleer (2017) argue that although it does not necessarily lead to the achievement of degrowth, several elements of CVC (interpreted as customer integration) could be used to accomplish degrowth objectives. The value creating collaboration efforts between consumers and the organization in itself could lead to the achievement of sufficiency because it

results in more consumer value since products and services are more adapted to their demands (Franke and Piller, 2004; Hankammer and Kleer, 2017). Besides, transparency and openness are needed to change the competition scene (Hankammer and Kleer, 2017).

4.1.7. Potential to flourish in the organization

To establish this criterion, a deliberate choice was made to aggregate all social aspects appearing in degrowth literature in one multi-dimensional pillar. Primarily because less attention is devoted to these aspects. The concept of degrowth was proposed as an answer to the oxymoron of infinite growth on a finite planet (Meadows et al, 1972; Jackson, 2017). Consequently, many proponents of degrowth tend to focus on solving environmental issues rather than social ones. Nonetheless, it should be noted that degrowth proponents do come from different sources: from anthropologists, the pursuit of democracy, ecology, *'the meaning of life'* and bioeconomics (Schneider et al., 2010). Yet this paper mainly focusses on the last position further explaining why social pillars have been combined.

Ergo, degrowth originated as criticism on the ecological and cultural impact of economic growth and development. More recently, however it has emerged to include other concerns such as justice, democracy, meaning of life and well-being (Demaria et al., 2013; Asara, Otero, Demaria and Corbera, 2015). In this regard, communities with less inequality tend to be happier, leading to higher prosperity, than is the case for communities where income is very unequally distributed (Jackson, 2009). This of course comes as no surprise, since it is uniformly acknowledged that a dollar of additional income brings less benefit to the rich than the poor. As an answer, income caps have been proposed as a policy goal in a degrowth organization (Jackson, 2016).

Secondly, as recognized in the degrowth accounts of O'Neill (2012), job satisfaction and democratic governance contribute to human well-being. Additionally, a greater amount of leisure can lead to greater future productivity and more importantly has a positive effect on unemployment rates. This softens poverty and relieves stress on the environment as on its scarce natural resources (Victor and Rosenbluth, 2007).

Furthermore, to increase overall prosperity firms are expected to engage in their local communities through grassroot innovations and alternatives. Such practices that extend beyond the boundaries of business are required to contribute to the necessary transformation (Asara et al., 2015).

4.1.8. Operationalization

Table 3 depicts an overview of how the different criteria are operationalized.

Table 3 – Business model criteria for a degrowth company

Criterion	Operationalization
Growth in sales is not a goal of the company	• Growth in profits is solely pursued with the goal to enlarge positive impact • Growth in sales is constant and limited, close to zero • Aspire to grow only as a substitute for ‘bad growth’, never to contribute to industry growth • Promote sufficiency¹
Adopt a role as ambassador of the environment	• Exist with the reason to implement solutions to environmental issues • Make extra efforts aside from business activity to engage in environmental movements and grassroots efforts • Strive to be a role model and a source of inspiration • Adopt a stewardship role²
Reduction of environmental impacts at all stages of the lifecycle	• Priority is given to the most important environmental impacts first, rather than the easiest ones to tackle • Apply the circular economy model³ • Continuously reduce material input, energy use, waste and emission • Use recycled and/or renewable materials in the production processes • Use renewable energy • Reduce hazardous waste and aim for total net positive or zero impact • Tackle suppliers and retailers to follow the same strategy • Application of metric to estimate total impact of the products/services (LCA⁴, ecological footprint⁵)

¹ Sufficiency focuses on reducing absolute demand by influencing and mitigating consumer behavior (Young and Tilley, 2006; Bocken et al., 2014). A business adopting a sufficiency-based approach attempts to meet the needs of their customers instead of creating wants (Bocken and Short, 2016).

² Worrell and Appleby (1999) propose the following definition: “Stewardship is the responsible use (including conservation) of natural resources in a way that takes full and balanced account of the interests of society, future generations, and other species, as well as of private needs, and accepts significant answerability to society”. They interpret it as a useful concept with regard to management as a philosophy where responsible forms of management are attained and sustainability concerns promoted (Worrell and Appleby, 1999, p.269).

³ Circular economy model is a business model build around the paradigm that disposes the current linear economic system, towards closed-loop resource flows to preserve both environmental and economic value in products. It can lead to an increase in resource efficiency and a reduction of environmental damage because less raw material are extraction and less waste is generated (Nußholz, 2017)

⁴ Life cycle assessment (LCA) is a tool to assess environmental impacts associates with all stages of a products life from raw material extraction through materials processing, manufacturing, distribution, use, repair and maintenance and disposal or recycling. It is a useful technique to critically asses the products (Joyce, Paquin and Pigneur, 2015).

⁵ Ecological footprint (EF) is a physical index of sustainability that measure the use per capita of land for food, wood, fiber, wood, in addition to the built environment and the amount of land that could absorb the carbon dioxide from burning fossil fuels. This is translated into one value, the amount of hectares (Martinez-Alier, 2012).

Table 3 – Business model criteria for a degrowth company

Make product that last and are repairable	• Implement longevity in design process • Provide and promote option to reuse • Implement repairability in design process • Provide and promote repair services
Shift to additional value adding through service	• Implement product-service systems as core part of the business model (rent, lease) • Promote shift from ownership to functionality • Provide supporting services in addition to product
Collaborative value creation	• Be open and transparent • Work in collaboration with network and competitors to achieve higher common value • Use tools to enhance consumers (innovation toolkits⁶, mass customization⁷, crowdsourcing⁸, open innovation⁹, crowdfunding¹⁰)
Potential to flourish in the organization	• Implement income caps through the entire company • Provide additional perks to increase employee wellbeing • Give employees more leisure time and provide more flexibility • Shift to a more horizontal organization structure and democratic governance • Motivate employees to believe in the company values • Exist with the reason to implement solutions to social issues • Make extra efforts aside from business activity to engage in social movements and grassroots efforts

4.2. Criteria assessment for companies

The majority of practical examples of degrowth remain limited to rather small initiatives such as cooperatives, social enterprises, back-to-landers, urban gardens, community agriculture, community currencies, work-sharing and ethical banks (Khmara and Kronenberg, 2017; Bloemmen, Bobulescu, Tuyen and Vitari, 2015; Healy, Martinez-Alier and Kallis, 2015; Johanisova et al, 2013; Kallis et al, 2012). All of these undoubtedly demonstrate interesting insights and contributions to a better way of living, yet most of these initiatives have in common that they take place in separate communities and

⁶ Innovation toolkits enable customers to track their personal usage profiles (Hankammer and Kleer, 2017).

⁷ Hankammer and Kleer (2017) define mass customization as a concept that allows consumers to purchase products that meet their needs more closely. This strategy aims at providing individualized products and services at the costs of a mass-produced good (Pine cited in Hankammer and Kleer, 2017).

⁸ Crowdsourcing is the collection of solutions or innovative ideas from a large community, *'the crowd'* (Hankammer and Kleer, 2017).

⁹ Open innovation focusses on opening up of the process to other parties in order to enhance the possibilities of the innovation (Hankammer and Kleer, 2017).

¹⁰ According to Wash (2013) "Crowdfunding systems are social media websites that allow people to donate small amounts of money that add up to fund valuable larger projects. These websites are structured around projects: finite campaigns with well- defined goals, end dates, and completion criteria." (Wash, 2013, p.631)

remain excluded from the majority of society. A typical for-profit company which would not comply with the predominant model of growth and externalization of costs would be in danger of being omitted from the system (Johanisova et al., 2013).

To this end, this paper tries to address that knowledge gap by operationalizing degrowth for a more typical profit generating business. It is worth notifying that I apply this to typical business in a more elaborated fashion than has already been done for corporate social responsibility (CSR), sustainability, green economy and comparable principles since they implement changes to the profit-oriented business model rather than introduce a completely different basis.

Even though, to this day, I am not aware of a single company claiming to operate according to the degrowth paradigm, many examples can be found of companies dedicating extraordinary efforts to address certain social and environmental issues and operate within the boundaries of the planet. I selected six companies and their business models are evaluated based on the criteria established above.

4.2.1. Patagonia

Undoubtedly the most prominent degrowth company, is Patagonia. It is a US-based and globally operating company selling outdoor clothing. Founded by Yvon Chouinard, an influential rock climber, mountaineer and ice climber, this company cares a great deal about the effect of business on the environment, which is clear from its mission statement:

“Build the best product, cause no unnecessary harm, use business to inspire and implement solutions to the environmental crisis” (Patagonia.com).

Many scholars have used Patagonia in research projects, mainly in the field of sustainability (Kmara and Kronenberg, 2018; Bocken and Short, 2016; Rothenberg, 2007; Casadesus-Masanell, Crooke, Reinhardt and Vasishth, 2009). Moreover, the company is renown to lead by example and its approaches have been widely adopted.

4.2.1.1. *Growth in sales is not a goal of the company*

Patagonia explicitly states they aim for a reduction of consumerism. In fact, their remarkable advertising stunt on Black Friday 2011 could serve as an excellent piece of evidence for this goal. They launched a poster with a picture of one of their outdoor jackets along with the slogan ‘*don’t buy this jacket*’ in order to sensitize consumers to think twice about whether they actually need the

jacket. Additionally, the main objective of the firm is to provide their customers with great products that last a lifetime and emphasize functionality over fashion (Casadesus-Masanell et al., 2009), even if that implies selling less individual units.

The firm has investigated zero-growth strategies in the past (Bocken and Short, 2016). Since this experiment turned out to be unsuccessful, the firm now claims to limit growth to a modest rate (Patagonia.com). Ergo, even after launching the advertisement Patagonia's sales have continuously increased. It suggests the latter might have been a marketing stunt to attract a different customer segment. Even if that were not the case, the growth in itself, and the impossibility to eliminate it, is undeniably controversial to the degrowth pillar and suggest zero-growth is unattainable.

More in compliance, Patagonia states to pursue growth because it enables them to use business for good (Greatplacetowork.com). The CEO, Marcario, even takes it one step further. She wants to maintain the growth of the company to prove that her take on capitalism can work. She is convinced that a company can achieve even more success when it thinks about both current investors and alongside them about future generations (Bradley, 2015). Whilst this could be interpreted as a possible pathway to tackle the problems arising with the current way of doing business, it does not fit in the proposed framework. Most importantly, because the degrowth discourse rejects the capitalistic systems completely (Fournier, 2008).

4.2.1.2. Adopt a role as ambassador for the environment

Patagonia itself claims to use their business to inspire people and show them that doing business in an environmentally friendly way is possible (Patagonia.com). This can be recognized in many examples. Firstly, the documentary film '*Blue Heart*'. This is a short movie about Europe's last wild rivers in an attempt to create awareness about the negative effect of -even small- dams, amplified with a petition against banks investing in the hydropower dams (Patagonia.com). Secondly, there is the '*1% for the planet initiative*'. This entails a donation of 1% of sales to hundreds of grassroots environmental groups all over the world in order to, in their own words, reverse the tide. In addition, a venture capital arm was set up, '*Tin Shed Venture*', and raised \$20 Million with the goal to identify and assist start-ups resolving ecological issues (tinshedventures.com). The main goal of this VC fund is to more specifically support other actors in their supply chain and companies using business to tackle bigger problems. Secondly, they use this arm to lead by example. Fourthly, the firm donates time and muscle. Employees at Patagonia get several days of paid leave to do volunteer work. Moreover, the company organizes '*Tools Conference*', to learn grassroots activist universal campaigning skills and enable them to inspire each other. Finally, the firm joins debates and campaigns in line with their values. Even if they might endanger the company's economic situation

(Chouinard, 2016). This non-exhaustive list of examples clearly indicates the company corresponds with all four aspects of the criterion.

4.2.1.3. Reduction of environmental impacts at all stages of product/service lifecycle

The outdoor clothing manufacturer initially didn't devote much attention to the environmental impact of production processes, suppliers and distributors. Today, that approach has completely altered, many innovations to reduce environmental damage have been implemented since and these clearly show the importance to tackle pressing issues rather than easy one. For instance, in 1985 the polypropylene underwear was substituted for new Capilene polyester and in 1996 after a self-audit showed that conventionally grown cotton was the most polluting material in Patagonia's supply chain they switched to organic cotton (Chouinard and Brown, 1997). At that moment, green alternatives to cotton were only available in very small amounts. However, Patagonia, required themselves to substitute all their cotton supplies in a limited amount of time and thus virtually created the industry for organic cotton in California (Patagonia.com). These examples provide proof that this company is willing to take on great financial risks and implement huge changes in the supply chain in order to minimize its impact on the environment.

Nowadays, Patagonia keeps challenging itself by communicating every step of this supply chain through 'The Footprint Chronicles' (Patagonia.com). This website provides information about every mill, factory and farm Patagonia works with and is used as an incentive to do even better. It reveals that the company is aware that their production, as is the case with every kind of production activity, creates pollution. So, as a means to reverse their negative impact on planet earth, they use recycled materials in their products, biodiesel in their cars, commits resources to learn about synthetic microfiber pollution... (Patagonia.com). On the other hand, a complete overview is not provided, and with reason. For instance, even though the switch to organic cotton is one of the company's biggest achievements, not all products are organic.

To reduce waste generation, Patagonia has a trade-in program to sell even used products and when second-hand selling is of the table, they offer easy ways to recycle their products. In other words, the ideas of the circular economy have been implemented.

A remark can be made to this end. Notwithstanding Patagonia's extraordinary attention to its suppliers and their own production process, less consideration is devoted to the selling of their products to other retailers, and the way they distribute them. For a globally operating company an important aspect to assess since it might well be possible that an initially environmentally friendly product has a bigger footprint than expected because of the journey it travels once it leaves the Patagonia factories.

4.2.1.4. *Make products that last and are repairable*

As has been stated before, one of Patagonia's main concerns is producing high-quality products that last a lifetime. On top of their high endurance, Patagonia amplifies the lifespan of its garments by providing a lot of information on how to care for them, wash them and repair them, in collaboration with Ifixit (Ifixit, 2018). Further the company establishes 'Worn Wear' stores and events to motivate people to repair their used Patagonia clothes by both learning customers how to fix them as well as repairing them for you. This is operationalized in stores, completely devoted to the reparation service. Alongside, a pick-up truck fueled by biodiesel travels around America and Europe with the same single goal: making sure that even damaged products can be used again. In addition, Worn Wear stores and one truck offer second-hand Patagonia clothing, increasing reuse. To this end, Patagonia also has an Ebay platform. Patagonia's clothes are indeed renowned for their high endurance and thus I conclude all aspects of this criterion have been implemented. However, I should add that the reuse program still has opportunities to expand, for instance by providing second-hand items on Patagonia's own websites.

4.2.1.5. *Shift to additional value-adding through service*

One type of service program, the 'Worn Wear' program was established, as discussed above. Still, only a limited amount of customers has access to repair stores because Patagonia's products are sold in countries all over the world, in collaboration with numerous retailers, whilst the repair stores are solely based in the US. The fact that only one truck is driving around amplifies this. This service is thus insufficient to reach all customers of the globally operating firm.

Other services that could be very useful in this area are not considered. For instance, given the sector in which the organization is active, renting garments might be an interesting pathway to reduce unnecessary purchases. Patagonia's business model however does not provide evidence for the viability of this criterion.

4.2.1.6. *Collaborative value creation*

Patagonia is known to be open about business activities and findings resulting from R&D expenses (Williams, 2015; Chouinard and Stanley, 2012). They use this openness to provide other corporations and companies with information to create value of their own, since this is mainly value not only in monetary terms but social and environmental value for the entire planet to benefit from. The Footprint chronicles add to this. The aim is to increase transparency towards stakeholders (Patagonia.com). Whether this actively enhances transparency raises doubts because the website contains an enormous amount of information. The fact that these examples impede readers – this

especially applies to customers – to deduct an overall picture might be considered a mild form of greenwashing¹¹. On the other hand, on the web page of each product links can be found to correct part of Footprint, partly guiding customers through the information maze. Notwithstanding overall skepticism is needed and the company's transparency should still increase significantly. This is affirmed by B score¹² for transparency which is below median¹³ (Bcorporation.net) and the fact that the company was unwilling to contribute to this research, as to many others (Khmara and Kronenberg, 2018)

The second aspect is implemented in a better way. This can be concluded for instance based on Tin Shed Ventures (tinshedventures.com) where collaboration with network is key. Moreover, when firm launched its brand of wetsuits with materials from a desert shrub native to the Southwest, called 'Yulex', a deliberate choice was made not to retain the patented 'biorubber' privately but rather to make it available to the entire industry (Williams, 2015). This choice bears witness of the far-reaching devotion to contribute to a better world, even if this means to forgo certain competitive advantages. Thirdly, engagement of customers is barely implemented in Patagonia thereby letting valuable opportunities to implement degrowth go by.

4.2.1.7. Potential to flourish in the organization

For this company it matters a great deal that every employee shares the company values and strives to make the world a better place, completely in line with the degrowth framework. Consequently, fellow workers are given opportunities to support environmental work and can choose what donations will be made in the context of the 1% for the planet initiative (Patagonia.com). Additionally, some of the ancillary perks that are provided are rather outstanding. For instance, the outdoor clothing manufacturer was one of the first companies to offer on-site child care, mainly with the intention to create a family atmosphere within the company and gain trust of the employees (Chouinard and Ridgeway, 2016). The innovative project has been followed by several major employers such as Google and Cisco. Various other perks and programs increase flexibility and employee well-being, such as company paid healthcare and sick time, paid maternity and paternity leave, alternative transportation reimbursement, a company ski trip, Environmental Grants Program.

¹¹ According to Chen and Chang (2013) "Greenwash is defined as the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service" (Chen and Chang, 2013, p. 489).

¹² A 'B Impact Assessment' analyses and values several aspects of a company, conducted by B corporation. All aspects together comprise an overall B score that defines whether a company deserves a 'B Corp certification'. According to the website "B Corps are a new type of company that uses the power of business to solve social and environmental problems" (Bcorporation.net).

¹³ The median includes all companies that completed the B Impact Assessment (Bcorporation.net).

More leisure is provided with a 9/80 Work Week Schedule. Altogether, it is hardly a surprise that the social efforts have resulted in a series of awards (Great Place to Work, 2017), a 'great place to work 2018' certification and a 'B corps' certification (bcorporation.com). In addition, the company operates in line with even the last two aspects of the criterion by financing and engaging in several grassroots efforts (discussed above) to tackle social issues.

4.2.2. Fair Phone

Fairphone is a Dutch producer of smartphones that, as the name indicates, strongly believes a better phone is a phone made better (Fairphone.com). The company was launched in 2013 by Bas van Abel as an offset of a campaign against 'conflict materials'. To produce a fair phone they focus on 4 core goals: sustainable design, honest materials, good working conditions, reuse and recycling. The company achieved the first goal, and so the last, by developing a modular phone. Honest materials, an obvious focus considering the firm's origin, are pursued by establishing a list of top 10 materials to focus on. Because they believe good workers are the basis of everything, the company has several programs in place to empower them.

4.2.2.1. *Growth in sales is not the goal of the company*

Opposing the main pillar of the degrowth movement, growth in sales is actually the primary goal of the company. Fairphone strives to produce at least 100.000 phones a year, hopefully within the next 3 years. The reasoning is that this amount is vitally necessary to play even a minor role in the smartphone sector (Ballester, personal communication, May 1 2018). Furthermore, the company does want its growth to be at the cost of other smartphone producers since the company does strive for a lower overall smartphone production. To this end, the CEO claims only to aspire selling phones to those who need them (Fairphone.com; Ballester, personal communication, May 1 2018). In that way they would solely answer to needs, as opposed to what the rest of the techno industry is continuously doing, creating wants. According to Boons and Lüdeke-Freund (2013) "Hardware firms offer new models at a high pace, fueling new fashions among users" (Boons and Lüdeke-Freund, 2013, p. 13). Fairphones approach would be in line with sufficiency and thus partly add to degrowth (Bocken and Short, 2016). Nonetheless this goal can never be actively achieved because no method exists to track customers that actually need a new phone, let alone limit supply to only those customers (Ballester, personal communication, May 1 2018). Since these ideas cannot be translated into practice, this of course shows the business model is not successfully adapted to degrow.

Other approaches to achieve lower overall smartphone production might be more successful. The first is increasing the useful life of a single product, to which I will come back into detail later (Bocken and Short, 2016). Secondly, the phone has a dual SIM, which enables separation between work and private communication without requiring separate devices. Further, whilst not actively reducing the amount of smartphones produced, no charger nor headset are delivered with the phone because most people already have those. This approach, totally complies with sufficiency and hence adds to this criterion.

On top of that, the phone manufacturer is investigating ways in which to offer smartphones as a service to further decrease material production, another issue that will be more elaborately discussed in later criteria.

Finally, even though the company does aspire to grow, this is desired to enable impact maximization. Profits on their own and other financial indicators are of no importance to the CEO (Eynde and Bachus, 2016). Therefore, the company does grow, but the other aspects of the criterion have been met to some extent.

4.2.2.2. Adopt a role as ambassador for the environment

It could easily be said that Fairphone owes its entire existence to its ambassador role since it was initiated as a research campaign to raise awareness around conflict materials (Hauke, 2017). Today, spreading the word, still remains the primary reason of continuation. The fact that the phone is not 100% fair yet, and admittedly even far from it (Wernick and Strahl, 2015) is no incentive for any disbelief to this regard seeing that it does above all open the conversation debate about conflict materials. This by selecting 10 primary materials to focus on and openly discussing the current state of conflict. Hence, Fairphone inspires other smartphone producers to in conjunction raise their standards due to competition or normative reasons (Eynde and Bachus, 2016). There probably isn't a better way of putting it than in the company's own words as stated on their website:

Our smartphone is a practical starting point for telling the story of how our economy functions. Producing a phone lets us tackle the big questions and challenges we face from a human perspective. It's an everyday object that nearly everyone owns, uses or can identify with. It's both a tangible device and a great symbol of our connected, social world.

But the phone is not a solution in and of itself – it's simply a vehicle for change. We're revealing its story, understanding how it's made and producing an

alternative. By buying this phone, you're reconfirming that collective action counts and becoming part of a community that has the power to fuel change.

This statement and thereby the message it sends across is confirmed by the community and movement the company built and likewise by Van Der Velden (2014). He recognizes the Fairphone as a case to rethink design as politics and the designer of the phone as an emancipator in a collective political process. Though the focus of Fairphones ambassador role lies primarily on the social aspect and no efforts completely differentiated from the core business activity are known, this firm's engagement in the transition to a better world is evolving to what degrowth proponents aim for.

4.2.2.3. Reduction of environmental impacts at all stages of product/service lifecycle

One of the ambitions of Fairphone is to track each and every component used in the production of the device. They map the supply chain and visualize the flow of materials and processes, not only to create transparency towards their shareholders, but also in order to better understand it themselves. The company plays a controlling role by compelling business actors in different stages of the value chain to meet their standards (Eynde and Bachus, 2016). Given the fact that the supply chains can be extremely long, the producers realize that this analysis is probably far from complete and hence not completely sufficient to meet the degrowth standards. As a solution, they established a top 10 of materials to focus on, based on how heavily they are used and how vital they are for the functionality of the device. Here, the firm's commitment to tackle the most pressing issues prior, an important aspect of this criterion, is evident.

Fairphone is, next to its obvious honesty, recognized as the most sustainable phone available. Among others, environmental organization Greenpeace made this conclusion and valued Fairphone as the greenest phone on the market (Greenpeace.org).

Together with the non-conflict materials – and the reduced production volume thanks to the dual sim and delivery without charger or headsets – the important differentiating characteristics of the phone contain: the body of the phone is fashioned with recycled polycarbonate that was retrieved from old devices, the battery is removable and the phone can be opened up to increase repairability. Furthermore, an important 'after sales' contribution is the stimulation of recycling through the 'Take Back program' and other safe recycling programs. To this end, the company cooperates with 'Closing The Loop' and 'Umicore' to decrease the input of raw materials and diminish the flow of waste. Finally, they participated in the launch of 'The circular phone' where their business model serves as the example for a circular model (Sustainable finance lab and Circle Economy, 2018).

Altogether these efforts lead to the conclusion that this criterion is well met. However, not enough is communicated about the energy sources the company's production relies on, insufficiently adding to that aspect.

4.2.2.4. Making products that last and are repairable

The smartphones are designed with reparability in mind every step of the way. The primary feature leading to the attainment of this goal is building a modular phone. This enables consumers to replace parts that are broken instead of the entire phone. Additionally, each component itself is designed in order to make its repair as easy as possible. To operationalize this, Fairphone collaborates with 'iFixit'. The latter even recognizes another advantage of the modularity, namely obtaining real ownership, due to the opinion that *'if you can't open it, you don't own it'* (iFixit, 2015). On the other hand, the company has already failed to provide their customers with the promised reparation parts and software, five years after the initial launch of Fairphone 1. A supposedly long-lasting and repairable phone was outdated. Thus, one could interpret the criterion as unaccomplished since the company failed to meet the mission statements. If the company succeeds to avoid a similar problem with Fairphone 2 however, the conclusion would be in favor of the criterion, since the initial plan is in line with the cornerstone.

4.2.2.5. Shift to additional value-adding through service

Firstly, the mobile phone company provides services through reparation and recycling programs. Secondly, Fairphone recently published a research project to move from ownership to service (Sustainable Finance Lab and Circle Economy, 2018). They investigated business models for Fairphone as a service and look for means to shift the value from the material product itself to the services it provides, completely in line with the degrowth cornerstones. At this moment, a pilot project, in collaboration with PGGM, is being established to apply the research results in practice. Miquel Ballester (2018) states: "Fairphone 2 was a breakthrough in the industry for circular product design; its modularity provided ease of repair and upgradability. But a real transition to the circular economy requires new business models that detach profit from the use of resources. With Fairphone-as-a-Service, we are taking a new and exciting step in our journey to change the industry" (Sustainable Finance Lab and Circle Economy, 2018). If the company succeeds in putting this business into place, a major step towards meeting the regrowth requirements will be achieved.

4.2.2.6. *Collaborative value creation*

Fairphone produces a smartphone. But a smartphone that is 'smarter' than others. The 'smart' phone is one for which certain other stakeholders are included in the production process and thus in the transition towards sustainable management of the material (Fairphone.com). Other actors are included in the process in numerous ways. First, by openly communicating the current situation concerning the top 10 materials. Second, by financing the production with crowdsourcing. During the production process financed by this crowdfunding, future users of the Fairphone serve as a campaign tool for the company. Since they have already invested their money, they become very approachable and involved in the Fairphone story and even share it with other. Therefore, these months are crucial for building up the community. Thirdly, CVC in later stages of the design process is established through participation in workshops, design discussion forums, a blog and even a bootcamp. In summary, a number of tools are implemented to include customers, leading to conclude a compliance with these aspects. On the other hand, the company's transparency and accountability don't exceed the median of all companies that have completed the B impact assessment (bcorporation.net). However since 'The Circular Phone', the phone is open-source and all their findings, as well as mistakes (the phone is admitted not to be 100% fair yet), are available for other companies to apply in their own business model. In other words, the biggest business model innovation to this regard has been implemented.

4.2.2.7. *Potential to flourish in the organization*

The company is self-evidently investing a lot of efforts into fair working conditions, both in the mining process and the production of their phones. Accordingly, the wages provided should sustain a normal lifestyle. Notwithstanding, when asked about this during the interview the provided answer remained very vague and showed a lack of knowledge concerning this issue (Ballester, personal communication, May 1 2018). Moreover, Income caps are definitely not intentionally implemented throughout the organization.

Fairphone has started several social programs. Firstly, '*making a positive impact on working conditions*' in which they give managers the skills to improve employment practices and fight against the current labour practices in China, such as excessive working hours, low wages and poor health and safety. Furthermore, '*improving employee/manager communication*' to make their employees' voices heard (Fairphone.com). These efforts are an attempt to partly address one of the company's major challenges: they don't own the supply chain thus their influence and control is limited. They emphasize that the company values employee wellbeing highly and aims to empower their workers, thereby to some extent achieving an altered, more democratic structure. However, the company

recognizes wider control is needed (Ballester, personal communication, May 1 2018). Additionally, the top 10 materials to focus on tackle unfair practices in the supply chain and mining of materials. Even though complete fairness has not been achieved yet, the political efforts and innovative approach of this company add significantly to the cornerstones of degrowth.

4.2.3. MUD jeans

Founded by Bert van Son, a veteran in the textile industry, Mud jeans is a Dutch company build around the idea of the circular economy. The small start-up firm produces jeans with a combination of recycled and organic cotton and sells them in approximately 250 stores and online. The emphasis in the business model lies partly on the service a pair of jeans provides to customers instead of the ownership of the product itself. Hence, jeans are leased and in addition sold in a deposit program, to enable returns of old pairs.

4.2.3.1. *Growth in sales is not the goal of the company*

Part of the company's business model is to lease jeans instead of selling them, in order to achieve a decrease of the amounts of jeans produced because they aim for a shift away from fast fashion (van Son, personal communication, May 7 2018). Of course, that does not imply they do not want to grow in sales, on the contrary, the discount code received during the interview suggests otherwise and is actually in contradiction to the earlier mentioned desire to shift away from fast fashion. The CEO, Bert van Son (May 7 2018) beautifully stated "You don't need to laugh, in the end I still need to sell jeans!" and thereby confirms the concern. However, in line with sufficiency and this goal, the jeans are never in sale and new models are only occasionally introduced.

MUDjeans follows the philosophy of the circular economy and uses the profits to invest in the growth of the company, which in the last couple of years was even at a rate of 100% (van Son, personal communication, May 7 2018). So, a very strong focus is put on growth, indicating this company does not execute this criterion. On the other hand, the growth they consider ideal, both for themselves as for the industry as a whole, has its boundaries. To this end, Bert van Son (May 7 2018) refers to Kate Raworth's doughnut economies. Raworth (2017) presents the economy as a doughnut. The inner line is the social foundation (the minimum economic activity to ensure decent living standards) and the outer line is the environmental ceiling (the maximum economic activity not to surpass planetary boundaries). In between lies a safe and just space for humanity, the doughnut (Raworth, 2017). She writes: "This is the space where both human well-being and planetary well-being are assured, and their independence is respected". Thus, according to her theory, he is a

proponent of keeping the economy and its growth within the doughnut and addresses this by not only growing in the number of products sold and aiming for growth in the amount of services sold. One could argue that given the young age of the company, this aim for growth is solely desired to obtain an established role in the market. However, no guarantee that this growth will stop can be found, nor is it explicitly stated to be the company's goal. The CEO might state to respect the limits for economic activity, whether or not this limit would actually be respected when entering a high growth phase remains unclear. Therefore, I conclude this company desires for the economy as a whole to be in compliance with this pillar, however their own activities are not adopted.

4.2.3.2. Adopt a role as ambassador for the environment

The company was launched to raise awareness about the polluting impact of the fashion industry – and the denim fashion industry in particular. Being a B-Corp certified company helps them to use their business for the good and so does their membership of the '*Alliance for Responsible Denim*' (MUDjeans.eu). The latter enables them to contribute to the collective battle against the polluting industry changing it into a cleaner and smarter one by raising industry standards. Since the alliance devotes attention to the main problems to be tackled with regard to cotton and denim production, their open communication to achieve higher awareness does add to their ambassador efforts. Finally, MUD jeans extend the scope of the efforts further than solely the industry they are active in. For instance, while on a trip to Spain, to recycle collected post-consumer jeans, the team joined several other sustainable initiatives amongst which a beach clean-up in Biarritz (MUDjeans.eu). These initiatives however remain minor and can therefore be seen as greenwashing. Although they are probably primarily marketing efforts, the communication of these efforts does increase the inspirational role of the company. For this, along with communication other information and facts, the company relies heavily on social media and thus reaches a vast public. In other words, even though the engagement in environmental movements is extremely limited, by advertising them the company is considered a role model by its followers.

4.2.3.3. Reduction of environmental impacts at all stages of product/service lifecycle

The MUD jeans are made to be environmentally friendly from the very first stage: the design process. Because mono-material products are better suited for recycling purposes, the labels on the pants are printed ones instead of leather (MUDjeans.eu). Moreover, by 2020, 50% of the rivets, buttons and zippers are strived to be designed for recyclability. However, when placing this in the light of the principles of the circular economy the company claims to be in compliance with, these goals could be considered insufficient. Secondly, the jeans are produced with a combination of recycled post-

consumer cotton and two types of virgin cotton: organic cotton without generally modified cotton seeds and BCI cotton¹⁴ (MUDjeans.eu). The amount of post-consumer recycled cotton used in a pair of pants today counts up to 40%, far from the company's goal of 100% (MUDjeans.eu). Still, this currently is the highest portion achievable because the existing mechanical recycling technologies still require virgin cotton to increase the performance and durability of the end product. Therefore, further reducing the amount of raw materials (without lowering longevity and thus jeopardizing another pillar) would rely on technological innovations rather than on business model innovations, assessed in this paper. Moreover, the business model does tackle the remaining virgin cotton to cause less environmental harm by opting for organic cotton.

Apart from the input materials, the production processes itself are continuously improved. Firstly, instead of conventional and harmful washing techniques, a Laser technique and Ozone are applied. Secondly, the manufacturing factory '*Yousstex International*' established a new washing and dyeing unit with the latest technology, resulting in 90% recycling of water used in the laundry and zero wastewater. Both improvements together reduce the water consumption by 75% and in some cases also reduce the use of chemicals to zero (MUDjeans.eu). Therefore, the degrowth characteristics are certainly implemented to some extent.

The distribution, on the other hand, is mainly by environmentally harming ship and truck transportation. Although, the company might keep the transportation distances short by producing closer to the retail market than is common in this industry, many opportunities for improvement remain present (van Son, personal communication, May 7 2018). Consequently, a finished product is sold in retail stores or online. The company's approach to both pathways entails a certain paradox. Concerning the in-store sale, MUDjeans currently sells most of their products in stores with a high emphasis on sustainability but they hope to change this towards the future. Retail stores without environmental engagement are persuaded to work with them, as this would get the jeans in normal cycles, in the hands of average customers (Bert van Son, personal communication, May 7 2018). This approach is contradictory to the bottom-up role business that could take in the transition towards degrowth (Kallis, 2011) and does not tackle other parties of the supply chain. Online sale happens in collaboration with '*Repack*' and shipping giants such as '*DPD*' and '*UPS*'. The former is a reusable and returnable packaging alternative that provides rewards for every order. The latter, however, confirm

¹⁴ According to bettercotton.org "The Better Cotton Initiative (BCI) is a not-for-profit organization that exists to make global cotton production better for the people who produce it, better for the environment it grows in and better for the sector's future. Through BCI and its Partners, farmers receive training on how to use water efficiently, care for the health of the soil and natural habitats, reduce use of the most harmful chemicals and apply decent work principles. BCI Farmers implementing this system are licensed to sell Better Cotton."

that MUDjeans seems to be unable to capture all innovative opportunities to switch to alternative methods, even those already available.

Finally, the company is CO₂ neutral thanks to a participation with '*BLUEdot Certified Carbon Neutral Program*' because it supports projects to reduce CO₂ emission in order to neutralize their own negative CO₂ emission. Therefore, part of the environmental problems the company was unable to solve, are somehow dealt with. Still this approach is a rather easy solution instead of a complete adaption to a totally different business model, which is the main idea behind degrowth.

4.2.3.4. Making products that last and are repairable

The company claims to produce jeans with longevity in mind and the fact that the products are leased should serve as driving factor for this. The leasing system implies the company's revenues are dependent on the lifetime of the jeans which incentivizes the firm to focus on the durability of their product. However, the current business model requires leasing fees only for the first year. (van Son, personal communication, May 7 2018). As a result, this incentive is only present in cases where the customer sends the product back within a year and the company leases it again. Additionally, the laser technique employed in the production of the pants ensures a longer life (MUDjeans.eu).

However, it is unclear whether the products manufactured by MUD jeans in reality last longer than an average pair of denim pants. Likewise, the company has not been operating long enough to be able to evaluate the lifespan of its products and no data about the lifespan is available. Hence, the degrowth pillar is taken into account but the actual attainment remains uncertain.

Furthermore, the company offers free repair services to customers (MUDjeans.eu). The same incentive acts as a driving factor for this: MUDjeans produces with the a priori aim to make products as repairable as possible to increase the possible revenue stream from a single unit produced.

Nonetheless, jeans are mono-material products leaving visible traces after repairing them, possibly discouraging customers. In these cases, however, the pants are still sold as '*Vintage jeans*'.

Consequently, promoting to increase both the lifespan and the repairability of the product, which ensures a better compliance with the pillar.

4.2.3.5. Shift to additional value-adding through service

Part of MUD jeans' selling proposition revolves around the fact that they offer a service instead of ownership. To this end, the '*Lease A Jeans*' concept was launched in 2013. This concept enables customers to rent jeans for a monthly fee and retain ownership of them after a year.

In other words, this company provides clothing as a service instead of clothes themselves. One could thus motivate that this business model is in line with the degrowth pillars, however, the brand uses

its lease concept as a unique proposition to attract more customers. In addition the concept has been put on hold in the past and is re-implemented again albeit in addition to a deposit system (selling the jeans with the possibility to send back for vintage pair or recycling).

Moreover, the lease-A-jeans service is currently only available via the website of the company itself since it remains difficult to work with retail stores because their business models are not adapted to the concept. A regular retailer focusses on buying garments (wholesale) and consequently selling them with a surplus (retail), a model for which the operating costs are too high to be able to implement the leasing concept (Fisher and Pascucci, 2017). In order to expand this service model two additional problems arise. Firstly, the platform on which jeans can be leased has to be fully operational and has to make sure the income streams are continuously renewed. Secondly, the leasing model implies only small margin at the very beginning, with a higher need of working capital than this young start-up can bare (van Son, personal communication, May 7 2018). The CEO hopes to find solutions for these issues (van Son, personal communication, May 7 2018) which would result in better alignment with the degrowth objective. Even so, the challenges currently present to expand the service model raise concerns about whether or not this type of model could be completely implemented. For this company the implementation of a product-service model is definitely insufficient to this day.

4.2.3.6. Collaborative value creation

The company states to care deeply about transparency and communication. Every step of the production procedure is supposed to be very open. Both the factories in which the jeans are manufactured and recycled are elaborately discussed as are the processes themselves. Yet, these mainly concern specific examples and therefore a sufficiently elaborated picture is missing. It is unknown how much information is still private. For instance, laser and ozone techniques are not thoroughly explained and the 'dirty' transportation techniques were only revealed after a thorough analysis. Moreover, the assessment by B corporation reveals the company's transparency does not exceed the industry average (bcorporation.net). Therefore transparency should be increased to sufficiently adopt CVC.

Additionally, as stated above, MUD jeans is a member of the Alliance for Responsible Denim, adding to this pillar because competition is put aside for collaborative efforts to alter the industry and achieve higher environmental and social goals.

Finally, MUDjeans does not include customers in the design process. However, the interview reveals the CEO could recognize the potential because he asked many interviewers for tips and collaboration

(van Son, personal communication, 2018). Similarly, feedback from customers could be useful and even necessary for the company. Yet this is not implemented hence CVC carried out insufficiently.

4.2.3.7. *Potential to flourish in the organization*

Production firms to which manufacturing of the jeans are outsourced offer good working conditions and wages (MUDjeans.com). Yet, this is not so much an achievement of efforts to create better circumstances, as they are a result of a careful screening process. The factories to which production is outsourced, were in fact chosen based on this criterion. To this end, one could argue whether screening suppliers to meet minimum working standards, can be considered as problem avoidance. Whilst actual problem solving would be to tackle the conditions in any production firm.

On the other hand, the company is part of the '*Young Designer Program of Fairwear Foundation*' to improve and audit the standards at the factories they collaborate with. MUD jeans monitors whether all factory workers earn a living wage (van Son, personal communication, May 7 2018) and thus income caps are present to some extent, however not intentionally and solely with the goal to provide everyone with minimum prosperity, not to reduce inequality.

Moreover, as a sort of Christmas gift to the factory workers, MUD offered Stroopwafels to deliver a message about recycling – Stroopwafels are Dutch cookies originally made from leftover cookie crumbs (MUDjeans.com). However, the extended communication about it can be considered a marketing strategy. Moreover, supplementary perks to the factory workers remain limited to this one. Therefore, the concern that the company is avoiding social issues rather than tackling them is confirmed.

4.2.4. Interface

Interface is a globally operating carpet manufacturer, that instead of producing regular carpets, makes modular carpet tiles. It was founded in 1973 by Ray Anderson and has since grown to become the market leader in modular floor coverings, partly due to several acquisitions and numerous brands, of which Interface and Flor are the best known. The publicly listed company is considered a source of inspiration when it comes to innovative environmental approaches, though they were not part of the initial core business. Only in 1994, after reading Paul Hawkins book '*Ecology of commerce*' Ray Anderson realized that the take-make-waste manner in which he had been running interface before is the way of the plunderer. The focus of the company was shifted and a new radical mission was adopted. Today, the mission on their websites states:

If we're successful, we'll spend the rest of our days harvesting yester-year's carpets and other petrochemically derived products and recycling them into new materials; and converting sunlight into energy; with zero scrap going to the landfill and zero emissions into the ecosystem. And we'll be doing well — very well — by doing good. That's the vision.

4.2.4.1. Growth in sales is not the goal of the company

Again, Interface is a large company that operates within the overarching paradigm of growth. A vital symbiotic relationship is recognized between profit and purpose and is implemented to grow the company. In other words, the profits made are used to innovate both the products itself and the manufacturing practices and end-of-lifetime consequences, as to create more value to both customer and society. These innovations in their turn will be translated into higher profits, even though purpose was the initial goal (Interface.com). As such growth is considered a good thing because it enables the company to use more business to the good (Interface.com), in line with the first aspect of the criterion.

Furthermore, the profits aren't solely generated by new products sold. The modularity of the product enables them to create value on the reuse perspective and promote sufficiency. Old carpets get taken back, repaired and installed again, further adding to company growth.

Moreover, the company stated not to look at measures as turnover and sales (Van Arkel, personal communication, May 1 2018). However, extra care is required with regard to this company because it is publicly listed and will therefore more easily be driven by classical financial measures. Additionally, the company knew an 'inorganic' growth pattern (fast growth through acquisitions) in the past. Finally, the growth in modular carpets has surpassed the growth of the overall floorcovering industry (Interface.com). If other floorcovering products are always dirtier and the floorcovering industry in itself has remained constant, this might not contradict the third aspect. However sufficient skepticism to such an assumption is needed and I conclude this company not to be in line with the first criterion except for the first and last aspect.

4.2.4.2. Adopt a role as ambassador for the environment

Even though the company does not owe its existence to solve arising issues, the large internationally operating company uses its size to expand the scope of their role model as a business. Some examples are evident of the companies' aspiration to inspire. Firstly, they try to sensitize other operators in the industry with the animation movie 'Unlikely hero', playfully depicting the seriousness of the environmental problems the industry has created. Secondly, a highway in Georgia,

'The Ray', is used to experiment with ecosystems and serves as proof that positive environmental ideas can be manifested everywhere (Interface.com). Thirdly, the 'Net-works' program, which will be discussed in a more elaborated manner below, serves as a tool for environmental engagement. Moreover, the latter is a way in which the company contributes to changes outside of their core business activity. However, given the size and thus potential influence of the company, practices that extent the boundaries of business remain too small. Furthermore, every fellow worker at Interface is turned into a sustainability ambassador himself (van Arkel, personal communication, May 1 2018). They are empowered to take up the company's goal and address it by knowing what Interface does, knowing how to contribute with their own knowledge and skills and ultimately applying it with motivation. These efforts have resulted in half of Interfaces 900 employees in the Netherlands becoming ambassadors. According to Van Arkel (May 1 2018): "The advantage of this approach is that it makes sure change is implemented in every single department, through the presence of motivated ambassadors all over the organization instead of exclusively in the departments where this is part of the core activity".

4.2.4.3. Reduction of environmental impacts at all stages of product/service lifecycle

The environmental impact of Interfaces carpet tile can easily be considered their main concern. To this end, the company applies the Life Cycle Assessment (LCA) tool which is immediately translated into the two-fold approach the company applies to reduce environmental impact. The first focus lies on reducing the negative impact of their products. Secondly, Interface has committed to compensating for any remaining harm done.

The first approach

To reduce the initial negative impact a product has on the atmosphere, Interface knows to start off from the very beginning, the input materials. Therefore, they shift their focus to using recycled materials for 67% of the total input and partly comply with one of the aspects in this pillar. Recycled materials are collected from waste stemming from other industries, thanks to the 'Net-Works' program, and from post-consumer materials, with the 'Cool Blue' and 'ReEntry' programs. For the remaining input required, raw materials are used. Similarly, yet another aspect is met by tackling these raw materials to be more environmentally friendly with the help of the 'benign by design' committee, that convinces suppliers to cut toxins from their materials. Additionally, they have created the 'Fotospera' carpet tiles. In these tiles a big portion of the yarn is replaced by oil from castor-bean plants, that are rapidly renewable and require less water. The most significant

advantage, however, is that the amount of virgin nylon that has to be added to manufacture the product is further reduced ([Interface.com](https://www.interface.com)), again in line with aspects of this criterion.

Aside from the materials used in the carpets themselves, interface cuts back on other aspect that come along with selling carpet flooring, such as the installation. For this, instead of conventionally using glue they opted for the '*TacTiles*' installation system, with a footprint 90% less compared to traditional flooring adhesives ([Interface.com](https://www.interface.com)).

Furthermore, the design of the total of tiles from a single tile is tackled to contribute to less emission, this led to the i2line of products. Based on how nature designs a floor, each carpet tile varies in pattern and color within one style and colorway, and most are designed to be installed in any order and orientation. This results in a cohesive floor design, regardless of when tiles were purchased or installed, and requires less installation time, produces nearly 90% less waste than traditional broadloom carpet, and offers easy reclamation and recycling ([Interface.com](https://www.interface.com)). Actually, this is an approach that not only reduces environmental impact of a single tile but is also in compliance with degrowth on several aspects such as sufficiency.

On top of all these engineering innovations, Interface is experimenting with a carbon negative prototype carpet tile, '*Proof Positive*' ([Interface.com](https://www.interface.com)).

The second approach:

The company is well aware that every step of the products life creates carbon emissions. The complete '*carbon footprint of use*' then contributes to climate change. To offset this '*Mission Zero*' was launched. A mission committing the company to reduce its footprint to zero by offsetting all the harm done to the environment in '*Cool Carpet*'. Since 1996, these initiatives have reduced the total Greenhouse Gas emissions of the entire company by 99% hence a new goal is adopted, taking it even a step further, '*Climate Take Back*'. This entails that the company as a whole should have a negative carbon effect ([Interface.com](https://www.interface.com)).

Consequently, all aspects have been implemented to some extent, with a focus on carbon emission and climate change. It is exactly this elaborated focus on reducing the carbon that should make this business model unique. However, several companies included in this analysis contribute to such efforts, at least according to the second approach. Moreover, even though from a macroeconomic perspective this might be considered a positive overall contribution, it can hardly be interpreted as part of the bottom-up role companies should fulfill in the shift to a new paradigm. In fact, this not so

much alters the business model to fit the degrowth discourse but rather provides ‘tickets’ to operate within the current paradigm. Thus, in order to be completely conform with degrowth, more emphasis could still be placed on the first loop.

4.2.4.4. Making products that last and are repairable

The most important feature of the Interface carpets is their modularity. This approach to carpet design has deliberately been invented and adopted to enhance repairability and a longer product lifetime (Van Arkel, personal communication, May 1 2018). The fact that the carpets are made in the form of tiles, makes sure that they are easily repairable, because only the damaged tiles ought to be replaced rather than the entire carpet. Moreover, this feature implies easy repurposing of the carpets. As opposed to other carpeted rooms, custom made to fit a specific space, they can easily be demolished and reinstalled in any other environment (Interface.com). Furthermore, the materials used are carefully selected and tested to increase the lifespan of the product, such as nylon 6 which is extremely strong and completely recyclable. According to several employees, that again results in over engineering. They motivate that the carpets are designed to last much longer than the timespan they will be used for considering how consumers apply them (approximately 20 years versus 12 years) (Van Arkel, personal communication, May 1 2018). The design and production processes might therefore not always be efficient and a lot of resources are wasted. Even though the aspects of the pillar themselves are applied, in the light of the degrowth framework waste of efficiency is problematic given the initial goal to reduce material throughput. However, Interface strives to continue designing their products to excel because they feel the customer segment, and the way their products are used is altering.

4.2.4.5. Shift to additional value-adding through service

The company has attempted to include service as a core activity into their business model in several manners. The most elaborated attempt was the Evergreen Lease program. In this pure form of a products-service model, Interface retained ownership of the carpets they had placed in the facilities of their customers since they only leased the floorcoverings. Hence, a shift was made from providing a product, to providing flooring as a service, including the maintaining and reclaiming of the tiles as necessary (Interface.com). Thereby Interface would entirely fit the degrowth discourse. However, mostly due to the fact that the main focus is on B2B activities the model never succeeded and was eliminated. Because these customers are obligated to report under accounting rules, they suddenly had to treat these flooring services as operating budgets instead of capital expenses, which makes it less appealing. (Van Arkel, personal communication, May 1 2018). Interface thus serves as another

piece of evidence – in addition to the same problem occurring for MUDjeans – for classifying this degrowth pillar as optimistic within the current context.

Other endeavors to provide services in addition to exclusively supplying the carpet itself, such as installation of the tiles and maintenance of the flooring, have not been welcomed with open arms either, more specific by installers they collaborate with. The aspect of services thus remains undeveloped. Nonetheless the latter thought Interface the value of working in a network and creating collaborative value, as discussed in the next criterion (Van Arkel, personal communication, May 1 2018).

4.2.4.6. Collaborative value creation

The company strongly believes value can only be created by working in close collaboration with other companies in your network, as mentioned above. The overall value delivered is higher because every party involved can focus on its core activity and benefit from specification advantages (Van Arkel, personal communication, May 1 2018). Furthermore, collaborative value for society as a whole can be created by cooperating with competitors and other interested parties within your industry. To this end, Interface offers full transparency, partly enabled through the use of LCA. One could argue that higher importance is assigned in achieving environmental goals than in creating a competitive advantage. Accordingly, research results are openly communicated as a way to enable others in other industries to duplicate their success. Idem for knowledge acquired through experience, which has even been summarized in a few key ingredients to offer others a framework and a set of guidelines to facilitate the implementation of sustainability within an organization (Interface.com). On the contrary, the company has some patents for instance for their 'Entropy' product which is part of the i2 modular product line. A product that contributes to a reduction of consumption, or at least does so according to Interface itself. Not only does this question the company's priority to achieve environmental goals, it reduces the credibility of the actual transparency. As a result it is insufficient to achieve the degrowth goals. Moreover, Interface does not add to the value other parties could provide them, such as the collaboration between customer and the organization, captured in the last aspect.

4.2.4.7. Potential to flourish in the organization

Since Interface recently compiled the B assessment, it had to evaluate all the working conditions in order to become part of the group. The maximum income cap is estimated at around factor 20, however this is an ex post measurement rather than an ex ante goal (Van Arkel, personal communication, May 1 2018) and therefore does not add to attainment of this criterion. On the

other hand, Interface does to take into account other social issues, both in their offices in the western nations (first five aspects) as in developing countries (last two aspects). A brilliant example of the latter is their 'Net-works' program. This initiative, currently based in the Philippines and Cameroon, collects used fishing nets from the oceans which are then used as resources for the carpets. Next to the goal of cleaning up the ocean and reusing material to limit raw material input, the nets are collected by people upon a distance from the labor market. Thanks to the program 1500 families now have access to finance and are even able to save it for the education of their children (Interface.com). This program tackles social issues outside of the company's activity and therefore makes sure the last aspect is incorporated, however only a single initiative is known. Concerning the capabilities to flourish within the company itself, little is known. Interface's interest and support in the education and development of their people leads to the financing of their studies (Van Arkel, personal communication, May 1 2018) and according to Van Arkel (May 1 2018) conditions are outstanding. Nonetheless no information can be found to this regard and even more surprisingly, nor on the B Corp certification, implying the company might have failed the assessment.

4.2.5. Clif Bar & Company

Founded in 1986 by cyclist and mountain guide Gary Erickson, Clif bar & Company produces nutritious and organic food bars for sports and outdoor activities. The California-based firm now exports to Australia and a big part of Europe. The company wants to create the world they'd like to pass on to their children and does this by creating a business that thinks like a tree. Since Trees run on renewable energy, recycle all waste, and sustain and improve the places they grow, they are convinced nature has something to teach us. They translate this important lesson into a set of goals and 5 aspirations: sustaining our business, our brands, our people, our community and the planet. Remarkable is that in 2000, the company turned down an offer from Quaker Oats to buy Clif Bar for 120 million dollars (Erickson and Lorentzen, 2004).

4.2.5.1. *Growth in sales is not the goal of the company*

Growth in sales is an essential goal for this company. They aim to produce and sell as many food bars as possible and continuously expand their product line with new types of bars. Part of the reason they seek to grow so much is that the most important competitors they are up against have both been acquired by multi brand companies and thus have extremely strong market positions (clifbar.com). Consequently, this company can hardly serve as proof that a company degrowing in the amount of sales is viable.

4.2.5.2. *Adopt a role as ambassador for the environment*

First, 'Clif Bar Family Foundation' was set up to fund grassroot nonprofits and it wants to set up initiatives. At this moment the latter remain limited to only one, 'Seed Matters'. It launches campaigns focusing on several crucial issues that aren't getting enough attention yet, hereby committing the company to more devotion, mainly to improve the organic seed and promote the farmers role (clifbarfamilyfoundation.org). A comparable initiative, 'White Road Investment' fund provides financing for companies with similar goals and values as Clif (whiteroadinvestment.com). Furthermore, the firm does not only play an ambassador role as a provider of financing. On the contrary, the company joins in environmental and political battles such as the one against global warming with the 'Start Global Cooling' campaign (Juniper, 2007). Moreover, hands-on volunteer work is promoted in 'Clif Corps' and 'In Good Company'. This commits the company and the employees to do volunteer service in communities around the country (clifbar.com). Initiatives like these demonstrate the company's devotion to tackle issues external to their core activity. Furthermore, the company values are further expanded and reach a big audience through a website loaded with tips and stories and a book of the founder 'Raising the Bar: Integrity and Passion in Life and Business: The Story of Clif Bar Inc' (clifbar.com). However, these 'inspirational efforts' can also be seen as an economic and marketing transactions. First, the book is sold at market prices and second, these stories add to the company image and might simply be a form of greenwashing. Thus, skepticism is needed, notwithstanding the other company efforts show they take responsibility and share that message.

4.2.5.3. *Reduction of environmental impacts at all stages of product/service lifecycle*

Clif bar's commitment to the planet can be observed at every stage of the production and selling processes. The company set clearly defined goals for itself, with regards to climate action, zero waste and the use of organic products (clifbar.com). These goals are set in place not only to tackle their own production processes but also to challenge other actors in the supply chain. More importantly, the goals are moving in that direction and as a result, today's bars are entirely made with clean, renewable energy, packed in environmentally friendly packaging and delivered by transportation that doesn't pollute. Additionally, Clif Bar rewards recycling of its wrappers and has completely eliminated shrink- wrapping of its energy bars since they shifted to 100 percent recycled paperboard. Also, the size of packaging itself is now smaller. Thus, both the input materials and production processes are tackled to meet the requirements.

Moreover, a project to enable the company to further challenge their practices and other supply chain actors was conducted in 2006 (Juniper, 2007). The 'Materials Intensity Per Service Unit' (MIPS)

system was adopted and adapted by to obtain quantitative estimates of the environmental impact desired by Clif Bar. These estimates, focusing on the entire lifecycle of a single product, are multiplied by the total amount of products, providing Clif Bar with the '*Foodprint*' of the company, the total impact of Clif bars operations. These calculations provide the company with an in-depth analysis of every different product formula, supplier... and enable the company to adjust its practices accordingly (Juniper, 2007). To further decrease the total impact of the company, Clif bar has a '*code of conduct for its suppliers*' (Juniper, 2007). Even employees are involved, by providing them several programs, on which we will come back later, to incentivize them to lower their own personal environmental impacts

Their total impact is reduced by supporting wind farms and planting trees to offset any remaining environmental harm (James, 2013)

In conclusion, nearly every aspect of the criterion has been implemented in the business model, with exception for the complete and explicit adopting of a circular business model. Therefore, I argue the efforts are in compliance with the degrowth objectives, or at least moving in that direction.

4.2.5.4. Making products that last and are repairable

Since Clif Bar manufactures eatable bars, this criterion isn't completely relevant. One could interpret the criterion in the light of the food industry as products that can stored long to reduce food waste, however that is beyond the scope of this research and the intent of this criterion.

4.2.5.5. Shift to additional value-adding through service

As with the previous criterion, Clif Bar's business model does not provide us with anything in favor of this degrowth criterion. As opposed to the former pillar, however, providing a service to increase the value delivered by a food product, does seem possible. Nonetheless, apart from the delivery of more than material value and for instance the community volunteer work in the '*Clif corps*' program, Clif Bar has to my knowledge not attempted to achieve higher value creation for the customer through service. Consequently, more research is needed to assess whether this might me a possible course to implement degrowth for food and beverages.

4.2.5.6. Collaborative value creation

The company tries to create additional value through collaboration with others in several ways. The most obvious example is probably In Good Company, as discussed earlier (clifbar.com). Moreover, White Road Investments, an investment fund founded by Gary and Kit with Clif Bar money, is a way to use their profit and experience for the better. Several young businesses get access to both the

required financing and the expertise and experience of Clif Bar's founders to enable them to better run a business based on deeply embedded values (whiteroadinvestment.com).

However, transparency and openness not achieved on every aspect. Inside company information, for instance about the production processes and supply chains is kept private, probably for competitive purposes given the aggressive market the company is active in. In addition, the fact that the company did not want to engage in this research confirms their lack of transparency and even more so does the fact that Clif Bar owns a patent on their flexible dispensing packaging.

Furthermore, customers are not included in the design nor production processes of the company. Consequently, with regard to collaborative value creation many opportunities to ameliorate the business model and move towards degrowth remain untaken.

4.2.5.7. Potential to flourish in the organization

Apart from the fact that employees are guaranteed a salary at or above market rate, it is unclear how big the wage differences at Clif Bar are at maximum and more importantly whether this maximum is established a priori.

On the contrary, it is well known that many efforts to make the working environment more pleasant and increase employee wellbeing are made. Evidence for this is that based on 703 employee surveys the company is a certified '*great place to work 2018*' (greatplacetowork.com).

One major goal within Clif Bar is to make the work-life balance much easier. To this end, the employees are offered several amenities in the office itself, such as on-site child care, subsidized meals, a gym with company paid personal trainer, dry cleaning, a breastfeeding room and so on. Employees can even bring their dogs along to the office and are forced to take a six-week paid sabbatical after 7 years of service. Moreover, the company offers their employees flexible working hours, paid health insurance and paid sick leave to care for a child or relative (greatplacetowork.com) thereby aligning company practices with the second and third aspect in this criterion.

In addition, the company commits to aligning the values of their employees with the corporate vision and the five company aspirations. Clif Bar was in fact, the first American company to offer an incentive program that pays cash to employees for choosing alternative transportation (Burlingham, 2005). Secondly, the staff is motivated through inspiring speakers that connect with the company's aspirations and donations are based upon the preferences of employees. Even the financial position of employees is used to give them reasons to pursue the company goals. After a year every employee enters the Employee Stock Ownership Plan (ESOP). In other words, they receive free shares of Clif Bar to benefit from the company's success. This results in an ownership structure where 80% of the company is owned by the founder and his wife and 20% is in the hands of the employees

(clifbar.com). Thereby this company has not only achieved employees that believe in the same values but the organization structure is more horizontal and it attempts to achieve democratic governance. Finally, grassroot efforts and financial funds, as mentioned above, focus on both environmental and social goals therefore they also add to this criterion. In other words, Clif bar is very evolved in the transition process towards degrowth as far as this criterion goes. With exception for the implementation of income caps which seems to pose a problem for all companies.

4.2.6. Riversimple

Riversimple is an SME founded by Hugo Spowers that hasn't started operating, and yet serves as an ideal example for how to build a business model with the constraints of the 21st century. A small piece of evidence for their dedication is their statement "the more environmental damage we eliminate, the more successful we will be as a company" (Riversimple.com). At this point in time they have developed a prototype car, 'The Rasa'. The next step will be to build 20 cars for a 12-month beta test, hopefully followed by the actual production. If the start-up's new approach turns out to be successful, Riversimple will be responsible for a radical reduction in the amounts of units produced for the same amount of mobility, a shift much needed.

4.2.6.1. *Growth in sales is not the goal of the company*

Hugo Spowers, stated "We're probably the only car company that hopes never to sell a car" (Riversimple.com). Instead, the company wants to retain ownership of the car and sell mobility as a service. In concreto, customers would sign-up for a one to three-year contract and in return pay a fixed fee. The latter is all-inclusive, meaning it covers all costs that come with the ownership and usage of a car, such as fuel and maintenance costs. This sale of service model has several implications on the amount of units produced (the goal is to produce a roughly 5,000 cars a year) (Riversimple.com).

Firstly, it entails customers not to worry about depreciation cost, an aspect that can lower overall car production. Nowadays, cars are often depreciated at very high rates, frequently resulting in fully depreciated vehicles that still have an economic value but are nonetheless scrapped (Wells, 2016). It is then no longer financially viable since the repair costs have become higher than the economic value, even though physically, the maximum durability has not been achieved. The Riversimple service model addresses this problem, since after a contract they are returned to Riversimple, where cars are repaired and remodeled and may consequently be hired out to another client (Riversimple.com). This shifts the emphasis from producing many vehicles to longer use of a single

unit. Secondly, this business model seeks to tackle some feature inherent to existing car ownership, that could be considered not in line with degrowth: reducing the power of materials as communication tool to show prestige and status, removing the fashion element of new models, focusing on the core of providing personal mobility. This results in lower utility from continuously replacing and upgrading a car and might further contribute to the reduction in production demand and usage (Bocken and Short, 2016). Hereby following the notion of addressing needs, rather than creating wants. Thus, even though there is an explicit desire to grow, the company's approach promotes sufficiency and is consequently partly in line with degrowth. Moreover, it should be stated that the company is not operating yet, and it remains a question whether or not the business will be successful and more importantly, whether it would reduce the number of vehicles required to provide the same level of mobility. Only then the company would actually contribute a degrowing industry.

4.2.6.2. Adopt a role as ambassador for the environment

The company is not operating yet, possibly impeding its abilities to fulfill a role as a stewardship since credibility has not yet been achieved and profits are still to be made. However, their approach towards collaborative value creation, as discussed in the criterion on this issue, can be interpreted as a form of stewardship, since the open-source model serves as an example to inspire and educate other businesses. Moreover, the company has been launched to tackle environmental problems. In other words, through the company definitely serves as an ambassador and uses business as a stewardship effort. On the other hand, contributions aside from the core activity – efforts in addition to purely responsible planning and management of resources and production processes – are hardly made nor aspired. The ambassador role could therefore be further elaborated.

4.2.6.3. Reduction of environmental impacts at all stages of product/service lifecycle

Hugo Spowers started this company with the sole purpose to develop a car that has a lower environmental impact. The mission statement reflects this goal clearly: *'To pursue, systematically, the elimination of the environmental impact of personal transport'* (Interface.com). To achieve this mission, they adopt a *'Whole System Design'* business model. This is a cohesive approach in which an alternative governance structure, business model innovations and technologies are all designed to provide mobility whilst aspiring zero environmental cost (Wells, 2016). For instance, by including the 'environment' and 'community' as key stakeholders (Bocken and Short, 2016). The efforts can thus be observed throughout every stage of the production procedure and the company as a whole. Firstly, Riversimple solely works with suppliers that have some innovative technology themselves and

transparently publishes them to all stakeholders. Even their sale of service model is actively being promoted to companies upstream, such that technologies are leased instead of bought by Riversimple. This evidently means all input materials of the car are supposed to be just as sustainable as Rasa itself. Secondly, every part of the car is designed to be very light. Hugo Spowers, found that cars are most often used to drive around two people or less and are actually hardly used at full capacity. He addresses this loss of efficiency by producing a two-seated car (Bocken and Short, 2016). Additionally, the car is built from a lightweight carbon-fiber reinforced plastic structure that is stiff and safe (Wells, 2016). This results in a vehicle that weighs only 580kg, which then again contributes not only to lower material input required but more importantly with the aim to lower the energy required (Riversimple.com). It has been confirmed that most of the energy needed in any vehicle is consumed accelerating the vehicle mass rather than the occupants, reasoning why lower vehicle mass can deliver high results (Wells, 2016). It has also been alleged that this lower energy requirement creates a synergy with the efficiency of the fuel cell (Riversimple.com). The Rasa is powered by a hydrogen fuel cell, which apart from its contribution attributed to the obvious shift away from fossil fuels, is also designed to be smaller. This can be achieved because the acceleration demands have been decoupled from the cruising demands, in order to provide 80% of the acceleration by the ultra-capacitor and a hub-motor in each wheel collects 50% of breaking energy back, to use for acceleration. This results in a smaller fuel cell, which contributes to an even smaller car that does not require a gearbox nor a driveshaft, further reducing the required materials. In turn, this lighter vehicle reduces energy required when driving. Finally, as has been discussed in the first criterion, the mobility service package includes fuel consumption and maintenance, thereby providing an incentive for the business to further improve the operational efficiency and longevity by design and thus reduces resource use. The lower use of resources, and consequently units produced is translated in a distributed manufacturing model. Riversimple states massive factories are not essential and they will build a human scale profitable factory near the markets they serve (Bocken and Short, 2016).

Thus, both input materials, required materials during the useful life and the impact of production processes are minimized. Although little is known about the latter since the actual production has yet to begin. Still, overall one would definitely classify this company as environmentally friendly on all of the most important aspects.

However, some annotations have to be made. First, the fix payment for fuel consumption and repair, also provides an opposite incentive for customers. It could lead to more intensive use of the Rasa. Moreover, it should be mentioned that even though the car is designed in line with the circular

economy, rubber is still used in some components. This might be a renewable material, it is nonetheless problematic to recycle.

4.2.6.4. Making products that last and are repairable

As mentioned above, the product-service model with fixed subscription fees, including all the cost, is a mechanism that incentivizes Riversimple to create a lasting product and to execute excellent repairs. Logically, the immediate influence on profits reinforces the aim for a car with greater longevity than the average car nowadays. The design of the Rasa partly solves this issue, since the most prevalent reason to dispense a regular car is often the deteriorated steel body. The composite body of the Rasa lasts longer (Riversimple.com). Moreover, as also introduced before, the service model and hence the elimination of depreciation needs, omits another reason to vehicle scrappage before it reaches the limits of durability (Wells, 2016). Similarly, it omits the power of materials as communication tool to show prestige and status and removes the fashion element of new models (Bocken and Short, 2016). The innovative car is hence designed completely in line with this degrowth pillar. Yet the fact that no car has been sold implies a lack of evidence and a great deal of uncertainty considering the conclusions that can be drawn.

4.2.6.5. Shift to additional value-adding through service

As mentioned above, the sale of service model is the core of Riversimple's business model. The service provided requires a fixed monthly fee, amounting to monthly costs of owning a car, that entails the leasing, the fuel and maintenance. In other words, the pure leasing concept is complemented with any other services that might be required. Moreover, this model is valued highly and adopted upstream the supply chain (Riversimple.com). This company hence plans to be fully compliant with this degrowth principle. On the other hand, the implementation of this pillar has created problems with all the other companies included in this analysis. Whether this service model will work in this company remains to be answered so actual viability cannot completely be assessed. However, success of similar initiatives in the automobile industry (such as 'Cambio') and the already existent demand for the car (Riversimple.com) suggest there might be a market adapted to the model in this case.

4.2.6.6. Collaborative value creation

The company's initial aim is to work towards the common goal of a reduction of environmental harm. The founders realize that open communication is key in working together and encourage

others to follow or even improve what they've built, a necessity worth the competitive advantage if one is to tackle the environmental issues arising today. As Spowers (2018) himself told CNCB:

What we want is those standards to become ubiquitous. We are using different fuel cells ... We want people to copy us because effectively, we are building different cars to the industry and we want to build volumes in (the) supply chain to reduce our costs.

As a result, Rasa is an open source vehicle. Research is thus made available with the license in which one has the right to study, change and distribute the knowledge for any purpose, rather than derive a monopoly by patenting (Hankammer and Kleer, 2016). The founder does not see this as a problem towards competition because it will lower costs and the market is big enough (Kharpal, 2018). The corporate culture, as such, is designed to benefit all stakeholders, and really give them a stake. Accordingly, this business is considered to implement CVC.

Furthermore, the collaborative act to create additional value works in both directions. For instance, the company's activities and research efforts were financed both by a government grant but in addition and more importantly by crowdfunding rounds. Moreover, during the 12-month beta test, a broad range of users will be asked to test and assess the car (Riversimple.com). The intention is to get as much feedback as possible, from this single trial, as to be able to answer to needs in an elaborated manner and thus create more value with the same product. Considering these efforts, few arguments remain to conclude that this part of a degrowth business model is unviable for Riversimple, evidently building on the vital assumption of company success.

4.2.6.7. Potential to flourish in the organization

Since the company is not yet operating nor generating profits, little can be assessed about the working conditions and income of their employees. One can assume that for the time being, given the limited amount of people involved, conditions are great and certainly discrepancies in income will not yet be problematic. Moreover, the 20 prototype cars that are being produced today are produced in a factory in Wales, about which little is known. Therefore, assessing this criterion is considered impossible at the moment. One valuable remark could be added though: not a single effort outside of daily business activity has been made to address and tackle social issues, thereby neglecting the latter two aspects of this criterion.

5. Discussion and suggestions

The objective of this paper was to operationalize degrowth and, based on six cases, open the debate on whether it can be implemented in a business model. It should be stressed that the companies for which the evaluation of the degrowth criteria was conducted, do not present themselves as degrowth companies.

An overview of how the companies meet the criteria is provided in table 4. This should solely be interpreted for discussion purposes since each of the established criteria cannot be assessed unequivocally as they have to be analyzed in an integrated manner. Moreover, the individual aspects are not entirely new, but the integration of those aspects could give rise to a completely different business model.

The analysis has shown that none of the cases are a perfect example of degrowth since several problems and limitations are evident. Nonetheless all companies adopt some important approaches to implement a new business model and address the needs of the 21st century.

Most importantly, none of the case study companies strive to degrow nor achieve zero growth. Not surprisingly, given that even within the degrowth literature no unanimity exists on what needs to degrow and the question of profits remains unaddressed (Schneider et al., 2010; Wells, 2016). Most companies appear to share two important visions emerging in this context.

First, many firms have attempted to adopt sufficiency-including business models. To this end, Patagonia for instance explicitly advertises sufficiency, Fairphone omits all unnecessary accessories etc. Additionally, all companies produce products with longevity and repairability in mind to reduce production levels. Nonetheless, they still increase customer demand by offering an attractive product that expresses style and taste and thereby convinces customers to make a purchase that otherwise would not have been made.

Second, many firms recognize the need for selective degrowth. It is understood that their 'good production' should substitute that of other 'dirtier' industries or 'dirtier' companies within the same industry and not increase overall production and consumption levels. The cases believe growth is necessary in order to obtain a certain market position that allows them to have an impact and contribute to the transition towards degrowth.

Table 4 – Analysis of the criteria for the case study companies

		Patagonia	Fairphone	MUD jeans	Interface Inc.	Clif Bar & Company	Riversimple
Growth in sales is not a goal of the company	Growth in profits is solely pursued with the goal to enlarge positive impact	Growth to use business for good To prove take on capitalism can work	Growth pursued to solve social and environmental issues	Growth pursued to solve social and environmental issues	Profits are used for purpose Extra growth on reuse	Growth in itself is main goal	Profits pursued to solve environmental issues
	Growth in sales is constant and limited, close to zero	High growth in sales not actively reduced nor pursued	High growth is desirable and explicitly aimed for	100% growth in recent years	High growth is desirable Past 'inorganic' growth achieved through acquisitions	High growth is desirable	High growth is desirable
	Aspire to grow only as a substitute for 'bad growth', never to contribute to industry growth	Not actively pursued	Aims to lower overall smartphone production	Stated to follow 'doughnut economies' principle	Growth surpassed overall growth in floorcovering industry	Not actively pursued	Offset production of regular cars and car ownership
	Promote sufficiency	Explicitly challenges consumers to reduce purchases	Aims to lower overall smartphone production; No accessories delivered	Motivates less jeans production	Modularity for reuse	Not actively pursued	Motivates less car production and less materials in a single car Reduces power of language of goods
Adopt a role as ambassador of the environment	Exist with the reason to implement solutions to environmental issues	Uses business to lead by example	Initiated as research campaign for conflict materials Phone serves as vehicle for change	Uses business to lead by example Launched to alter industry	Does not exist to solve environmental issues Employee ambassadors	Uses business to lead by example	Uses business to lead by example Launched to alter industry
	Make extra efforts aside from business activity to engage in environmental movements and grassroots efforts	VC fund and other financial contributions Engages in political debates and volunteer work	Top 10 materials to focus on No other efforts completely differentiated from activity	Joins limited sustainability initiatives	Starts limited initiatives (networks) No other efforts completely differentiated from activity	VC funds Engages in political debates and volunteer work	No efforts completely differentiated from activity
	Strive to be a role model and a source of inspiration	Business to lead by example Inspirational communication (movie etc.)	Business to lead by example	Intensive use of social media	Business to lead by example Inspirational communication (movie etc.)	Business to lead by example Inspirational communication (website, book etc.)	Business to lead by example
	Adopt a stewardship role	Takes responsibility for environmental damage	Tackles harmful industry Takes responsibility for not completely fair phone	Tackles harmful industry	Altered business model to take responsibility for environmental damage	Takes responsibility for environmental damage	Tackles harmful industry

Table 4 – Analysis of the criteria for the case study companies

		Patagonia	Fairphone	MUD jeans	Interface Inc.	Clif Bar & Company	Riversimple
Reduction of environmental impacts at all stages of the lifecycle	Priority is given to the most important environmental impacts first, rather than the easiest ones to tackle	Priority problems sought through audit supply chain mapping (e.g. change of cotton industry)	Priority problems sought through audit supply chain mapping (e.g. top 10 materials to focus on)	Business itself tackles pressing cotton problem	All aspects are tackled	Goal for climate change Priority problems sought through measurement of “Foodprint”	Business itself tackles pressing CO ₂ problem Whole System Design
	Apply the circular economy model	Does not explicitly apply circularity, but reselling and recycling	Explicitly applied	Explicitly applied, but not entirely	Explicitly applied	Does not explicitly apply circularity	Explicitly applied
	Continuously reduce material input, energy use, waste and emission	Continuously tackled	Continuously tackled through design (modularity, strong materials etc.)	Mono material Reduction of water and CO ₂ usage (e.g. laser and ozone technique)	Continuously tackled through design (modularity, strong materials etc.)	Packaging smaller Zero waste goal	Light vehicle to reduce material and energy
	Use recycled and/or renewable materials in the production processes	Organic cotton Recycled materials Not all materials organic or recycled	Recycled materials	Recycled and organic cotton	Recycled and post-consumer materials Renewable materials	Organic products Recycled packaging	Recycled materials
	Use renewable energy	Renewable energy	Unknown	Not all energy renewable	Renewable energy	Renewable energy	Unknown
	Reduce hazardous waste and aim for total net positive or zero impact	hazardous waste reduced	Insufficient	Carbon offset programs	High emphasis on carbon offset programs Climate Take Back goal	Carbon offset programs	Strives for zero environmental cost
	Tackle suppliers and retailers to follow the same strategy	Suppliers continuously tackled (footprint chronicles) Retailers not deliberately tackled	Suppliers continuously tackled Retailers not deliberately tackled	Only suppliers with innovative technologies Some retailers deliberately not tackled	Tackles suppliers to cut toxins No retailers	Code of conduct for suppliers Retailers not deliberately tackled	Only suppliers with innovative technologies Sale-of-service model promoted upstream No retailer
	Application of metric to estimate total impact of the products/services (LCA, ecological footprint)	Unknown	Unknown	Unknown	LCA	MIPS	Unknown

Table 4 – Analysis of the criteria for the case study companies

		Patagonia	Fairphone	MUD jeans	Interface Inc.	Clif Bar & Company	Riversimple
Making products that last and are repairable	Implement longevity in design process	Products last a lifetime	Aimed for but insufficient	Virgin cotton for longevity Unknown	Designed for longevity (nylon etc.)	/	Designed for longevity (composite instead of steel body)
	Provide and promote option to reuse	Reselling promoted	Not provided	Reselling promoted (vintage MUD jeans) Reuse for several lease periods	Repurpose promoted	/	Reuse for several lease periods
	Implement repairability in design process	High emphasis on repairability	Modularity	Not implemented	Modularity	/	High emphasis on repairability
	Provide and promote repair services	Free repair services and guidance; insufficient	Repair promoted	Free repair services Repair promoted	Provided in network	/	Free repair services
Shift to additional value adding through service	Implement product-service systems as core part of the business model (rent, lease)	Not implemented	Research to implement product- service	Product-service failed, partly readopted	Product-service failed	Not implemented	100% of revenues stem for product-service
	Promote shift from ownership to performance	Not promoted	Shift promoted; attempts to implement	Shift promoted	Attempts but failed to promote	Not promoted	Shift completely implemented
	Provide supporting services in addition to product	Free repair service	Reparation and recycling programs	Free repair service	Services in collaboration with network	Not provided	Free repair service
Collaborative value creation	Be open and transparent	High emphasis on transparency (no patents) Maybe insufficient	High emphasis on transparency (complete view of supply chain)	High emphasis on transparency But insufficient	High emphasis on transparency But insufficient (patents)	Transparency insufficient (patent on flexible dispensing packaging)	Open source vehicle
	Work in collaboration with network and competitors to achieve higher common value	Value for network through VC fund	Collaboration to alter industry	Collaboration to alter industry	Services in collaboration with network (installation, maintenance)	Value for network through VC fund	Open source vehicle
	Use tools to enhance consumers (innovation toolkits, mass customization, crowdsourcing, open innovation, crowdfunding)	Not implemented	Several tools applied (crowd-sourcing, design workshops)	Not implemented	Not implemented	Not implemented	Crowdfunding Tests on broad range of customers

Table 4 – Analysis of the criteria for the case study companies

		Patagonia	Fairphone	MUD jeans	Interface Inc.	Clif Bar & Company	Riversimple
Potential to flourish in the organization	Implement income caps through the entire company	Not implemented	Not implemented Living wages	Not implemented Living wages	Not implemented	Not implemented Salary at or above market rate	/
	Provide additional perks to increase employee wellbeing	Outstanding perks (on-site childcare, paid healthcare...)	Fair conditions	Factories screened based on conditions	Perks (paid education)	Outstanding perks (on-site childcare, fitness...)	/
	Give employees more leisure time and provide more flexibility	More leisure time provided	Unknown	Factories screened based on conditions	Unknown	Flexible working hours More leisure time provided (paid sabbatical)	/
	Shift to a more horizontal organization structure and democratic governance	Alternative governance structure	Programs to educate and empower employees	Factories screened based on conditions	Unknown	Alternative governance structure (ESOP)	/
	Motivate employees to believe in the company values	High emphasis on including employees (volunteer work, alternative transportation reimbursement...)	Unknown	Emphasis on including employees (stroopwafels) but insufficient	High emphasis on including employees (employee ambassadors)	High emphasis on including employees (volunteer work, alternative transportation reimbursement...)	/
	Exist with the reason to implement solutions to social issues	Not the initial goal	Uses business to lead by example Launched to alter industry	Not the initial goal	Not the initial goal	Not the initial goal	/
	Make extra efforts aside from business activity to engage in social movements and grassroots efforts	Highly engaged in grassroots efforts and movements	Top 10 materials to focus on No other efforts completely differentiated from activity	No efforts completely differentiated from activity	Starts limited initiatives (net-works) No other efforts completely differentiated from activity	Highly engaged in grassroots efforts and movements	/

This also implies that other companies have to reduce sales levels even further in order to achieve system-level degrowth. Yet how these companies will degrow remains unclear. It generally concerns those companies that devote less attention to environmental and social issues. A voluntary decrease in sales is highly unlikely as they are aware it will lead to disruption. Thereby I suggest the bottom-up role firms can play and the power to “let it emerge organically from the ground” (Kallis, 2011, p. 875) is insufficient. First, impact-businesses should be allowed to grow to some extent. However, it might take too long for small innovative businesses to grow organically and deliver system-level change (Bocken and Short, 2016). Thus secondly, it could be useful to strive for a collective transition pathway with bottom-up stimulation and top-down regulation. Only then one could select the industries that need to degrow and to what extent. However, that again raises the question whether or not such a policy goal is actually desired as it enforces degrowth ex ante. As Van den Bergh (2011) argues, when enforcing degrowth ex ante an actual reduction of environmental impact cannot be guaranteed. This is mainly due to possible rebound effects¹⁵, but if both approaches are implemented simultaneously, negative effects could be minimized. However, the evaluation of policy implications and political feasibility, extends beyond the scope of this paper.

On the other hand, aspects that overlap with the ideas from other concepts such as green growth, CSR and sustainability seem to be implemented in a more successful manner. Even though some of these initiatives can be categorized as greenwashing, companies use their business models to challenge the way conventional business is done. They recognize value in doing business to lead by example and share the core company visions, with regard to environmental as well as to social aspects. This is in favor of the role business could play in the transitional pathway. Moreover, some companies have shown that businesses are an ideal tool to implement solutions for non-business purposes and contexts as well: VC funds, grassroot efforts, volunteer work... Thereby the aspirations of these cases extend beyond the company boundaries and the role they can play to alter society is even further affirmed.

With regard to these sustainability aspects, one remark should be added. Companies seem to focus on offsetting the damage done to the environment by balancing out carbon emissions with positive

¹⁵ Here rebound effects can be understood as: consequent to a limit on the volume of sales might incentivize firms to reduce production costs, possibly shifting to ‘dirtier’ alternatives in an attempt to keep profits constant. In that case the environmental pressure of the firm will not have been reduced (Van den Bergh, 2011).

carbon offset programs. Thereby they technically operate in compliance with the criterion established in this analysis and address an important need of today's society. However, this approach simply provides companies with 'tickets' to operate and thus achieve higher growth. Moreover, the financial contribution adds to growth in the carbon offset sector as well. In other words, although carbon offset programs are vital for the time being, they might not present a long-lasting solution within a post-growth society.

Next, the cases demonstrate that the adoption of product-service models seems to depend on the external context within which the companies are active. The failed attempts by Interface and MUD jeans to adopt lease programs exhibit that implementation of this business model archetype can be impeded by other parties. The case of Riversimple on the other hand, provides an argument to assume the model is indeed viable. Evidently this company has yet to achieve market success, but the auto-sharing schemes suggest there is a potential market for their lease program. Based on these companies one could conclude that the main reasons for these difficulties are the network and collaborating firms. More accurately, Riversimple is a business-to-consumer company whilst MUDjeans and Interface both have other businesses as their clients. This explains why the product-service models were precluded. The supply chain partners' business models were not adopted and led to omitting the lease models. The fact that MUDjeans has been successful to reinstall the model online, thus on its business-to-consumer platform affirms this suggestion. Consequently, a possible business model innovation could be to install shorter supply chains as it would enable some firms to adopt the model and it is in line with the overall degrowth framework that calls for stronger localized economies (Kallis et al., 2012).

Another difficulty concerns income caps to reduce inequality within the organization. Whilst income equality appears to be favorable for both individual and collective prosperity (Jackson, 2009), none of the companies have included this in their business model. All prefer to ensure their employees have living wages and minimum required working conditions over reducing inequality first hand. This suggests an inherent characteristic of human nature: nations' GDP can increase without resulting in an increase of prosperity however individual happiness increases when your income is relatively higher than your neighbour's income (Jackson, 2009; 2016).

Similarly, CVC has been proposed as a strategy to attain degrowth (Hankammer and Kleer, 2017) but apart from crowdsourcing and some engagement of consumers in design phases, this is not really

applied in the investigated cases. Moreover, most companies even struggle with complete transparency. Even though this could be to build company image and hide the aspects that might be harmful to the latter, another potential explanation is competition. Open innovations would indeed alter business-as-usual and move towards better attainment of degrowth objectives. However, the first company to adopt this might give away its competitive advantage in a world where it is still of vital importance. Riversimple is the only case that adopts this approach entirely. This is a business with extremely innovative products and it is uncertain whether after some years of actual market interaction, the competitive advantage will still be theirs. Other companies still apply methods that can be interpreted as business-as-usual, such as protecting their intellectual property by patents (Interface and Clif Bar). In other words, the cases provide no evidence in favor that CVC could be viable.

Thus, overall the analysis shows that these firms' business models are not completely adapted to degrowth since they all still contribute to an increase in customer demand. The only exceptional case might be Riversimple. Even though the future financial viability of the start-up remains uncertain, it bears witness that even within the current growth-oriented society, degrowth could be a viable business model. They offer a highly necessary product when considering today's needs and if they are successful, they have not only substituted a 'dirty' product for a cleaner one but they will also decrease the total amount of products. However, the company still hasn't incorporated a zero-growth strategy, suggesting growth should be allowed to some extent, at least for impact-companies. Again, to change the entire system bottom-up approaches are needed to limit growth of other companies.

Degrowth is a political pathway for the entire society, hence a more inclusive view of business within this context and their bottom-up power is required. To that extent it is highly necessary that degrowth proponents agree on what needs to degrow and to what extent. This for two reasons. First, because a role for political intervention is recognized since the most impeding pillar to implement seems to be the constant sales volume itself. This could be understood in terms of caps on maximum production levels, relative to the necessity of the product and the impact on the environment. In order to make this called-for selective degrowth possible, one thus needs to agree

on what the policies should exactly aim for, with in mind critique and negative implications. Second, because degrowth is a collective and democratic transition towards a different world (Schneider et al., 2010) it is of uttermost importance to gain a comprehensive understanding of the concept. In order to broadly implement degrowth consumers, producers and governance will have to adapt. The concept should move from the academic sector into society as a whole (Van den Bergh, 2011). Degrowth has to capture the attention of mainstream economists as well as politicians, customers and producers to prevent it to stay a simple utopia. Moreover, criticism should be addressed. Not only because that increases the understanding of the concept but more importantly because concerns about the effect of degrowth themselves could be hurdles to the shift much needed.

6. Conclusion

Degrowth is a political movement arisen at the junction of a social, environmental and ecological crisis. It is based on the idea that we have reached the limits of growth. The concept could be defined as “an equitable downscaling of production and consumption that increases human well-being and enhances ecological conditions at the local and global level, in the short and long term.” (Schneider et al., 2010, p.1). Since we appear to be unable to decouple resource consumption from GDP growth, this democratic and collective downscaling process will lead to a decline of economic activity. Degrowth proponents believe the power of governance bodies is insufficient to enforce a radical transition of society. Therefore, to implement the necessary shift away from the growth paradigm, change needs to start at the bottom. Ergo businesses play a major role in the transitional pathway (Kallis, 2011).

However, there is very little understanding of what businesses (and business models) ought to look like in this degrowth society. Therefore, this paper did attempt to operationalize degrowth in seven criteria and used them to evaluate the business models of six study cases. Doing so I assess whether degrowth could be a viable business model within the current context, as that is a necessary condition for them to play a role. The analysis has shown that businesses are well able to implement sustainability aspects. However, approaches that are rather new and only appear in degrowth are more problematic. The biggest hurdles are the implementation of CVC, income caps and constant sales growth. This suggests growth should be allowed to some extent, suggesting a higher indifference towards growth might be valuable. Moreover, top-down and bottom-up forces should be implemented simultaneously as to alter the entire society and enforce firms to implement certain

business model innovations (with minimum rebound effects). Moreover, the lack of a comprehensive theoretical framework further challenges the implementation of degrowth aspects.

7. Limitations and areas for future research

A crucial limitation of this paper is the lack of private company data included in the analysis. This assessment was primarily based on publicly available data, in combination with in-depth interviews. However, the latter were rather limited. Only three out of six companies were willing to contribute in the research project. Moreover, the other three companies postulated high limitations with regard to the amount of questions that could be asked. As a result, the interview was not so much in-depth in nature. Moreover, since the analysis is based on different sources of data for the different companies the reliability decreases. However, it was never the aim to thoroughly evaluate the companies nor to compare them. Moreover, the lack of internal data has been included in the assessment of the criteria.

As stated above, further research on what exactly needs to degrow is highly necessary, as only then a comprehensive theoretical framework could be draught and practical implications could be assessed. Furthermore, additional research is required to assess whether a bottom-up approach could actually help in the transitional pathway towards a post-growth economy. It should also be assessed whether businesses that are currently doing ‘business-as-usual’ are willing to adapt to a world of degrowth and implement an entirely new business model. Moreover, it could be useful to conceptualize different forms of business models for degrowth, incorporating that certain industries are allowed to grow whilst others should in effect degrow.

Finally, if degrowth were to be aimed for by complementarily relying on bottom-up and top-down implementation tools, it is important to assess the political feasibility of the concept.

8. References

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9. Attachements

9.1. Attachment A: Questionnaire Fairphone

You are aiming for growth as a way to achieve impact maximization. What do you use this growth for, how is it distributed? Are you currently growing at the expense of other smartphone manufacturers or contributing to industry growth?

You want to solely produce phones for customer who need them, as opposed to other companies in the industry that continuously seek to offer the client new innovations as a way to incentivize them to buy new products. However, how do you make sure this goal is achieved?

You try to build a phone with a long-lasting design. One way of achieving this goal is obviously the repairability of the phone which is achieved partly through your original modular design. However, apart from the modularity and the possibility to repair a phone when something breaks, what efforts have you put in increasing the lifespan of every single part (different longer lasting materials...)?

It is well known that your company initially wasn't established as a production company but rather as a campaign and that you are learning the way of doing business along the way. Does this mean that you knowingly and ex ante innovate your business model, or do you just go along with the situation as it comes without priorly defining the road map? If so how?

Do you implement income caps (a maximum difference between the minimum income level versus the maximum income level) within your organization to reduce inequality? How do you tackle the fact that there are such huge differences between the working standards in the countries where the materials are mined, where the phone is produced and where the phone is sold?

9.2. Attachment B: Questionnaire MUD jeans

You have done some impressive R&D enabling you to, for instance make 40% recycled denim and say it is very important for you to be very open, but how open are you about the findings as a way for other companies to copy your technologies so that everyone can contribute to less polluting denim industry? Is it still somehow a competitive advantage for your company?

Do you want to move to 100% Lease-A-Jeans, if not why?

You say the laser technique you use ensures a longer life. However, how does this work and do your jeans in reality really have a longer lifespan than is average for similar products?

Do you have an idea of what the factory workers in the factories you collaborate with earn? Do you take this into account and attempt to limit the inequality in wages?

You claim to reduce the amount of jeans everyone has in its closet and thus the amounts sold, but how do you feel and act in the light of fashion trends and as such incentivizing customers to buy products when they don't need them?

9.3. Attachment C: Questionnaire Interface

You have stated that you desire both to serve a purpose and a profit because they have a symbiotic relationship and are the way to grow your business. On top of that, with the newest initiative you are testing you have a negative carbon emission. In other words, one would believe growth in your company can only serve society for the better. However, how does your company growth answer to the rising problematic of consumerism?

Do you think you're innovative and appealing design create wants rather than address needs?

What is the lifetime you strive for for your products?

Are they designed to last longer than the average carpet and how do you achieve that? Additionally, aside from the modularity of the product, do you take repairability into account in the design procedure of your carpet tiles and in later stages?

How do you share the information you find from your research? Since you operate in a very competitive sector, do you use certain research outcomes as competitive advantages?

What is the maximum income cap within your organization (difference between the highest earner and the lowest earner)?

Do you provide your employees with any extraordinary perks to increase productivity and overall job satisfaction?