Managing Open Innovation in the Presence of Grand Environmental Challenges:

Identifying Stakeholder Co-Creation Capabilities and Exploring the Role of the Brand Purpose in Managing Environmental Open Innovation

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Abstract

In response to the grand sustainability issues that affect society and the planet globally, and increasing consumer demand for more sustainable products, companies face the challenge of developing radical solutions. Due to the complex nature of radical environmental innovations, firms are required to engage with various external stakeholders to gain access to expertise and to address challenges that are that are too complex to be solved by one company alone. In this context, a new phenomenon of environmental open innovation has emerged. This study set out to investigate the underlying mechanisms, processes and elements that enable radical environmental open innovation, not only from a capability perspective but also from a corporate brand perspective. The latter involves examine the scarcely researched brand-innovation relationship by investigating the role of the brand purpose in driving and guiding environmental open innovation. The investigation takes its departure in the exploratory case study of Carlsberg and its radical environmental innovation project – the Green Fibre Bottle. Qualitative interviews were conducted with key players in the innovation network, including Carlsberg employees and two individuals from external partners. This thesis contributes to innovation and branding literature by illustrating how innovation capabilities and the brand purpose can facilitate radical environmental open innovation. Five stakeholder co-creation capabilities, and their microfoundations, and seven different roles of the brand purpose in facilitating environmental open innovation have been identified. The study not only demonstrates a connection between the capability and corporate brand perspective, but also reveals the power of an environmental flagship project in strengthening the brand purpose internally and externally. It was further found that a holistic brand-led innovation is manifested within the entire organisation, rather than solely within the branding-team. Additionally, this study demonstrates the necessity for organisations to incorporate both functional as well as meaning and human elements to harness knowledge and competence synergies between diverse innovation partners.

Keywords

Environmental Open Innovation • Radical Innovation • Stakeholder Co-Creation Capabilities • Corporate Brand Identity • Brand Purpose • Brand-led innovation

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List of Abbreviations

CBIM	**Corporate Brand Identity Matrix**
DTU	**Danish Technical University**
EOI	**Environmental Open Innovation**
G-D	**Goods-Dominant**
IFD	**Innovation Fund Denmark**
SDGs	**Sustainable Development Goals**
S-D	**Service-Dominant**

1   Introduction

As a society facing significant environmental problems that affect all aspects of life globally, there is a need for more sustainable solutions that contribute to a better and more sustainable future (Bogers et al., 2020). Setting out to accomplish this, the United Nations created a blueprint of Sustainable Development Goals (SDGs) which summarise and offer guidance on the grand challenges humanity is facing, such as poverty, inequality, climate change, and environmental degradation (United Nations, 2018). Many industries are associated with these issues in terms of challenges, but also in terms of possible solutions. While consumers are actively seeking more sustainable products, and governments increase pressure on industries, organisations are faced with an intensified urgency to address sustainability. This has prompted many companies to search for new radical ideas and to pursue environmental innovations in order to achieve economic, social and environmental benefits simultaneously (Watson et al., 2018). Bogers et al. (2020) refer to this new movement as Sustainable Open Innovation which represents the fusion of the sustainability and the open innovation concept.

Due to the complexity and uncertainty of environmental innovation, these projects often have emerged as a collaboration between diverse stakeholders ranging from universities, governmental institutions, NGOs to technology start-ups, and large established corporations (Draper, 2013). As a form of collaborating, the different partners have created networks or innovation ecosystem to combine complementary knowledge and competencies and thereby increase the likelihood of successfully producing radical environmental innovations (Watson et al., 2018). However, identifying the right partners and collaborating with multiple stakeholders with divergent cultures, values, interests, and strategies represent a complex challenge in itself. Consequently, understanding the challenges of collaborating with diverse stakeholders in an innovation ecosystem, as well as the required capabilities to facilitate radical environmental innovation, appears exceptionally relevant in the urgency of these grand challenges (Behnam et al., 2018; Watson et al., 2018).

Despite the fact that several authors have supported the idea of using an open innovation approach for environmental innovation (Bogers et al., 2020) and that companies globally realise the power of open innovation ecosystems, little is still known about the intersection of open innovation ecosystems and environmental sustainability (ibid.). Moreover, Chesbrough et al. (2018) argue that although there has been substantial research on open innovation, the current understanding of processes for participating in open innovation projects, in general, and in the context of environmental sustainability, requires further exploration. In particular, the firm's capabilities and underlying processes for co-creating and

collaborating with diverse external partners in the context of environmental innovation have been left under-investigated (Chesbrough et al., 2018; Watson et al., 2018). In addition, Watson et al. (2018) argue that despite the increasing attention towards innovation projects involving diverse stakeholders, there is scarce research on the engagement of partners from the public and private sector whose different institutional settings lead to different values, logics, cultures, and goals (ibid.).

Shifting from a capability perspective to a brand perspective, recent management reports highlight the role of the brand purpose in enabling company growth, inspiring innovation, and creating positive change (Accenture, 2018; EY & Harvard Business Review, 2015). This notion of brand purpose refers to the central insight that meaning is not only abstract, but also significant in the sense that it influences the organisation's ability to grow and innovate for more sustainable practices (EY & Harvard Business Review, 2015). Despite the fact that today's consumers not only demand companies to take action regarding social and environmental problems, but also prefer brands whose purpose they can identify with (Accenture, 2018), only a minority of companies have clearly articulated and utilised a brand purpose (EY & Harvard Business Review, 2015). As the brand purpose represents the organisation's aspirational reason for existing beyond making money, it has been linked to the company's sustainability ambitions as well as its environmental innovation efforts (ibid.). In particular, it has been argued that a clearly defined brand purpose can inspire and drive environmental innovation and positive change (ibid.).

However, the concept of *brand purpose* has only recently gained momentum, and many companies are still in the process of developing and understanding their purpose. Consequently, there is no academic literature investigating the role of the brand purpose within innovation and environmental open innovation ecosystems. In general, innovation literature has scarcely addressed the role of the brand in innovation processes. If at all, the role of the brand and brand management has been placed at the end of the innovation process or shortly before the market launch of the innovation. Notably, the role of the brand as a driver of innovation has hardly been discussed and is poorly understood in academia (Calder & Calder, 2010). While management reports argue that corporate brands, in particular the corporate brand purpose, can be an essential path to and strategic driver of environmental innovation, the knowledge of how it can do so is very limited and requires further exploration.

To conclude, there is a great potential to advance the understanding of the role of the brand, specifically the role of the brand purpose, along the entire process of environmental open innovation. Moreover, current research on stakeholder co-creation capabilities in the environmental open innovation context can be enriched by exploring these capabilities on a microfoundational level, including their underlying

processes and structures (Watson et al., 2018). Additionally, the specific role of the brand purpose within these co-creation capabilities remains a gap in the literature and appears of value to investigate.

Overall, the capability perspective on environmental open innovation lacks a meaning and human perspective which places focus on the underlying motivations, values and relationships of the key actors. This thesis aims to bridge this gap by showing how the functional capability perspective is intertwined with the meaning and human perspective within (environmental) open innovation.

1.1 Research Objectives and Research Questions

Based on the identified gaps in the literature, the research objectives can be summarised as followed:

- Enhancing the understanding of the stakeholder co-creation capabilities and the underlying processes necessary to facilitate environmental open innovation.
- Advancing the understanding of the brand-innovation relationship in the context of environmental open innovation.
- Exploring the role of the brand purpose in facilitating environmental open innovation.
- Developing a framework for the newly established research domain of environmental open innovation, which integrates and connects both a capability and brand perspective.

Based on these research objectives and taking into account the existing gaps within the literature this thesis addresses the following research questions:

1. **What capabilities and underlying processes enable stakeholder co-creation in the context of environmental open innovation?**

2. **What part does the corporate brand identity of the centrally acting firm play in environmental open innovation?**
    a. How can the corporate brand purpose facilitate environmental open innovation?
    b. How does the corporate brand purpose affect stakeholder co-creation capabilities?

To answer the stated research questions, this thesis examines the case of Carlsberg's open innovation project - the *Green Fibre Bottle*, from the perspective of the lead-firm (Carlsberg). A resource and capability perspective is applied to explore the management of the stakeholder collaboration within the Green Fibre Bottle innovation project. Additionally, a meaning perspective with regards to the Carlsberg brand and its role within the innovation project is employed. The focus of the meaning perspective is placed on the corporate brand identity, in particular the brand purpose.

1.2 Research Outline

This section outlines the research structure of the thesis in order to fulfil the set research objectives as well as the stated research questions.
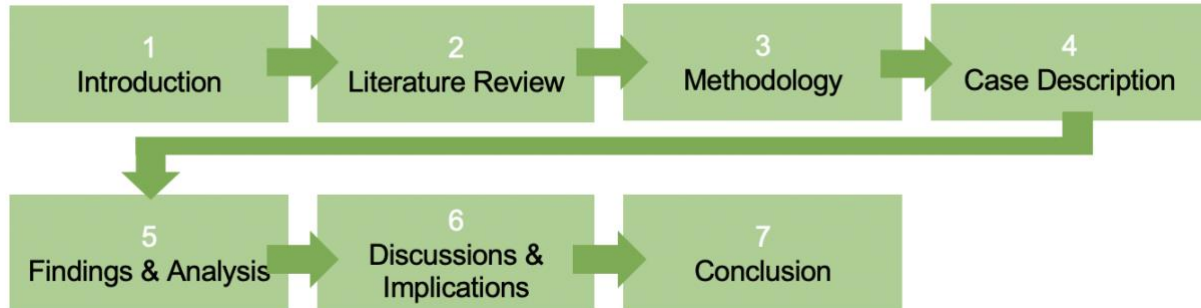
Figure 1: Research outline; own creation

1 INTRODUCTION has demonstrated the academic relevance of this thesis, explained the identified research gaps, and set the context for the research objectives and questions.

2 LITERATURE REVIEW presents key theories within *innovation*, *branding* and *brand & innovation* literature. These are addressed to deepen the foundation and comprehension of the underlying study. The literature review is divided into three parts. The first part explores the current innovation theory, which draws upon open innovation, environmental open innovation, and stakeholder co-creation capabilities. The second part elaborates on fundamental research within the area of corporate branding. The brand theory section includes the evolving brand logic, corporate branding, corporate brand identity, and the role of the brand purpose. The last section of the literature review draws upon the previous findings about the connection between branding and innovation. This section explores the brand-innovation relationship and the role of the brand purpose in an environmental open innovation context. Lastly, an environmental open innovation framework is derived, which considers both a capability and a brand purpose perspective.

3 METHODOLOGY comprises the scientific approach, research design, and qualitative method suitable for addressing the research questions. Moreover, data-quality considerations of internal and external validity and reliability are discussed.

4 CASE DESCRIPTION focuses on the selected case study of the Danish beer manufacturer Carlsberg and the Green Fibre Bottle innovation project and presents an overview of the firm as well as the project.

5 FINDINGS & ANALYSIS provide the findings derived from the collected semi-structured interviews. The collection of data is followed by data analysis and lastly, by an overview of the key findings.

6 DISCUSSION & IMPLICATIONS discusses the findings in connection with the literature review and the research question. This section also provides a framework encompassing capabilities as well as the role of the brand for enabling environmental open innovation. Lastly, this part outlines the managerial implications as well as future research within the area.

7 CONCLUSION summarises the paper by providing a synopsis of the paper as well as a conclusion.

2   Innovation Theory

As elaborated above, the increased urgency towards environmental sustainability is pushing companies to look for radically new ideas and technological innovations which use fewer resources and minimise the firm's ecological footprint (Adams et al., 2016; Bogers et al., 2020; de Jesus et al., 2016; Watson et al., 2018). This section outlines current research at the intersection of open innovation and sustainability. It does so by first introducing the paradigm of open innovation and explaining the recent emergence of environmental innovation and environmental open innovation (EOI), which involves diverse stakeholders. By exploring the innovation space in which EOI takes place and is managed, key challenges of this innovation domain are derived. Lastly, this section sheds light on stakeholder co-creation capabilities that have been identified in the context of EOI.

2.1   Open Innovation

In order to establish a common understanding, it is crucial to briefly specify and define the terminology that results from the intersection of innovation, open innovation, and sustainability, starting with the concept of innovation. In very general terms, this paper takes on the view that innovation is a "*multi-stage process whereby organisations transform ideas into new or improved products, services or processes, in order to advance, compete and differentiate themselves successfully in their marketplace*" (Baregheh et al., 2009, p. 1334).

Innovation might once have been seen as an individual sport of a few pioneering individuals in R&D, which turned ideas into new products behind the closed doors of their organisation. As Freeman and Soete (1997) observe, the 20th century was essentially characterised by focusing on the firm as the sole source of innovation. However, in the 21st century, the innovation game has moved from a closed

approach to an open and multi-player one as a response to dealing with fragmenting global markets, political uncertainties, unexpected competitors, regulatory instabilities, and rapidly advancing technologies (Tidd et al., 2009).

Moving from closed to open innovation marked a paradigm shift on how to manage, organise, and talk about innovation. This shift was first coined in 2003 by Chesbrough in his book "Open Innovation: The New Imperative for Creating and Profiting from Technology". In its core, the concept of **open innovation** builds on the notion that innovation is a **knowledge-driven process** and that the knowledge required for successful innovation is distributed beyond the boundaries of the firm. This shift from a previous "closed innovation" logic to an open one has been driven by a number of **erosion factors**, such as the growing mobility of employees, increasing access to venture capital for start-ups, more sophisticated university research departments as well as the rise of the web 2.0 and social media. All of these have altered the way knowledge is generated and shared and thus altered the context in which firms innovate (West & Bogers, 2014).

Chesbrough's original conception of open innovation acknowledged this by arguing that valuable ideas are not only generated inside a company but also exist outside of the firm's boundaries and can have inside and outside paths to market (Chesbrough, 2003). Over the last decade, this definition has been modified and extended by various authors, including Chesbrough himself. Laursen and Salter (2006), who conducted one of the first extensive empirical studies on open innovation defined it as a "model [which] is using a wide range of external actors and sources to help them achieve and sustain innovation" (Laursen & Salter, 2006, p. 131). This conceptualisation, however, undermines the core concept of knowledge exchange which is inherent to open innovation and addressed in Chesbrough's (2006) adapted definition emphasising inflows and outflows of knowledge: "Open Innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively" (Chesbrough, 2006, p. 1). In other words, enterprises engaged in innovation activities can develop inflow mechanisms to find external ideas, knowledge, and technology and internalise it into their own innovation processes as well as outflow mechanisms, such as channels to share unused inside ideas and technologies with the external environment.

In line with this, Chesbrough differentiates two different yet interrelated types of open innovation, which he names **inbound (outside-in)** and **outbound (inside-out) innovation.** Figure 2 shows an illustration of the open innovation model. While Inbound innovation encompasses a firm opening up its innovation processes to many kinds of external input and contributions, outbound innovation

requires firms to allow unused and underutilised ideas to go outside the organisation for others to use in their business models (Chesbrough & Bogers, 2014). Opening up these innovation processes demands sharing formerly internal tools, resources, and processes with external stakeholders. It is not a question of either-or, since organisations may also combine inbound and outbound processes. In contrast to the inbound research branch, which has received great academic attention, outbound innovation has been less explored in academia and practice (Bogers et al., 2018). Moreover, there is a considerable research gap in understanding meaning and human elements behind these inter-organisational knowledge flows and processes. Academia has focused on exploring these flows with regards to functional aspects such as exchange of resources, types of knowledge, types of stakeholders and number of stakeholders required to facilitate collective innovation. However, this perspective lacks the consideration of the human aspects, which are the deeper held motivations and drivers forming these partnerships. In turn, the functional perspective neglects the meaning that is created not only for the individual participants, but also for the organisations/brands as a whole.
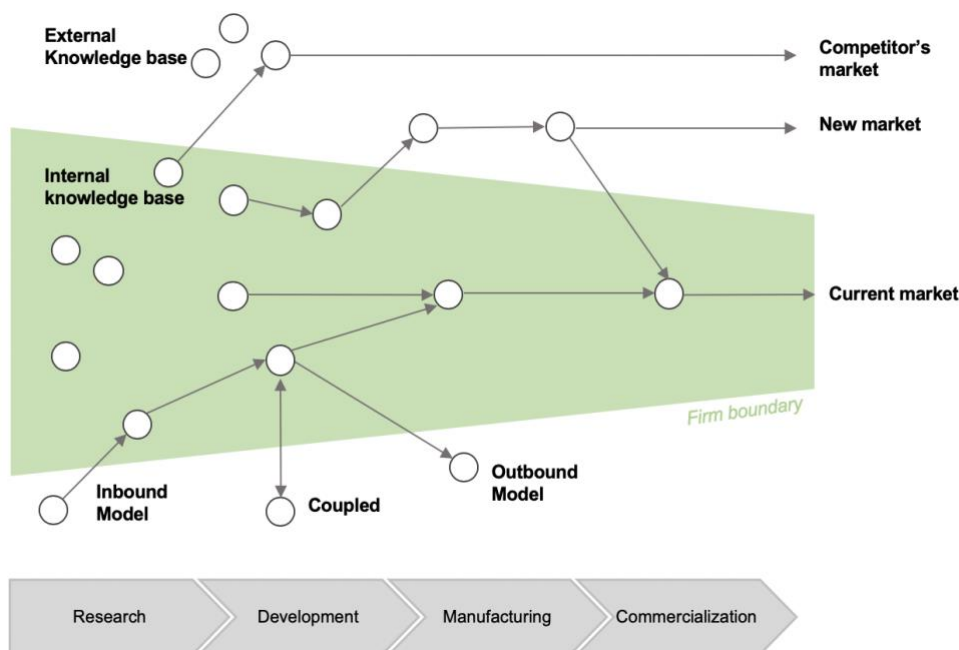
Figure 2: The Open Innovation Model; own creation adopted from Chesbrough & Bogers (2014, p.31)

The recent focus within the open innovation research domain on creating transformational change through social and environmental innovation taps into this motivational (human) aspect of open innovation (Chesbrough & Di Minin, 2014). Chesbrough expanded his previous open innovation definition by distinguishing between **monetary** and **non-monetary** drivers for innovation, meaning

that the motivation is not always purely economic but can also be inspired by meaning, or in other words, by creating positive societal and environmental change (Chesbrough & Bogers, 2014).

This paper builds on this definition yet adds emphasis to the multiple stakeholder approach. Consequently, this thesis defines open innovation as a "distributed innovation process based on purposively managed knowledge flows across organisational boundaries, (**involving a variety of internal and external stakeholders**) and using **pecuniary and non-pecuniary mechanisms** in line with the organisational business model" (Chesbrough & Bogers, 2014, p. 17).

2.2 Emergence of Sustainable and Environmental Innovation

After having discussed the way innovation practice changed from a closed to an open approach, involving multiple stakeholders, this section aims to shed light on the increasing focus on sustainability within the innovation literature. Goal 12 of the United Nation's SDGs "Responsible Consumption and Production" directly addresses manufacturers and demands a more sustainable resource and waste management in order to reduce the negative impact on the environment (United Nations, 2018). As a response to these challenges as well as the pressure from external stakeholders, including NGOs, governments and consumers, many organisations have pursued environmental innovation as a means to desirable social, environmental, and economic outcomes (Klewitz & Hansen, 2014). Despite the recent awareness, the idea of sustainability-oriented innovation is not new and first gained global attention with the Brundtland report in 1987. The report stressed the important role of firms in creating, adapting and diffusing environmentally sound technologies and defined sustainable development as *"the development that meets the needs for the present without compromising the ability of future generations to meet their own needs"* (WCED, 1987, p. 54).

Over the last decades, firms have increasingly integrated **social, ecological and economic** aspects – the three dimensions of sustainability - into their innovation efforts towards new products, processes and organisational structures in order to not only reach their financial goals but minimise the environmental harm and the depletion of resources. This shift in focus has led some researches to the notion of labelling sustainable innovation as a new innovation paradigm (Seebode, Jeanrenaud, & Bessant, 2012). They argue that over the last decades companies have "ridden" several innovation waves. While the previous wave mainly contributed to innovations around digital networks and software technology, the new emerging sixth wave, starting at the end of the 20th century, focuses on sustainability, radical resource productivity, and renewable energy as a response to the grand challenges humanity is facing (Hargroves & Smith, 2005) (see figure 3).
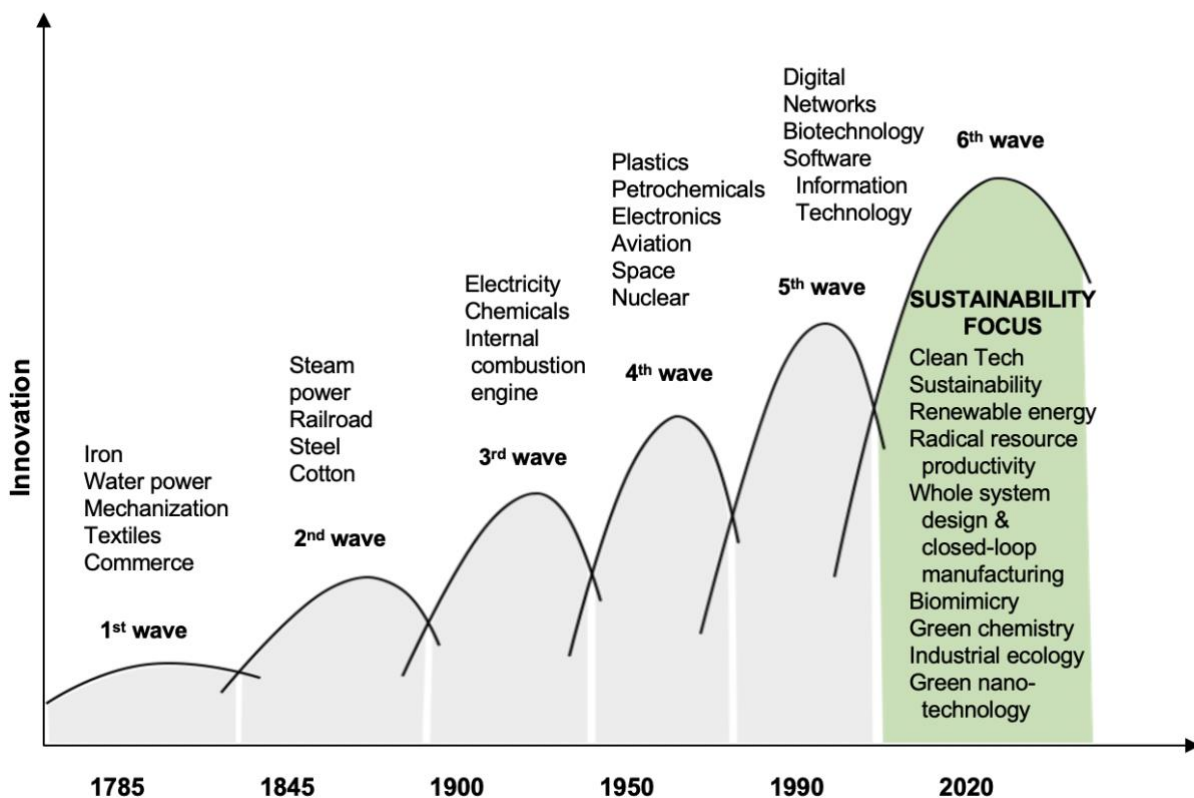
Figure 3: Waves of innovation; own creation adapted from Hargrovers & Smith (2005, p.17)

2.2.1 Definition of Environmental Innovation

Sustainable innovations can be broadly conceptualised as innovations that contribute to the "sustainable development from an economic, ecological, and a social point of view" (Steiner, 2008, p. 596). This thesis, in particular, focuses on the ecological dimension of sustainable innovation, hereafter referred to as environmental innovation. Environmental innovation has been addressed in academia under different notions such as sustainable innovation, eco-innovation, green innovation, and environmental innovation (Klewitz & Hansen, 2014). Although several different definitions exist (see table 1), these concepts are often used interchangeably, which is also reflected in the similarity of their descriptions and definitions (Schmiedrig et al., 2012).

One of the most commonly cited definitions defines eco-innovation as "the production, assimilation or exploitation of a product, production process, service or management or business method that is novel to the organisation (developing or adopting it) and which results, throughout its life cycle, in a reduction of environmental risk, pollution and other negative impacts of resources use (including energy use) compared to relevant alternatives" (Kemp & Pearson, 2008, p. 3). Based on this, the relevant criteria

for assessing whether an innovation project can be characterised as eco-innovation is that it is less harmful to the environment than the use of other relevant options.

Building on this definition, the Organisation for Economic Co-Operation and Development (OECD, 2010) adds environmental motivation as a factor by arguing that eco-innovation might lead to improved environmental performance intentionally as part of the firm's sustainability ambitions or simply as a by-product of regular innovation activity. Consequently, OECD defines eco-innovation as the creation of "new, or significantly improved products (goods and services), processes, marketing methods, organisational structures and institutional arrangements which - with or without intent - lead to environmental improvements compared to relevant alternatives." Very similarly to the eco-definitions, yet more operational, Klewitz and Hansen (2014, p. 58) define environmental innovation as "new or enhanced processes, organisational forms, as well as products or technologies that are beneficial to the environment in that they reduce or avoid negative environmental impacts."

Having reviewed the different notions and definitions, this thesis defines environmental innovation by keeping the pragmatic character of Klewitz & Hansen's (2014) conceptualisation yet enriching it with considerations of environmental motivation (OECD, 2010) and relativity (Kemp & Pearson, 2008). Consequently, environmental innovation is defined as the creation of new or enhanced processes, organisational forms, as well as products or technologies that are beneficial to the environment (**with or without intent**) in that they **reduce or avoid adverse environmental** impacts **compared to relevant alternatives.**

Table 1: Definitions of Environmental, Eco, and Green Innovation

Construct	Definitions	References
Environmental innovation	"innovation can be beneficial to both the innovating firm and the environment"	*Weber & Hemmelskamp, 2005, p.3*
	"new or enhanced processes, organizational forms, as well as products or technologies that are beneficial to the environment in that they reduce or avoid negative environmental impacts"	*Klewitz & Hansen, 2014, p.58*
	"innovations that consist of new or modified processes, practices, systems and products which benefit the environment and so contribute to environmental sustainability."	*Oltra & Saint Jean (2009, p.567)*
Eco-innovation	"the production, assimilation or exploitation of a product, production process, service or management or business method that is novel to the organisation (developing or adapting it) and which results, throughout its life cycle, in a reduction of environmental risk, pollution and other negative impacts of resources use compared to relevant alternatives"	*Kemp & Pearson, 2008, p.7*
	"innovation that encompasses or results in environmental damage prevention, mitigation and recovery"	*de Jesus et al., 2016, p.3001*
	"the creation of new, or significantly improved products (goods and services), processes, marketing methods, organisational structures and institutional arrangements which – with or without intent - lead to environmental improvements compared to relevant alternatives"	*OECD, 2010, p.40*
	"any form of innovation resulting in or aiming at significant and demonstrable progress towards the goal of sustainable development"	*EC, 2011, p.2*
Green innovation	"innovations in products, processes or business models lead the company to higher levels of environmental sustainability"	*Cuerva et al. 2014, p.104*

2.2.2   Types of Environmental Innovations

Based on the definition above, Klewitz & Hansen (2014) identify three types of environmental innovation, namely **process, organisational, and product** innovations. **Process innovation** in the environmental context refers to the cleaner production of goods and services, mainly focusing on eco-efficiency and effectiveness in the manufacturing process (Huber, 2008). For instance, a firm could alter the way they utilise resources, manage non-product outputs in close loop production schemes (internal production recycling), or do low-energy processing (Klewitz & Hansen, 2014). **Organisational innovations** encompass the restructuring of company internal routines, processes, and management. These innovations are primarily concerned with the people and the organisation at work and, for instance, include environmental management systems, changes in supply chain management as well as innovation processes (ibid.). They also entail business model innovations that have sustainability at their core, such as ethical investment services or environmentally responsible retailing (Tidd et al., 2009). Lastly, research has focused on **environmental products or service innovations,**

which entail improved or entirely new products. In this category fall, for instance, ecological-friendly new designs and materials, such as recycled or organic materials, as well es entirely new sustainable technologies that lead to the development of new-to-the-world products (Klewitz & Hansen, 2014).

2.3 Environmental Open Innovation

Especially in light of the pressing environmental challenges, and the potential benefits of engaging diverse stakeholders, understanding the capabilities to successfully facilitate EOI appears crucial. The following sections briefly defines EOI, describes its inherent challenges, introduces EOI networks and reviews current literature on capabilities needed to facilitate the collaboration in EOI projects.

2.3.1 Defining Environmental Open Innovation

EOI describes the convergences of open innovation approaches and the sustainability concept (Bogers et al., 2020). Based on the previous definitions of open innovation and environmental innovation, EOI is considered to be an outside-in process that incorporates external knowledge with the aim of developing environmental innovation. It is also considered as an inside-out process of sharing internal knowledge regarding new sustainable ideas, concepts or processes with the external environment (Adams et al., 2016).

Pecuniary and non-pecuniary mechanisms can drive these knowledge flows. Pecuniary mechanisms relate to the business case or financial motivations that drive EOI activity. However, especially in the face of grand sustainability challenges, it has become apparent that non-pecuniary mechanisms such as a strong purpose is observed to be a critical initial driver for environmental innovation activity (Bogers et al., 2020). In addition, we relate EOI to the integration of a variety of external stakeholders in the innovation process, to enlarge a firm's knowledge source and capabilities, thereby enabling sustainability-related positive impacts (Adams et al., 2016). Consequently, we define EOI as a distributed innovation process which is based on purposively managed knowledge flows across organisational boundaries, involving a variety of stakeholders, using pecuniary and non-pecuniary mechanisms in line with the firm's business model, and thereby contributing to the development of enhanced or new processes, organisational forms and products or technologies that reduce or avoid environmental impact compared to relevant alternatives.

2.3.2 Environmental Innovation Ecosystems

As elaborated above, environmental innovation approaches have been moving towards a more open approach, yet the effectiveness of this inclusive approach relies on more than just inter-organisational knowledge flows. Collaborations have been moving beyond the bilateral connections of Chesbrough

(2003) towards network typologies such as alliances, communities, platforms, and ecosystems (West & Bogers, 2017). The context of environmental innovation often requires firms to initiate and partake in a network (or innovation ecosystem) of co-creating actors (Walrave et al., 2018). By integrating a variety of internal and external actors in the different stages of the innovation process and combining diverse knowledge sources, these ecosystems have the potential to collectively tackle complex environmental challenges (West & Bogers, 2017). In line with this, Adams et al. (2016), argue that the nature of environmental problems – in particular their complexity, uncertainty, risk, and cost – have led to the emergence of environmental innovation ecosystems which aim to solve those problems collaboratively.

These ecosystem stakeholders can be comprised of previously unconnected players such as academic research institutions, non-profit organisations, technology start-ups, governments, and companies from different sectors. One illustrating example of these novel collaborations is the global innovation platform LAUNCH, which is centred around the development of new sustainable materials transforming the system of textiles. Initially starting as an American project, the innovation ecosystem was established by the sports brand Nike, NASA, the US Agency for International Development (USAID) and the US State Department (Draper, 2013). Mark Parker, Former CEO of Nike, highlights the power of this new collaboration to bring radical solutions to sustainability problems:

> "Innovation is most powerful when it's activated by collaboration between unlikely partners, coupled with investment dollars, marketing know-how, and determination. Now is the time for bold solutions. Incremental change won't get us where we need to go. And it certainly won't get us there fast enough. Nor at a scale that makes a difference. We are moving from an era of open innovation to one of systems innovation." (Draper, 2013, p. 33).

Firms who initiate or take a leading role in these ecosystems must not only attract relevant partners who will co-create value but also resolve competing interests when co-creating (West & Bogers, 2017). Based on a literature review of current open innovation findings, West & Bogers (2017) identify the innovation ecosystem (or network) to be an emerging way of engaging in open innovation. However, little research has been done on such ecosystems beyond the computing and telecommunication industries (ibid.).

2.3.3 Challenges of Environmental Open Innovation

Having looked at the space in which EOI takes place and taking into account the specific characteristics of environmental innovation, four main challenges can be derived: 1) High Technological Complexity 2) Rapidly changing business & environmental context 3) Learning from diverse knowledge sources 4) Collaboration in heterogeneous innovation ecosystems.

Rapidly changing business & environmental context

Environmental innovation activity operates in a rapidly changing business and environmental context as new legislations, competitors, and technologies introduced to the market consistently influence the company's innovation activities and processes. This also necessitates a continuous adaptation and consideration of the necessary resources in terms of knowledge, skills, and technological competencies (Watson et al., 2018).

Technological complexity

Environmental innovation projects are often characterised by high complexity. Aiming for positive or reduced environmental impact, requires new and often complex technologies whose development demands a high degree in scientific codification. In order to overcome these complexities a collaborative approach with scientific and technological external collaborators is often needed (Bogers et al., 2020; Seebode et al., 2012; Watson et al., 2018).

Learning from diverse knowledge

Environmental innovation projects require companies to go beyond their core competencies, knowledge, and expertise. Therefore, radical innovation in this domain will not come from a single actor. Instead, innovation activity is shaped by multiple stakeholders, internal and external, whose activities will co-evolve towards the emergence of innovation (Bessant et al., 2014). Thus, radical environmental innovation arises from building unusual partnerships across sectors that previously did not work together on co-creating system-level change. As a result, heterogeneous and unfamiliar external knowledge sources need to be considered, more so than for other types of innovation (Ghisetti et al., 2015). Combining these diverse knowledge pools of different actors represents a unique learning challenge, which ultimately demands a new kind of knowledge management (Adams et al., 2016). Furthermore, collaborating with external partners, as part of an environmental innovation process, includes loosening the control over the firm's intellectual property rights that might be of competitive advantage (Appleyard & Chesbrough, 2017).

Collaboration in heterogeneous innovation ecosystems

According to Seebode et al. (2012), the main challenge lies in working in these new pathways of stakeholder collaboration, which involves finding, forming, and performing within new EOI ecosystems. As innovation actors of these ecosystems tend to differ in their institutional origins, approaches, logic, cultures, and values, it is the task of the centrally acting firm(s) to align and manage the emerging cross-functional teams and their heterogeneous links to external collaborators (Watson et al., 2018).

In order to overcome these challenges, literature has argued that a firm needs to develop dynamic capabilities which can be described as the ability to adapt, reconfigure and learn new routines and approaches. Taking on a resource perspective, the following section will illuminate the dynamic open innovation capabilities which enable EOI.

2.3.4 Capability Perspective within Environmental Open Innovation

When investigating the mechanisms and factors enabling innovation networks to successfully co-create radical solutions, researchers have taken on a resource-based view. This perspective views external stakeholders engaged in open innovation as unique knowledge resources, which, if combined successfully, have the potential to create a competitive advantage for the focal firm and the network as a unity (Kazadi et al., 2016). However, while such collaborative knowledge creations can lead to a competitive advantage, they also bring challenges arising from the complexity of that knowledge and the complexity of the social interactions between innovation partners. Collaborating with a diverse set of stakeholders may result in conflicting goals and interests, communication barriers, and even distrust among participants that inhibit knowledge co-creation towards radical environmental innovation (Waligo et al., 2014).

In line with the resource-based view, companies inhabiting an orchestrating role in innovation networks require the appropriate capabilities to build and manage the complex interactions and novel pathways within innovation ecosystems. Many researchers (e.g. Watson et al., 2018; Kazadi et al., 2016) have constructed these stakeholder co-creation capabilities as **dynamic capabilities,** which represent the "firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece et al., 1997, p. 516). Further studying dynamic capabilities, Teece (2007) concludes that the underlying micro-foundations of dynamic capabilities - namely, skills, processes, routines, and organisational structures - enable firms to utilise innovation and collaboration to create new business and innovation ecosystems.

Due to the increasing focus on sustainable innovation, most recently, researchers have analysed the role of stakeholder co-creation capabilities when the innovations are particularly aimed at environmental sustainability. Building on Kazardi et al.'s (2016) framework, Behnam et al. (2018) investigate whether the stakeholder co-creation capabilities that have previously been identified on a general open innovation context, require reconciliation for the EOI context Similarly, to Kazardi et al. (2016), their initial capability framework includes **Networking Capability, Competence Mapping,** and **Relational Capability**. These capabilities can be divided in pre-project and in-project capabilities. Networking capability and competence mapping fall in the category of *pre-project capabilities,* required when setting up the innovation project. A firm's *Networking Capability* is about identifying, attracting, and engaging the relevant stakeholders for open innovation projects. On a micro-foundational level, this can be expressed through communicating openly about the types of partners needed and the selection criteria by which potential partners are chosen, as well as taking part in networking events. *Competence Mapping*, on the other hand, entails having a clear overview of the key competencies offered by each of the stakeholders. Routines which emphasise this, are conducting exploratory meetings with stakeholders and documenting their competences. During the innovation project (in-project capabilities), Behnam et al. (2018) identify **Relationship Management** and **Desorptive Capacity** as important capabilities that both foster the co-creation valuable knowledge. *Relationship Management*, also referred to as *Relational Capability*, entails building and maintaining strong relationships between the different stakeholders and especially centres around building trust, identifying common goals, and managing arising conflict. Lastly, **Desorptive Capacity** is included which is defined as the "ability to select, engage, empower and align relevant internal actors to external actors in a project" (Behnam et al., 2018, p.954). After qualitatively analysing eight innovation projects with a sustainability focus, they conclude that environmental innovation capabilities conform to the conventional stakeholder co-creation framework, yet they require certain reconciliations to facilitate radical environmental innovation. In particular, the networking capability needs to be strengthened to attract and engage external actors who may not be in the immediate environment of the leading business. Moreover, considering the diversity of stakeholders, and potential conflicts of interest, more structured relationship management processes are required to deal with these diverse co-creation relationships. Lastly, EOI projects require the enhancement of internal coordination between different units. Consequently, cross-functional teams need to be created as the sustainability context affects multiple business units, from supply-chain, innovation, public relations, branding and so forth.

Similarly, to Behnam et al. (2018), Watson et al. (2018) argue that environmental innovation requires greater engagement with external stakeholders than traditional innovation. Moreover, they align with

Benham et al. (2018) in that the increased external collaboration must be combined with enhanced internal collaboration in order to achieve radical environmental innovation. In line with this and based on an extensive literature review in the field of environmental innovation, they identify two **stakeholder engagement capabilities**, **External Integrative** and **Internal Integrative**. While firms absorb knowledge through External Integrative capabilities, Internal Integrative capability organises how it is used internally. Both capabilities are further broken down into three dimensions. Hence, External Integrative capability entails **building bridges** between diverse stakeholder groups through selected intermediaries, **developing engagement processes** that inspire continuous cooperation, transparency, and trust, and lastly, **achieving alignment** by bringing the goals of the different innovation partners into line. The latter, in particular, can be achieved by creating shared visions and identifying mutual benefits.

Internal Integrative Capability, on the other hand, is primarily concerned with internal stakeholders and comprises the three dimensions of **engaging employees**, **using environmental data**, and **integrating sustainability** internally. Starting with the first, employee engagement in environmental innovation can be influenced by team composition (e.g., appointing cross-functional teams) as well as support by leaders and top-management. Moreover, collecting and sharing environmental information internally with the organisation can spark innovations and foster internal collaboration between teams (Watson et al., 2018). Lastly, environmental innovation requires to integrate sustainability by enabling collaboration between different functions like marketing, R&D, PR, and corporate sustainability, as well as incorporating environmental criteria in the decision processes.

Moreover, Watson et al. (2018) identify **second-order dynamic capabilities** - namely, **Value-Framing** and **Systemised Learning** - that enable organisations to co-create value with diverse stakeholders and to learn from the collaboration continuously. Especially in the context of EOI, which entails working with very diverse partners, different "dominant logics" may occur (Lane & Lubatkin, 1998). Watson et al. (2018) refer to these institutional logics as **value-frames** that provide companies with values and guidelines for their behaviour (Le Ber & Branzei, 2010). Distinct value logics (or frames) result in different interpretations of what is considered valuable in the innovation project set-up. Prior research has found that incompatibilities between value creation logics and **conflicting identities** of cross-sector partners (e.g., non-profit and for-profit) can inhibit social or environmental innovation (Le Ber & Branzei, 2010). For instance, for-profit partners may mainly, yet not exclusively, pursue economic value creation, related to the generation of financial gains. Non-profit partners, on the other hand, will be largely driven by their social mission and will take on a more environmentally focused value-frame, that prioritises environmental above financial outcomes. This is in line with

Watson et al. (2018), who argue that organisations might have a commercial/customer-centric frame, while governmental and non-profit institutions are likely to have a more environmentally- or socially-focused value-frame. Moreover, clashing value-frames are not only a phenomenon observed within inter-organisational partnerships. Differences in value-frames between internal departments are just as likely to occur when departments follow divergent agendas. For instance, more sustainable-oriented designs suggested by R&D might be repelled by internal branding and marketing teams who are concerned for consumer acceptance (Watson et al., 2018).

Consequently, a key challenge for the leading firm(s) in EOI ecosystems is to manage and align the differences between the value-frames of external and internal innovation partners, in other words, to align the different interests, expectations, and beliefs (Le Ber & Branzei, 2010). According to Watson et al. (2018, p.256), radical environmental innovation requires firms to empathise with the alternative value-frames of their innovation collaborators, and "harness the differences in order to rethink the problem, combine competencies in new ways, and to co-create innovative solutions". In order to align different value-frames, some researchers have argued that it is essential to set a **higher purpose** for the EOI project that reaches beyond the divergent internal and external agendas (Draper, 2013; Ollila & Yström, 2016). This might include shifting the focus from the individual company needs towards the collective needs of the entire industry in order to advance on a more sustainable path. Watson et al. (2018) refer to this as **thinking systemically** because these collaborations, united by a higher purpose, can have the potential to facilitate system-shaping environmental innovations (Adams et al., 2016). This thesis, therefore, refers to "thinking systemically" as "**thinking purposefully".** In line with this, Adams et al. (2016) find evidence that building these innovation EOI networks necessitates the reframing of the brand purpose of the leading company beyond economic considerations to "doing good by doing new things with others" (Adams et al., 2016). However, the role of this higher purpose and how it relates to the brand purpose of the leading firm(s) in innovation ecosystems is yet unexplored.

Apart from "thinking purposefully", Watson et al. (2018) identify two additional dimensions that comprise the Value-Framing Capability, namely **empathizing** and **hybridizing**. **Empathizing** encompasses the ability to make space and time for honest, open, and vulnerable conversations and interactions between innovation stakeholders in order to reflect on differences in value-frames. **Hybridizing** refers to the process of reconciling different internal as well as external logics and value-frames by firstly acknowledging inter- and intra-organisational tensions and secondly, co-creating solutions that provide benefits to all actors involved (Watson et al. 2018). The process of hybridization has also been referred to as "value-frame fusion" where stakeholders move from initial contrasting

interests, expectations, and values towards deliberately adjusting their value-creation frames in relation to each other (Le Ber & Branzei, 2010).

As the second higher-order stakeholder co-creation capability Watson et al. (2018), identifies **systemised learning**, which describes the firm's ability to learn from its stakeholder collaborations in innovation projects. This capability entails **accumulating experiences** from previous innovation projects and stakeholder interactions and **embedding the learnings** from these experiences within the organisation by, for instance, sharing best practice guides and case studies of sustainability initiatives. Moreover, it involves "**organising for continuous learning**" by establishing the right structures, processes, and culture, which are flexible and open enough to evolve and adapt external stakeholder relationships based on the gathered learnings.

The following two tables (table 2 and 3) summarise and define the stakeholder co-creation capabilities that have been identified in the context of EOI.

Table 2: Overview of Stakeholder Co-Creation Capabilities by author and project stage

Project Stage	Behnam et al. (2018)	Watson et al. (2018)
(1) Front-end innovation stage Setting up the innovation network and identifying opportunities	• Networking Capability • Competence Mapping	
(2) Development stage During the innovation project	• Relational Capability • Desorptive capability	• External Integrative • Internal Integrative • Value-Framing
(4) Commercialisation stage After the innovation project		• Systemised Learning

Table 3: Overview of stakeholder co-creation capabilities and their definitions

	Capability	Definition	Key references
Kazadi et al. (2016) & Behnam et al. (2018)	**Networking Capability**	A firm's ability to attract external actors to be engaged in a project (build [recruit potential partners] and grow an innovation network).	*Kazadi et al. (2016, p.531); Behnam et al. (2018, p.954)*
	Competence Mapping	A firm's ability to produce an explicit overview of the competencies of external entities.	*Kazadi et al. (2016, p.335); Behnam et al. (2018, p.954)*
	Relational Capability	A firm's ability to manage its network by managing the different relationships (with a comprehensive set of entities/individuals).	*Behnam et al. (2018, p.954); Kazadi et al. (2016, p.535)*
Behnam et al. 2018	**Desorptive Capability**	The ability to select, engage, empower, and align relevant internal actors to external actors in a project.	*Behnam et al. (2018, p.954)*
Watson et al. (2018)	**External Integrative**	Capabilities that relate directly to the relationship with external stakeholders.	*Watson et al. (2018, p.260); Verona (1999)*
	Internal Integrative	Capabilities that relate to the sharing and use of the acquired information across groups of internal stakeholders.	*Watson et al. (2018, p.260); Verona (1999)*
	Value – Framing	The ability to manage different value-frames of external and internal stakeholders.	*Watson et al. (2018, p.266)*
	Systemized Learning	The ability to learn from the stakeholder engagement activities and manage that knowledge on an organizational level.	*Watson et al. (2018, p.268)*

2.3.5 Functional vs. Meaning and Human Aspects in Environmental Open Innovation

Based on the discussion of open innovation, EOI and stakeholder engagement capabilities it becomes evident that previous literature has mostly viewed open innovation from a functional perspective. In other words, focusing on flows of knowledge across company boundaries and the synergetic complementarity of resources (competencies, knowledge, skills etc.). While recent stakeholder engagement literature, focuses on these resource complementarities (Henisz, Dorobantu, and Nartey, 2014) and the ability to create value-synergies through the combination of their resources (Gyrd-Jones & Kornum, 2013), the **meaning and human elements** in these knowledge flows have been neglected. By meaning and human element, this thesis refers to the underlying motivations, beliefs, and identities that drive and facilitate innovation-related knowledge flows beyond functional benefits. While this

meaning and human perspective on open innovation and EOI is still mainly unexplored, some researchers have hinted towards its crucial role. Behnam et al. (2018), for example, call for a stronger focus on relationship management in EOI projects, focusing especially on the company's ability to build and maintain strong relationships based on trust, shared values and goals (relational capability). Similarly, Watson et al. (2018) highlights the importance of developing engaging processes that encourage the development of a strong relationship which is based on open communication, transparency and trust (external integrative capability).

Moreover, the capability of value-framing (Watson et al., 2018; Le Ber & Branzei, 2010) taps into the notion of viewing open innovation from a meaning perspective that takes into consideration the divergent core values and visions a company holds. As previously elaborated, diverse innovation partners tend to have divergent value-frames, or divergent dominant logics, which determine what each partner values, prioritises and expects from the collaboration. Clashing value-frames can stand in the way of successful collaboration and thus inhibit successful environmental innovation even though the resources that each partner provide appear to be complementary (functional perspective). Le Ber & Branzei (2010) who investigate divergent value-frames in cross-sector collaborations note that clashing value-frames are linked to clashing corporate (brand) identities. Meaning that what a company values and expects from a collaboration (value-frame) is ultimately determined by the company's core identity - encompassing core values, vision, promise and its purpose (see upcoming section 3.3 on corporate brand identity). In other words, the outcome the company seeks from a collaboration depends on where the firm sees itself in the future (vision), on what the firm defines as its reason for existing (purpose), on the principles that guide firm behaviour (core values), and on the value/experience the firm seeks to provide for its customers (brand promise). In a similar line of argument, Gyrd-Jones and Kornum (2013) propose that functional value-synergies that are created through complementary resources are dependent on some level of cultural complementary, which is characterised by similar (enhancing) cultures that link to common core values. The authors argue that the cultural core values of a partner influence what processes and activities are valued and prioritised by them (Gyrd-Jones & Kornum, 2013). Therefore, the motivation to enter into a collaboration is twofold: it is driven by both, "the value the partnership can create in terms of concrete outcomes (functional perspective), but also in terms of the way in which partnerships confirm core cultural values for each stakeholder (meaning perspective)." (ibid., p.1490). Following this logic, conflicting (antagonistic) cultural values might hinder the collaboration of stakeholders in environmental innovation projects, even if it would create positive outcomes for the project. Therefore, the cultural distance between strongly interacting stakeholders and internal subcultures needs to be small. However, more peripheral stakeholders in the EOI ecosystem

might have larger cultural distances to the centrally acting ones. This conclusion by Gyrd-Jones and Kornum (2013) implies that open innovation and EOI have to incorporate not only a functional perspective of knowledge synergies but include considerations about the different partner identities to initiate and maintain the relationship with innovation partners. Based on these elaborations it can be concluded that the identity and meaning element in the context of EOI can be important in order to enable and enhance functional knowledge-flows. The literature has hinted towards these elements but further exploration into how the meaning and the human element manifests is needed. While Gyrd-Jones and Kornum specifically relate one aspect of the brand identity, namely core values, this thesis shifts the focus towards another core element of the corporate brand identity, namely brand purpose.

While the stakeholder co-creation capabilities elaborated in section 2.3.4 gives an overview of the capabilities a focal firm needs to establish to facilitate the co-creation of radical environmental innovation in an innovation ecosystem, the role of the brand in these early innovation processes has been mostly ignored in academia. However, this paper takes on the view that the corporate brand identity plays a crucial role in EOI processes. As explained in this section brands and in particular brand identities, are theorised to be part of the meaning perspective within EOI. It is suggested that brand identities form expectations and motivations which are expressed for instance in a company's value-frame (Le Ber & Branzei, 2010). The alignment of value-frames is the basis for a strong innovation collaboration (relationship) and thus seemingly enables functional aspects of EOI, namely the flow of complementary knowledge and resources from one partner to another. This proposition links the stakeholder engagement capability perspective with a corporate brand identity perspective on EOI. In the following section this paper aims to shed a more thorough light on the specific role of the corporate brand identity, specifically so the brand purpose, within innovation and EOI.

3 Brand Theory

The previous part has focused on identifying stakeholder co-creation capabilities that facilitate EOI processes. Some researchers have indicated and hinted towards the role of the brand in relation to driving and guiding innovation processes (Beverland et al., 2010; Brexendorf et al., 2015; Calder & Calder, 2010; Abbing, 2010). However, the brand-innovation relationship has received little to no attention in academia and remains vastly unexplored. In order to shed light on how the brand can play a role within EOI processes and the collaboration between the different innovation partners, this section explores literature within corporate branding. Firstly, this section discusses the brand logic this paper

takes on. Secondly, this paper takes on a corporate brand identity perspective and, in particular, investigates corporate brand purpose, which is seen at the core of the brand identity.

3.1 The Evolving Brand Logic

Companies are increasingly recognising that their brand is among their most valuable assets. As a consequence, companies are intensifying their resources directed towards building them. Therefore, there has been increased attention towards understanding the value and meaning of brands and the process of branding. In light of this, the branding domain has been evolving over the past decades and resulted in a new conceptual logic (Merz et al., 2009).

Traditionally, branding has been perceived as being attached to products and (or) services in the form of identification and ownership. Moreover, it has been viewed as a firm-internal construct solely developed by managers from within the firm (Balmer & Gray, 2003). In this regard, customers have been viewed as the receiver of communication, indicating a dyadic relationship between the organisation and its customers (Merz et al., 2009). Vargo & Lusch (2004) define this as the goods-dominant (G-D) logic. This perspective proposes that organisations produce value and that customers are exogenous to value creation. However, the G-D logic is considered to be limited and flawed and should instead be replaced by the Service Dominant (S-D) logic. The S-D logic highlights that brands are co-created within a network of stakeholders comprising not only the organisation and its customers but also other stakeholders and communities. In addition, this perspective includes a process-oriented logic, emphasising *value-in-use* rather than the traditional output-oriented marketing view, which sees value in terms of *value-in-exchange* (Vargo & Lusch, 2004).

Likewise, Asmussen et al. (2013) denote that the evolution of the internet and the evolvement of the web 2.0 has resulted in new relationships between the firms and its stakeholders. The internet has enabled stakeholders to become co-authors and access providers, and thus empowered them to participate in the co-creation of brand meanings (Asmussen et al., 2013). Consumers and other stakeholders have "moved out of the audience and onto the stage" (Prahalad & Ramaswamy, 2000, p. 80). Subsequently, brand management cannot solely be comprehended as constituting of organisation-initiated processes. It should rather be understood as involving stakeholder-initiated activities that are not controlled by the firm. Asmussen et al. (2013), define this as an internet-based democratisation of brand management.

In accordance with the above, Merz et al. (2009) argue that brand logic has evolved to a new conceptual logic, where brand value is co-created between the firm and its stakeholders. Consequently, it is viewed

as a process-oriented phenomenon, in which stakeholders are viewed as endogenous to the brand value-creation process. This can further be linked to the Stakeholder-Focus Brand Era (2000 and forward). This brand era denotes that brand value is co-created within a stakeholder-based ecosystem in which stakeholders form networks rather than solely dyadic relationships. Additionally, brand value is dynamically constructed via social interactions among the various stakeholders (Merz et al., 2009).

Based on the S-D logic and the Stakeholder-Focus Brand Era, this paper views brands as continuous social and dynamic processes. Thus, "brand value is co-created with all stakeholders and determined through all stakeholders' collectively perceived value in the context of their own lives" (Merz et al., 2009, p. 340).

3.2   Corporate Branding

The following section sheds light on literature dealing with the subject of corporate branding and corporate brand identity. Corporate branding is characterised as a strategic branding tool designed to obtain certain outcomes that positively affect the company's performance (Jones, 2010). The term "corporate brand" indicates that there is an organisation behind the brand. Corporate brands often have multiple customer and non-customer stakeholders, as they typically constitute a broad range of products/services (Urde, 2013). Traditionally, corporate brands have been viewed as mere symbols, such as logotypes or trademarks denoting ownership (Balmer & Gray, 2003). However, nowadays, the corporate brand is defined by what the brand stands for (Greyser & Urde, 2019), which is transmitted and incorporated within the brands' products and services. As such, corporate brands communicate the brand's values, often defined as promise or purpose, which helps to differentiate them from competitors and enhance loyalty among their stakeholders (Balmer & Gray, 2003). The specific components encompassing a corporate brand identity are further explored in the section below.

Punjaisri & Wilson (2007) describe corporate branding as encompassing multiple stakeholders interacting with the organisation. Therefore, success is dependent on employee behaviour, attitudes, and the ability to transfer the brand promise to external stakeholders. In line with current literature, corporate brands can therefore be defined as social constructs, that are formed in the interaction of multiple stakeholders and communicated through brand values in a consistent manner (Balmer & Gray, 2003; Jones, 2010; Urde, 2013). Furthermore, Vargo & Lusch (2004) argue, that the success of corporate branding is determined by the creation of value for its stakeholders. In order to elicit value creation, the focus must lie on the relationship between the organisation and its stakeholders. Based on this, it can be derived that corporate brands "are born out of corporate identities but live in the minds of groups and individuals" (Balmer et al., 2017, p. 33).

3.3 Corporate Brand Identity

According to Balmer & Grey (2003), an organisation's identity is a prerequisite to the establishment of a corporate brand. It is further argued that the corporate brand embodies corporate identity (Jones, 2010). The corporate brand identity encompasses not only the visual presentation but also the organisation's value, culture, vision, history, and core competence (Balmer & Gray, 2003; Törmälä & Gyrd-Jones, 2017). Corporate brand identity has previously been presented as a stable and endogenous phenomenon based on reputation. In contrast, Törmälä & Gyrd-Jones (2017) argue that corporate brand identity should rather be considered as a continually developing and self-reflecting story about the brand. A brand identity creates a model in which consumers can identify and mirror their self-image (Kapferer, 2012). The concept is seen as being co-created through social interactions among various stakeholders within the firm's eco-systems, involving both internal as well as external responses (da Silveira et al., 2013; Törmälä & Gyrd-Jones, 2017). Notably, this is in correspondence with Merz et al.'s (2009) Stakeholder-Focus Brand Era. As previously mentioned, the brand logic from this era views brands as dynamic and social processes in which value is co-created with all of its stakeholders.

3.3.1 Corporate Brand Identity Matrix

According to Urde (2013), there are various elements that constitute the phenomena of a corporate brand identity. Elaborating further on this notion, Urde (2013) provides managers with a guiding tool - the Corporate Brand Identity Matrix (CBIM) - to enable alignment among the various elements and thus achieve a consistent corporate brand identity. The CBIM takes the shape of a three-by-three matrix and includes internal, internal/external, and external elements (see figure 4). The variations of internal, external, and internal/external elements allow for market-oriented, brand-oriented, or a combined approach to align and identify the corporate brand identity. The market-oriented approach considers the external elements, whereas the brand-oriented approach takes into account the internal elements. The focus lies at the *core* of the CBIM, which encompasses the promise and the core values. The arrows deriving from the core of the matrix and aiming towards the other elements, imply that the other elements are influenced by the core (promise & values) of the organisation (Urde, 2013).
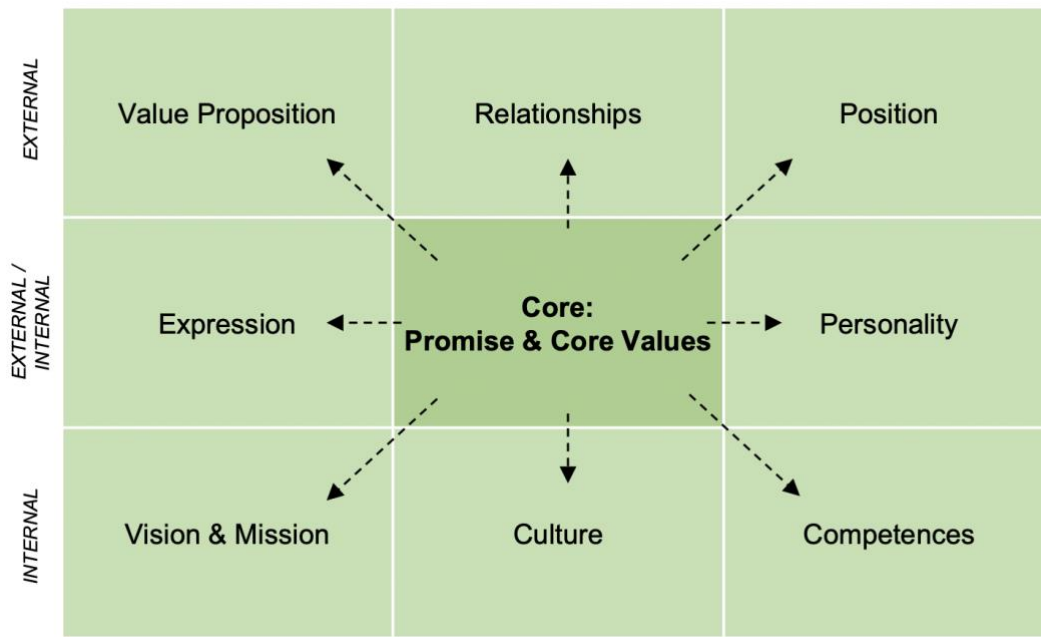
Figure 4: Corporate Brand Identity Matrix by Urde (2013); own creation based on Urde (2013)

The internal (sender) elements of the CBIM are characterised by the organisations' *mission & vision*, *culture,* and *competences*. The *mission* here explains the existence and motivations of a company beyond the aim of making money (Urde, 2013, p. 751). The *vision* is described as extending the mission by formalising where the firm is heading and what inspires it to move towards a future-oriented direction (de Chernatony, 2001). The *culture* element represents the firm's attitudes, values, and beliefs, which are reflected in the ways the company is behaving and working (Hatch & Schultz, 2001). The last component within the internal elements is *competences*. *Competences* refer to the organisation's capabilities, knowledge, practices, and processes, prospectively resulting in competitive advantage (Urde, 2013).

The external (receiver) components consist of *value proposition*, *relationships,* and *position*. The component of *value proposition* is concerned with appealing arguments directed towards customers and non-customer stakeholders (Frow & Payne, 2011; Rintamaki et al., 2007). The way brands deliver their products and services and interact with their users defines the *relationship* component of the CBIM. The *position* component within the framework defines how the firm wants to be positioned in the market and in the minds of key customers and non-consumer stakeholders (Keller et al., 2012). The diagonal arrow from the *mission & vision* to the *position* implies that there needs to be alignment between the organisation's reason for being and its intended *position* (Urde, 2013).

Lastly, the matrix is completed by the three elements, which are both internal/external. These include *personality*, *expression,* and the brand core, which encompasses *promise* and *core values*. As previously mentioned, the brand core is at the heart of the CBIM which underlines its crucial role of giving guidance and focus, while enabling coordination. Notably, a clearly defined core allows for a dynamic approach to building the corporate brand over time. The arrows from the core illustrate that all of the elements within the framework originate from the *promise* and *core values* and thus need to be consistent with the brand core (Urde, 2013). According to the author, the corporate brand *promise* assembles the *core values* as a meaningful whole. These are henceforth communicated externally and serve as a guiding tool internally for the firm (Baumgarth, 2010; Burmann et al., 2009; Ind, 2007). The *personality* of the framework is characterised by the combination of qualities that form the corporate character. A corporate brand *personality* is depended on the personality formed by the employees of the corporation. Finally, the *expression* element encompasses the visual and verbal forms of identifications of the corporate brand identity, exemplified by design, graphic, logotypes, flagship products, and tone of voice (Urde, 2013).

3.4 The Core of the Corporate Brand Identity

Based on the elaborations from the CBIM, it becomes evident that the elements within the framework play a significant role in order to achieve a unified and strong corporate brand identity (Greyser & Urde, 2019). As seen in figure 4, there are many components of the CBIM that encompass what the corporate brand stands for. However, this paper aims to understand and shed light on how the brand, and specifically the brand purpose, can play a role within EOI projects and processes. Therefore, the following section scrutinises the core of the CBIM by firstly defining its elements and their relationship to each other, and secondly, by investigating the phenomenon of brand purpose.

3.4.1 The Core of the Corporate Brand Identity Matrix

In alignment with Urde (2013), Collins & Porras (1998) consider the **core values** as key elements of the corporate brand identity. Core values in this instance are defined as the "essential and enduring tenets of an organisation "that are non-negotiable within an organisation (Collins & Porras, 1998, p. 66). In other words, core values are a small set of guiding timeless principles that have intrinsic value to those inside the organisation. However, in contrast to Urde's (2013) CBIM, the authors also underline the relevance of the **purpose** as a crucial element, which they define as the "organisation's fundamental reasons for existing beyond making money" (Collins & Porras, 1995, p. 3). Current management practices also put increased focus on the brand purpose arguing that organisations need to have a compelling brand purpose that is motivational, connects with the heart and the head, and takes a strong

outward focus in a sense that it answers the question of what the company is doing for someone else - the society and (or) the planet (Kenny, 2014).

Collins & Porras (1995) definition of purpose is very similar to how Urde (2013) defines mission within the CBIM: "the mission is vital as it explains the existence and motivations behind the organisation, beyond the aim of making money" (Urde, 2013, p. 751). The similarity in definition between mission and purpose illustrates that there has been no clear distinction between the two concepts and that there is a tendency of them being used interchangeably. However, more recent literature and studies within management have utilised purpose statements rather than mission statements (EY & Harvard Business Review, 2015). Taking the above into account, this paper views purpose as a vital part of what constitutes a corporate brand identity and, therefore, includes purpose as an element within the CBIM instead of mission. As seen in figure 5, the purpose is positioned at the core of the matrix as it is considered to inspire, motivate and affect the other elements of the corporate brand identity (Collins & Porras, 1998). The role of the brand purpose will be further explored in section 3.4.3.

In this regard, it is also valuable to distinguish between brand purpose and **promise** as there is a tendency to use the terms interchangeably. Brand promise is defined as "a perlocutionary communicative act that comprises an intentional and a causal element" (Anker et al., 2012, p. 272). For a promise to be realised it needs to be communicated and have an intention to be carried out through various actions. Fulfilling the brand promise necessitates companies to meet certain expectations among the stakeholders and thus create value (Abbing, 2010). In contrast, brand purpose is described as seeking to contribute to a better world and must go beyond statements about profitability (de Chernatony, 2001; Hollensbe et al., 2014).

Similar to the brand purpose, **vision** is described as guiding the development of the firm and serving as a common focus for internal and external stakeholders. Vision has been widely discussed in the literature. However, it is a concept that is both vague and often overlooked in comparison to an organisation's mission (Jones, 2010). As argued above, this paper includes purpose rather than mission. In light of this, it is valuable to distinguish between the two terms. Vision is abstract, non-specific, and essentially about transforming future environments into being (Jones, 2010), whereas the purpose is concerned with the organisation's fundamental reason for existing (Collins & Porras, 1998). Jones (2010) presents vision as a two-layered concept that takes on the role of a guiding light and a sense-making tool. Regarding the first layer, vision provides organisations with inspiration and a shared sense of direction. At the second level vision is seen as strategic in nature and is concerned with sense-making, which allows companies to guide themselves through rough competitive environments.
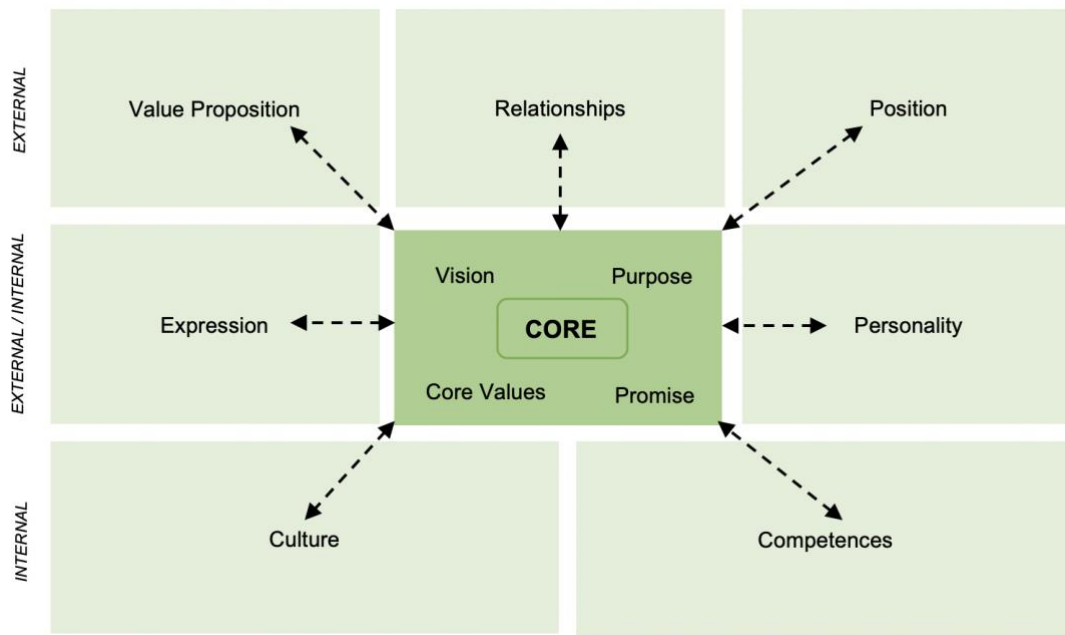
Figure 5: Adapted Corporate Brand Identity Matrix with vision and purpose as part of the core; own creation adapted from Urde (2013)

Likewise, Collins & Porras (1998, p. 66) state, "vision provides guidance about what core to preserve and what future to stimulate progress toward". Consequently, vision is be placed at the core of the CBIM and is thus seen as guiding and influencing the other corporate brand identity elements.

Lastly, and as previously argued, corporate brand identity is considered to be co-created and socially constructed among internal as well as external stakeholders (da Silveira et al., 2013; Törmälä & Gyrd-Jones, 2017). In line with this, the arrows, connecting the different elements of the CBIM, can arguably go both ways - from the core to the other elements as well as from the elements to the core. Moreover, this indicates the interrelationship between all components of the CBIM. Table 4 gives an overview of the elements mentioned in this section and their definitions.

Table 4: Definitions of the core elements of the Corporate Brand Identity Matrix

	Definitions	**References**
Vision	"The overall future focus of the firm in a broad societal perspective"	*Jones, 2010, p.49*
Core Values	"Essential and enduring tenets of an organisation"	*Collins & Porras, 1998, p.66*
Promise	"A perlocutionary communicative act that comprises an intentional and a causal element"	*Anker et al., 2012, p.272*
Purpose	"The organisations fundamental reason for existing beyond making money"	*Collins & Porras, 1995, p. 3*

3.4.2 Relationship between the Components within the Core of the CBIM

As elaborated in the previous section, the components within the core of the CBIM are related to one another. Subsequently, it is of value to understand their interconnectedness in relation to the brand purpose, which is the focus of this thesis. There is limited research explicitly describing their relationship, although de Chernatony (2001) and Collins & Porras (1998) include and incorporate the components above in order to describe the brand vision.
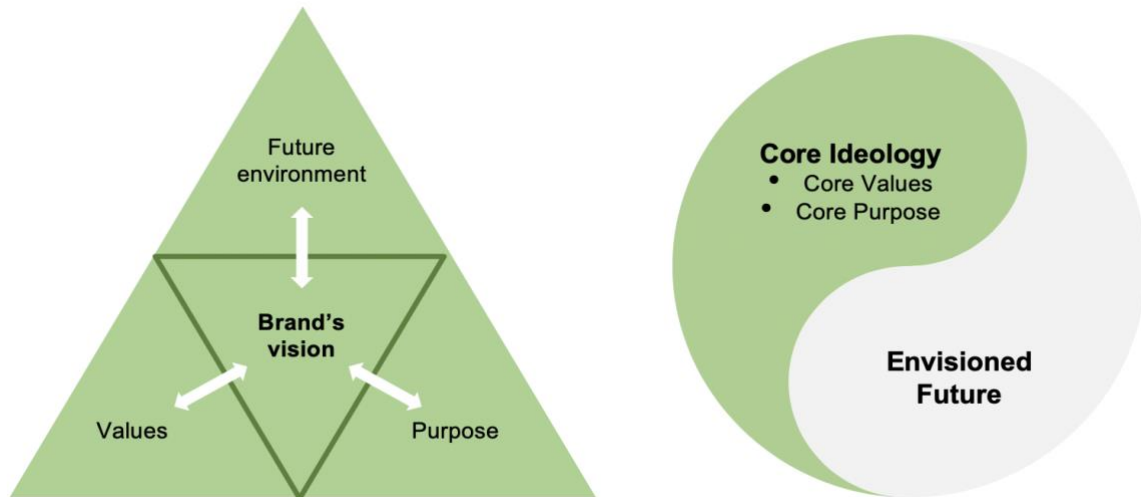
*Figure 6: **Left:** Brand-vision centered model by de Chernatony (2001); own creation adapted from de Cerhnatony (2001); **Right:** Core Ideology Model by Collins & Porras (1998), own creation adapted from Collins & Porras (1998)*

According to de Chernatony (2001), and as seen in figure 6, there are three components which encompass a brand's vision; future environment, brand purpose, and brand values. Correspondingly, in their *Core Ideology Model,* Collins & Porras (1998) argue that the brand vision is comprised of two components, namely core ideology and envisioned future. As seen in figure 6 the Core Ideology Model is designed in the form of yin and yang - "Yin is unchanging and complements yang". The core ideology is represented by the yin and defines what the firm stands for, which is derived from the core values and core purpose. The envisioned future includes a visionary goal of the future and a vivid description of what it will be like to achieve that goal.

These models demonstrate the interrelationship between purpose, vision, promise, and core values. Building on these notions, this paper views purpose as relating to all components within the core of the CBIM, namely core values, promise, and vision (see figure 7). The brand purpose is seen as the

motivational force and direction of the organisation, which means that it represents a point of departure in defining the core and the overall corporate brand identity (as seen in figure 8).
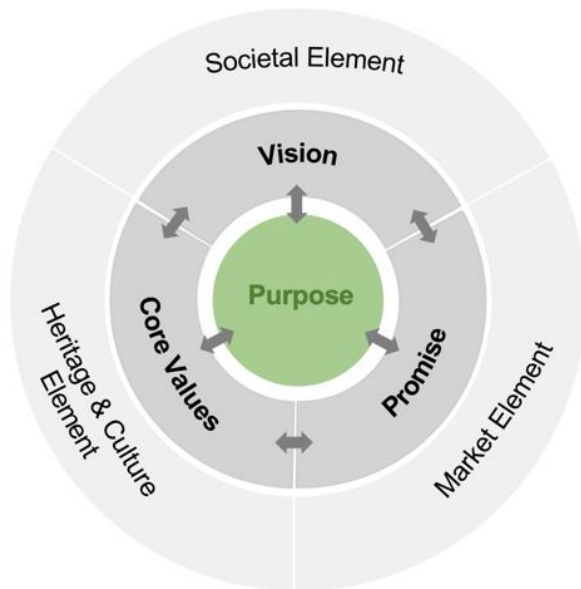
Figure 7: Purpose Driven Core Identity Model; own creation
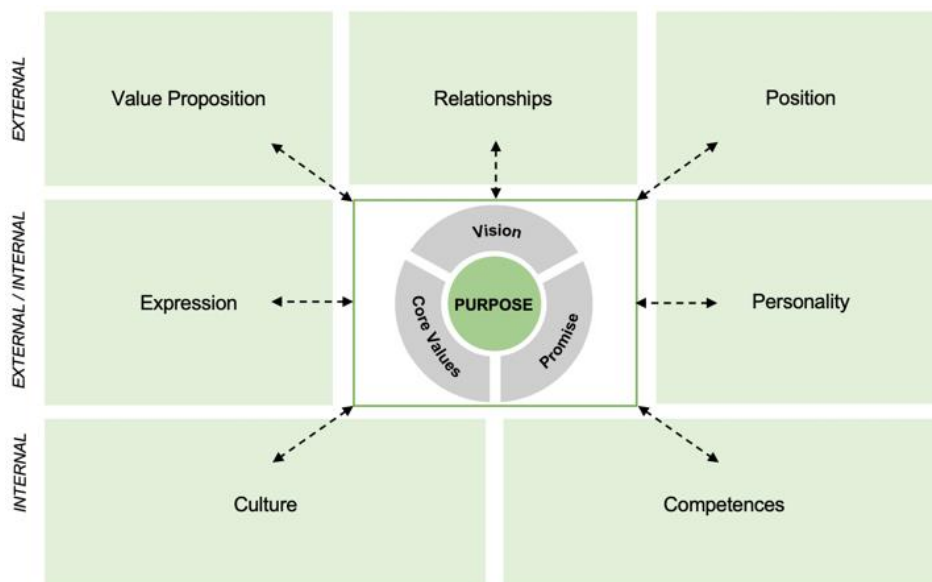
Figure 8:Adapted Corporate Brand Identity Matrix with the Purpose Driven Core Identity Model; own creation adapted from Urde (2013)

Purpose in relation to vision is seen as extending the purpose "by formulating its view of where it is heading and what inspires it to move forward" (Urde, 2013, p. 751). The core values, on the other hand, are seen related to the purpose as they describe the rules the employees live by in order to deliver the purpose of the company (EY & Harvard Business Review, 2015). Lastly, the purpose can be seen as a motivational force that inspires the brand promise. In turn, the brand promise creates customer expectations that need to be met by the corporation's actions, services, and products, which are driven by the brand purpose (Accenture, 2018).

As mentioned above, de Chernatony (2001) and Collins & Porras (1998) indicate that these elements are mutually influencing each other in an iterative process, which is indicated by two-way arrows linking all elements to each other (see figure 7). Elaborating further on this notion, it is found that if the core values are deeply rooted and mutually understood within the organisation, the brand promise will be delivered in a more authentic manner with commitment and passion (Kornberger, 2010). This will not only bring the brand to life but also enhance the prospect of a better brand performance as a result of the interconnectedness between the core values and the brand promise (Kornberger, 2010; de Chernatony, 2001; Punjaisri & Wilson, 2007). Furthermore, Hatch & Schultz (2001) denote the importance of the interrelation between the core values and vision. It is fundamental for firms to understand which core values are shared across the organisation, as a successful corporate brand vision picks up on those shared values. Likewise, Collin & Porras (1998) argue that vision provides guidance on what core values to protect and how to adapt these core values for the future. Moreover, vision is connected and linked to the brand promise. In order for the vision to be realised and delivered it has to be activated through meaningful manifestations and experiences that relate to the product and service (Abbing, 2010). Through these manifestations, the brand promise is delivered and thus value is created for the customer. So ultimately, the vision influences the brand promise as it guides what the promise needs to stand for in order to move the company towards its vision.

Elaborating further on figure 7, it is valuable to distinguish each elements' function of the *Purpose Driven Core Identity Model*. **Vision**, as previously mentioned, is defined as "the overall future focus of the firm in a broad societal perspective" (Jones, 2010, p.49). Given the current focus on societal and environmental issues, companies can be seen utilising their vision in order to describe their aspiring role in contributing to societal or environmental change. As the vision builds on deeply held assumptions of various brand stakeholders it can be viewed as the emotional link between organisations and society. Through this link it provides the firm with meaning and common focus to move forward (ibid). Taking this into account, the vision relates to the "Societal Element" as seen in figure 7 and is

considered to be an internal/external element, which links internal organisational aspirations to the external future environment.

In contrast, **core values** are more internally driven as they are defined as the organisation's essential and enduring tenets (Collins & Porras, p. 66). They are a small set of guiding timeless principles that have an intrinsic value to those inside the organisation (Collins & Porras, 1998). Core values are further described as the firm's fundamentally held beliefs, often derived from the founding fathers (Collins & Porras, 1998). Based on this, the core values can bee seen originating from and be connected to the company's heritage and culture (Hatch & Schultz, 2001). The authors Hatch & Schultz (2017) conclude that the authentic use of heritage can support organisations in harmonising their strategic decisions with the knowledge and wisdom of their past. Meaning that history becomes relevant to present future activities as it guides the future of the firm. Building on the above, the core values represent the "Historical and Cultural Element" as illustrated in figure 7.

The **promise** component is market-oriented and is essentially concerned with the relationship to the customer stakeholders. As mentioned earlier the brand promise is seen derived from the purpose and is in essence about meeting certain expectations held among the stakeholders (Abbing, 2010). It is defined as "a perlocutionary communicative act that comprises an intentional and a causal element" (Anker et al., 2012, p.272). In order for the promise to be realised it needs to be communicated and it needs to have the intention to be realised through various actions. The promise component of the model relates to the "Market Element" as seen in figure 7.

Demonstrated by the model, the **purpose** is situated in the middle representing not only the departure in defining the corporate brand identity (as mentioned above), but also the underlying construct of what encompasses and influence the purpose. Based on the juncture of these three phenomena - vision, promise and core values - this thesis views the brand purpose as an emerging reflection of *why* the organisation exists and *how* the brand perceives itself. At the same time, once the brand purpose is articulated by the brand it reciprocatively influences the vision, values and promise of the organisation.

Form a holistic point of view, and thus looking at all the elements together as a whole, the Purpose Driven Core Identity Model reflects *who* the organisation is and *what* it stands for. The model represents the core **identity** of the corporate brand and symbolise the "heart" and "soul" of the brand. Based on the characteristics of the separate elements, the model is considered to provide meaning for the brand. As Kornberger (2010) states, the brand essentially is an equation of functionality and **meaning**. The proposed core model can be considered as that meaning element of Kornberger's (2010) equation. Through providing meaning the elements have the ability to motivate and drive internal as well as

external stakeholders. It becomes clear that they together have the ability to influence and guide the organisation as a whole.

3.4.3 The Role of the Brand Purpose

This section aims to clarify the subject of purpose by understanding the role and the definition of purpose in relation to corporate branding. Notably, the subject of brand purpose is relatively unexplored. Consequently, only limited research covering the topic could be found. However, in contrast to academic theory, purpose is frequently mentioned in practice. The very concept of brand purpose is commonly used within management, and especially when it comes to the context of sustainability (Craig, 2018; EY & Harvard Business Review, 2015). The development of a brand purpose is regarded as subjective experiences, given the fact that individuals are interpreters of a firm's brand purpose. Additionally, the brand purpose is formed through a company's interactions with others and the world around them (Muñoz & Cacciotti, 2018). The purpose can hence be regarded as a concept co-created by multiple stakeholders (Merz et al., 2009). Subsequently, it is also suggested that a brand purpose operates as personalised intentions of "doing something good" and as such as a connecting link between business, society, and the planet (Muñoz & Cacciotti, 2018).

Every organisation has a purpose, albeit if it has not yet been formalised. Similar to core values, a brand purpose is unique, deeply held, and fundamental to any organisation. A brand purpose is discovered rather than created by organisations. It is formalised to last for decades and is not to be mistaken for specific goals or business strategies (Collin & Porras, 1998). A brand purpose should be able to answer the following questions: Why do we exist? Why is that a good thing? What value do we offer, and to whom? Which values do we believe in? (Gamper, 2017). In line with this, Collin & Porras (1995, p. 3) define purpose as "the organisation's fundamental reason for existing, beyond making money". The authors elaborate further on this notion by describing the purpose as the heartbeat and the soul of an organisation.

Purpose-driven organisations have been emerging over the last years and, as such, are concerned with driving meaning and goal-directedness, which in turn guides positive impact (EY & Harvard Business Review, 2015; Hollensbe et al., 2014). The purpose motivates the employees and can act as a unifying focal point of efforts, which promotes team spirit and supports internal alignment (Collins & Porras, 1998). A brand purpose should be applied with authenticity and accountability. In other words, it is of utmost essence for corporate brands to "walk the talk" of what they claim their purpose to be. Thus, a successfully implemented purpose can serve as a catalyst for the company to take concrete actions (EY & Harvard Business Review, 2015; Accenture, 2018).

A study conducted by EY and Harvard Business School (2015) found that purpose driven organisations tend to acquire higher growth rates and higher levels of success. The survey further demonstrated how a clear and well-developed purpose can be of assistance to firms when it comes to meeting and addressing new challenges, including transforming and driving ideas into successful innovations. Brand purpose matters as it involves a positive change and as such creates intrinsic meanings among employees, generates value for customers, and results in a positive impact on society. In the words of Rebecca Henderson, the John and Natty McArthur University Professor at Harvard Business School:

"The sense of being part of something greater than yourself can lead to high levels of engagement, high levels of creativity, and the willingness to partner across functional and product boundaries within a company, which are hugely powerful." (EY & Harvard Business Review, 2015, p. 4).

In summary, this paper defines brand purpose as a company's reason for existing beyond monetary motives. In other words, it is the aspirational essence of being that stimulates action towards creating benefits for society and the environment. Brand purpose is about driving meaning and creating value for all of the stakeholders within an organisations' network and is thus considered as the heartbeat of the firm, moving it forward (ibid.).

4 Branding & Innovation Theory

As seen in Section 2 (2.3.5), this paper proposes a link between EOI and the corporate brand identity, thereby supporting a link between branding and innovation theory. The aim of this section is to further shed a light on what previous researchers and management cases have found in regard to the brand-innovation relationship. Based on this, this thesis intends to understand the role of the brand purpose in EOI processes.

4.1 The Brand-Innovation Relationship

Innovation in relation to corporate branding has been discussed rather implicitly than explicitly in the literature (Nedergaard & Gyrd-Jones, 2013). There is a scarcity of research that covers the brand-innovation relationship and in particular brands as a source of innovation (Brexendorf et al., 2015). However, literature frequently emphasises the necessity for brands to be innovative, especially so the importance of continuous innovation as a capability to enhance a brand's value propositions and differentiation within the market (Aaker & McLoughlin, 2007; Keller et al., 2012). It becomes clear that innovation is not solely on the product-level, rather it lies at the heart of the organisation (Nedergaard & Gyrd-Jones, 2013).

Ex-post Innovation

For decades, branding and brand management has predominantly been viewed as **ex-post** to innovation, solely playing a role in activating and communicating the innovation efforts (Beverland et al., 2010). A successful innovation improves brand perceptions, attitudes, and usage. Likewise, Brexendorf et al. (2015) argue that brands support the introduction and adoption of innovations. Meaning that brands influence the decision behind how and where the innovations should be marketed and activated. Notably branding in this sense also influence the consumer response and ultimately contributes to the success in the market (Brexendorf et al., 2015). A key driver for successful new product launches, as mentioned above, is whether the innovation effort is in alignment with consumers' perceptions of the brand. Failing to achieve that alignment might result in confusion among the customers and hence result in damaging rather than building brand equity (Beverland et al., 2010). This notion requires that the brand should be part of the development of the innovation, as elaborated in the following paragraph.

Ex-dure Innovation

Contradicting to the view of brands as solely ex-post to innovation efforts, Beverland et al. (2010), emphasise the need for a fit between the innovation processes and the brand positioning **during (ex-**

dure) the innovation development. Notable in this regard is that brands are not solely seen as ex-ante and ex-post to innovation, but also as part of the innovation process (ex-dure) since they provide the process with strategic focus and guidance and thus make sure the innovation stays "on brand", in the sense that it is not only aligned with the corporate brand but also strengthens it (Nedergaard & Gyrd-Jones, 2013). Similarly, Brexendorf et al. (2015) state that brands are considered to guide and add focus to the development of new products and innovations. The authors elaborate further by arguing that the brand provides insight into identifying innovation potential, defining innovation boundaries, and optimising innovation timing for market entry.

Ex-ante Innovation

Calder & Calder (2010) emphasise that brands should not only be considered as essential part of the commercialisation of innovation (ex-post) and guideline during innovation processes (ex-dure). Instead they argue that brands should be seen as a source of or path to innovation by providing a sense of direction of how product portfolios can be extended into new categories and markets. Similarly, Nedergaard and Gyrd-Jones (2013) see a potential for brands to act as a strategic source for idea and concept generation in the fuzzy front-end innovation phase. Furthermore, Abbing (2010) argues that brands can act as filters for innovative ideas and be a source of inspiration via the use of brand criteria. Inspiration in this instance does not only relate to inspiring new products and services, but also to inspiring the entry into new markets, the formations of new partnerships, and the creation of new business models (ibid.).

In conclusion, there is an inevitable relationship between the corporate brand and the brand's innovation efforts. This paper departs the prevailing ex-post approach to the role of brands in innovation and considers branding and innovation to be closely intertwined at all stages of innovation - before, during and after the innovation process (Beverland et al., 2010; Brexendorf et al., 2015; Calder & Calder, 2010; Abbing, 2010).

4.2   The Role of the Brand Purpose in Environmental Open Innovation

Brand purpose has previously been considered as a marketing issue that is primarily concerned with the positioning of the brand and brand image (EY & Harvard Business Review, 2015). However, in line with breaking the dominant conception of the brand's ex-post logic, recent managerial studies argue that brand purpose acts as a motivational and meaning-creating force for every aspect of the firm, including innovation (EY & Harvard Business Review, 2015; Accenture, 2018). In a survey of 474 companies, it was found that executives treating brand purpose as a core driver for strategy and

decision-making, report greater ability to create transformational change and innovation. Thus, indicating that brand purpose has an impact and relation to innovation. A clearly articulated brand purpose that states the companies aspirational reason for being has been found to not only provide employees with a sense of meaning and fulfilment, but to also motivate them to pursue innovation that leaves a positive impact on society and the environment (EY & Harvard Business Review, 2015).

These recent management reports illustrate that a meaning perspective matters not only within branding but equally so within innovation. Despite these accounts of emphasising the importance of a clearly articulated brand purpose, academia has attributed little attention to the role of brand purpose within innovation processes yet alone within EOI processes.

As argued previously (in section 3.4.3), a clearly articulated brand purpose should encompass the reason why a company strives to go beyond making profits, and thus refers to the benefits a company seeks to provide for the local and global society. By providing meaning, the brand purpose motivates individuals and organisations to act. Especially, if the core brand purpose revolves around leaving a positive environmental or social impact it should consequently stimulate the desire and action towards innovations that fulfil the purpose. At the same time, the brand, and thus arguably the brand purpose, can be seen as a filter for the evaluation of ideas and innovation directions through the use of brand criteria (Abbing, 2010).

5 Conceptual Framework

This part of the paper summarises the literature review within the fields of innovation theory, brand theory, and brand & innovation theory, by integrating these perspectives into one framework. The framework on the one side draws upon the literature on stakeholder co-creation capabilities facilitating radical EOI processes and, on the other side, incorporates the role of the corporate brand identity, specifically the role of the brand purpose, in facilitating EOI (see figure 10). The adapted CBIM (figure 9), in which the purpose is seen positioned within the core, visually illustrates how the core affects and is affected by the other components of corporate identity. One of these components is described as the firm's competencies or capabilities. Subsequently, this thesis suggests that there is a link between the core brand identity and the capability perspective and thus aims to combine these in the following framework, as shown in figure 10.
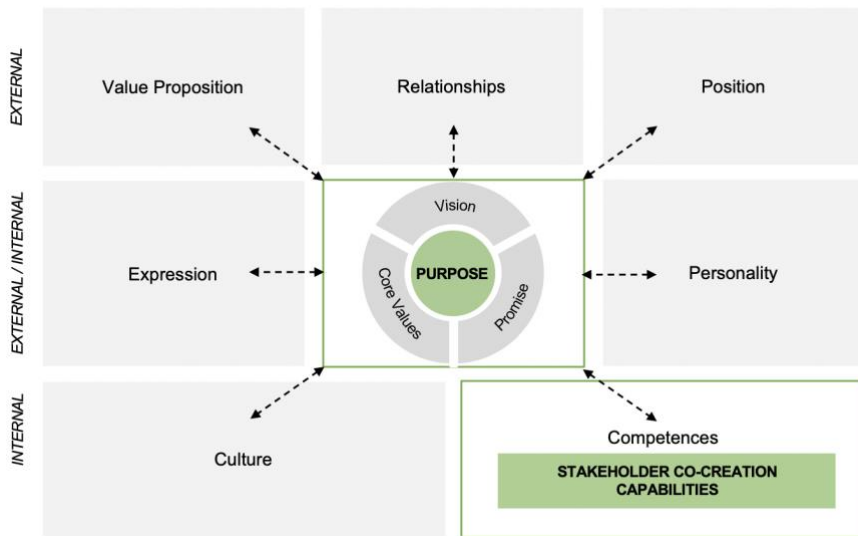
Figure 10: Corporate Brand Identity Matrix that links Purpose and Stakeholder Co-Creation Capabilities; own creation adapted from Urde (2013)
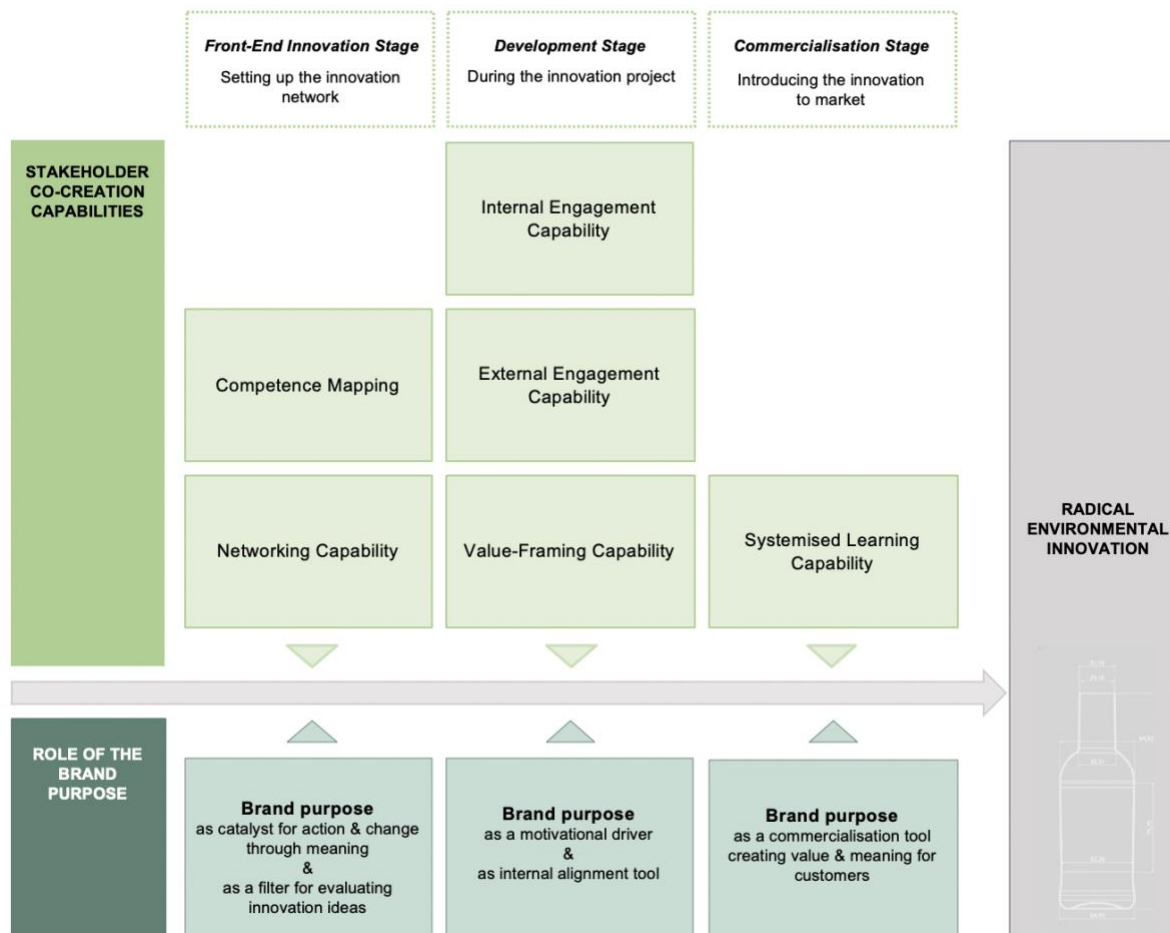
Figure 9: Conceptual framework combining a capability and brand perspective; own creation

The framework (figure 10) is structured along three innovation stages. The *front-end innovation stage* involves identifying opportunities and laying the groundwork for the innovation network (Kazadi et al., 2016). The second stage can be described as during the innovation development (ibid.). Lastly, when radical environmental innovation has been successfully developed, the product innovation needs to be introduced to the market as part of the *commercialisation stage* (Tidd et al. 2009). The following elaborations show how this thesis places the different capabilities along these three innovation stages.

Based on the stakeholder engagement capabilities elaborated in Section 2.3.4, this framework aims to bring together and complement existing capabilities to provide a holistic view of potential stakeholder engagement capabilities that facilitate EOI. In line with Kazadi et al. (2016), **Competence Mapping**, which refers to the ability to produce an explicit overview of competencies lying in (potential) external stakeholders, and **Networking Capability**, which describes the ability to attract the right external stakeholders for the innovation network, is placed in the front-end innovation stage.

Especially during the early project- and development-stage, it is essential to build a strong relationship with the external actors in the innovation ecosystem, which this thesis refers to as **External Engagement Capability.** This capability represents the fusion of External Integrative Capability from Watson et al. (2018) and Relational Capability from Behnam et al. (2018) as both capabilities majorly overlap. In the development stage, this capability entails creating engaging processes that inspire trust, achieve alignment between partners, establish a shared vision, and build bridges between partners, for instance, by appointing third-party intermediaries. While early development requires relationships to form and build, in more mature development stages the task shifts towards maintaining these relationships by facilitating ongoing communication characterised by open, transparent and non-hierarchical dialog (Watson et al. 2018).

However, EOI does not only require increased external collaboration but also increased internal collaboration. Consequently, in the early development stage, the firm needs to select, engage, and align relevant internal actors to match the external actors in the project, which is referred to as **Internal Engagement Capability**. Again, this capability is derived from Watson et al.'s (2018) Internal Integrative Capability and Behnam's et al. (2018) Desorptive Capability. On a micro-foundational level, Internal Engagement Capability entails processes around allowing employees to share their environmental ideas, communicating top-management support for environmental innovation, selecting the relevant departments and teams for environmental innovation with external partners, and empowering employees for enhanced commitment to collaborate with external actors.

Moreover, the **Value-Framing Capability** plays an important role during the development stage. It entails creating structures and processes that align the different interests and goals of the diverse innovation partners. This may include creating time and space to reflect on differences and similarities and acknowledging the tensions between competing internal and external value-frames in order to co-create solutions that unite the different value-frames. It may also involve "thinking purposefully", which means shifting the focus from the individual needs of the company to the collective needs of the entire industry, in order to unite diverse actors. "Thinking purposefully" can manifest in setting a higher purpose for the innovation network (or project) that unites participants (Draper, 2013; Ollila & Yström, 2016).

Lastly, this paper suggests that the **Systemised Learning Capability**, the ability to learn from the stakeholder co-creation activities and manage those learnings (Watson et al. 2018), plays a particular role after the specific innovation project. This is where companies should reflect on their collaboration and experiences with external and internal stakeholders. Specifically, in terms of what worked and what did not work and adapt their Networking, Competency Mapping, External and Internal Engagement and Value-Framing Capabilities accordingly. In other words, this Systemised Learning describes the positive feedback loop between stakeholder engagement, innovation, and learning (Watson et al. 2018). Appendix 1 shows a full overview of all stakeholder co-creation capabilities that have been included in the conceptual framework and their underlying microfoundations. See Appendix 1 for a full overview of the capabilities outlined in the conceptual framework, their definitions and identified underlying microfoundation that have been gathered from various authors (Watson et al., 2018, Behnam et al, 2018, Kazardi et al., 2016).

However, the aim of this thesis is to go beyond the mere consideration of capabilities by examining the role of brand purpose along the innovation process of EOI. While current academia has not acknowledged the role of the brand purpose in open innovation, this thesis aims to investigate the role of the purpose in enabling "functional" knowledge flows through meaning. In other words, this study seeks to explore how the brand purpose may fill a gap the EOI and the capability perspective is currently lacking by shifting the focus from the functional exchange of knowledge towards the consideration of meaning, individual beliefs and motivations within open innovation processes. As there is no scientific research about the role of the purpose in EOI the conceptual framework is derived from management cases that were, for instance, published by EY and Accenture (EY & Harvard Business Review, 2015; Accenture, 2018). Based on these studies and as elaborated in section 4.2, the following roles are suggested and will guide the further exploration.

Initially in the front-end innovation phase, the brand purpose is seen as acting as a **catalyst for positive change** and as driving action towards radical environmental innovation through meaning (EY & Harvard Business Review, 2015; Accenture, 2018). It is therefore seen as an initial spark that ignites actions towards radical environmental innovations and that paves the way for the establishment of the innovation network (ibid). In addition, the brand purpose is seen as a **filter** for evaluating innovation ideas in the early stage. Innovation ideas and directions are evaluated based on their brand-fit, or in other words, their alignment with what the brand stands for (Abbing, 2010). As indicated by the EY study, a strong brand purpose encourages employees to team up across internal departments and thus acts as a unifying focal point that supports **internal alignment** throughout the innovation process (Collins & Porras, 1998). Moreover, given the uncertainty, challenges and complexity of radical environmental innovation, a brand purpose that provides meaning to these actions may act as a **motivational driver** throughout the challenging development phases (EY & Harvard Business Review, 2015; Accenture, 2018). Lastly, taking a more traditional ex-post view on branding, the brand purpose is suggested to play a part in the **commercialisation** stage. Literature shows the necessity for brands to be a part of commercialising new products. The brand influence where and how the innovation should be marketed and ultimately connects the innovation with consumers (Beverland et al., 2010; Brexendorf et al., 2015). Based on this and taking into account that the brand purpose is situated at the core of the corporate brand identity (section 3.4.2), this paper argues that the brand purpose plays a role as a commercialisation tool by creating value and meaning for customers in the final stage of the innovation process.

Relating the framework to the underlying research objectives, this paper aims to shed light on the role of the brand identity, specifically the corporate brand purpose, in driving and facilitating EOI projects and processes. This entails gaining a better comprehension of the brand-innovation relationship in EOI processes. Furthermore, this paper intends to enhance the understanding of stakeholder co-creation capabilities and, in particular, the underlying microfoundations (processes and structures) which facilitate EOI. Moreover, this thesis seeks to explore what role the brand purpose plays within these capabilities and if there is a connecting between the two. By investigating these areas, this thesis aims to enhance the conceptual framework and further contribute to the newly established research domain of EOI, from a capability and corporate brand perspective.

6 Methodology

Section 6 outlines the methodology and research design of the underlying study. First, the scientific approach, regarding ontological and epistemological considerations is discussed before the research approach is introduced. Subsequently, the research design and the case study approach is explained, followed by methodological considerations regarding semi-structured interviews. Lastly, data quality with regards to validity and reliability are addressed.

6.1 Research Philosophy

Understanding research philosophy is essential as it lays the foundation for how research is approached within this study (Rashid et al., 2019). All theories of knowledge that are created by researchers must be based on considerations of how the nature of the world is perceived (ontology) and how knowledge can be derived from it (epistemology) (Bryman et al., 2011). Therefore, the ontological and epistemological standpoint of this thesis is presented in the following sections.

6.1.1 Ontological Considerations

Ontology is concerned with the nature of reality and human beings, thus relating to the assumptions researchers make about the way the world operates (Saunders et al., 2007). By arguing that social entities and their meanings are continuously shaped by the interactions of social actors, this thesis takes up the view of **social constructivism** (Bryman et al., 2011). This position challenges that organisations and brands are pre-given observable entities which are external to the individuals that inhabit it. Instead, it stresses the active role of the individuals in the construction of social reality. Social reality is thus created and perceived based on the interpretations of individual experiences (Berger & Luckmann, 1996). Consequently, there is no objective world or truth. Instead, multiple, socially constructed realities exist due to diverse individual experiences and perspectives (Guba & Lincoln, 2005).

Moreover, it implies that social phenomena (e.g. innovation networks and corporate brands) and their meanings are created by social interaction. Bryman et al. (2011) further argues, that these social phenomena are shaped by constant negotiation between these social actors. In line with this, innovation collaborations and ecosystems are in a constant state of development resulting in the continuous negotiation of the meaning of these networks and relationships by all actors involved. Moreover, also the corporate brand and the corporate brand purpose is subject to the interpretations and experiences of the different actors, internal and external to the brand. Consequently, this thesis takes on the view that the world is being socially constructed and the proposed framework should be viewed through the lenses of social constructivism.

6.1.2 Epistemological Considerations

While ontology is concerned with the nature of reality, epistemology considers the nature and origins of knowledge and its construction (Saunders et al., 2007). As this thesis takes departure in the ontological view of social-constructivism, an **interpretive epistemological position** is employed (Hudson & Ozanne, 1988). In contrast to a positivists view, where accessible knowledge can be objectively determined and generalised across different contexts, interpretivists consider knowledge to be socially constructed in dependency to a specific context (Bryman et al., 2011). Instead of seeking ultimate truths, and laws about reality, primary data collection is motivated by determining motives, meanings, and subjective experiences that represent respondents' "local truth" in their socially constructed reality (Hudson & Ozanne, 1998). As this thesis seeks to investigate how diverse innovation stakeholders with different dominant logics and cultures collaborate towards radical environmental innovation, an interpretivist approach enables this study to understand individual motives, meanings and their subjective experience during the co-creation of innovation. This approach allows the thesis to derive at findings which do not represent ultimate truths but explore the phenomena of environmental innovation networks and the brand-innovation relationship through the eyes of the participants.

6.2 Research Approach

There is ongoing debate about the development and use of theory and the degree to which useful knowledge can be best obtained by starting with data (induction) or with existing theory (deduction) (Collins & Stockton, 2018). Both, induction and deduction are very common research approaches in business studies (Rashid et al., 2019). While deduction is usually associated with quantitative studies and the deduction of hypotheses based on previous knowledge and theory, induction is more typically associated with qualitative studies. In the inductive approach, the starting point is the collection of data which then results in the emergence of questions, propositions and theory (Bryman et al., 2011). As this thesis aims to explore the relatively under-researched domain of EOI and the brand-innovation relationship based on the case of Carlsberg and the Green Fibre Bottle, an inductive approach appears appropriate. Qualitative semi-structured interviews have been conducted to explore stakeholder co-creation capabilities, underlying processes and the role of the brand in the environmental innovation case of the Green Fibre Bottle.

However, the traditional inductive logic neglects the use and impact of existing theory on the process of designing and engaging in research (Ravitch & Carl, 2016). Prior to data-collection this study utilised theory and existing knowledge in the fields of stakeholder co-creation, innovation and corporate branding in order to derive at a theoretical framework which guided the creation of the questionnaire.

Moreover, existing knowledge and theory has played an important role in the development of the research questions and goals of this study. Hence, both, inductive and deductive elements have been utilised in this research. Therefore, this study adopts an **abductive approach**, which has been classified as an approach to knowledge creation, which goes beyond the binary induction/deduction logic and bridges the gap between the two (Järvensivu & Törnroos, 2010).

As opposed to induction, abduction accepts existing theory as it can improve the strength of case analysis, while remaining flexible enough to allow less theory-driven research processes than deduction (Rashid et al., 2019). The abductive research process has also been referred to as "systematic combining" in a sense that theoretical framework, case analysis, and empirical fieldwork evolve simultaneously. The goal of an abduction strategy is exploring and understanding a social phenomenon through the lens of social actors (Järvensivu & Törnroos, 2010). In line with this, the underlying study investigates the environmental innovation network and the role of the brand through the lens of its participants.

6.3 Research Design

As the research objective of this thesis seeks to deepen the knowledge about stakeholder co-creation capabilities and processes facilitating radical environmental innovation and the brand-innovation relationship, a case study approach is applied. In line with the abductive approach, the theoretical framework is built from current innovation, branding, and brand & innovation theory. However, Hubermann and Miles (1994) argue that too much prior structure in form of a tight framework might "blind" the researcher to discover important findings in the case or might lead to misinterpreting participant's perceptions. On the other hand, too loose and emergent frameworks might lead to an overloaded and indiscriminate data-collection (ibid.). This research follows Dubois & Gadde's (2002) notion of frameworks within case study research. Based on an abductive strategy, they suggest that frameworks should be **tight** (in the sense that researchers have articulated their perceptions), yet **evolving** (in a sense that empirical findings inspire changes). Thus, the conceptual framework of this research is used as point of reference and functions as a guideline during the empirical phase.

Semi-structured interviews are applied to investigate motives, values, interests, and meanings attached to the open innovation processes and to identify the meaning and role of the corporate brand identity through the eyes of key innovation stakeholders. Based on this short overview, figure 11 illustrates the research design of the underlying study.
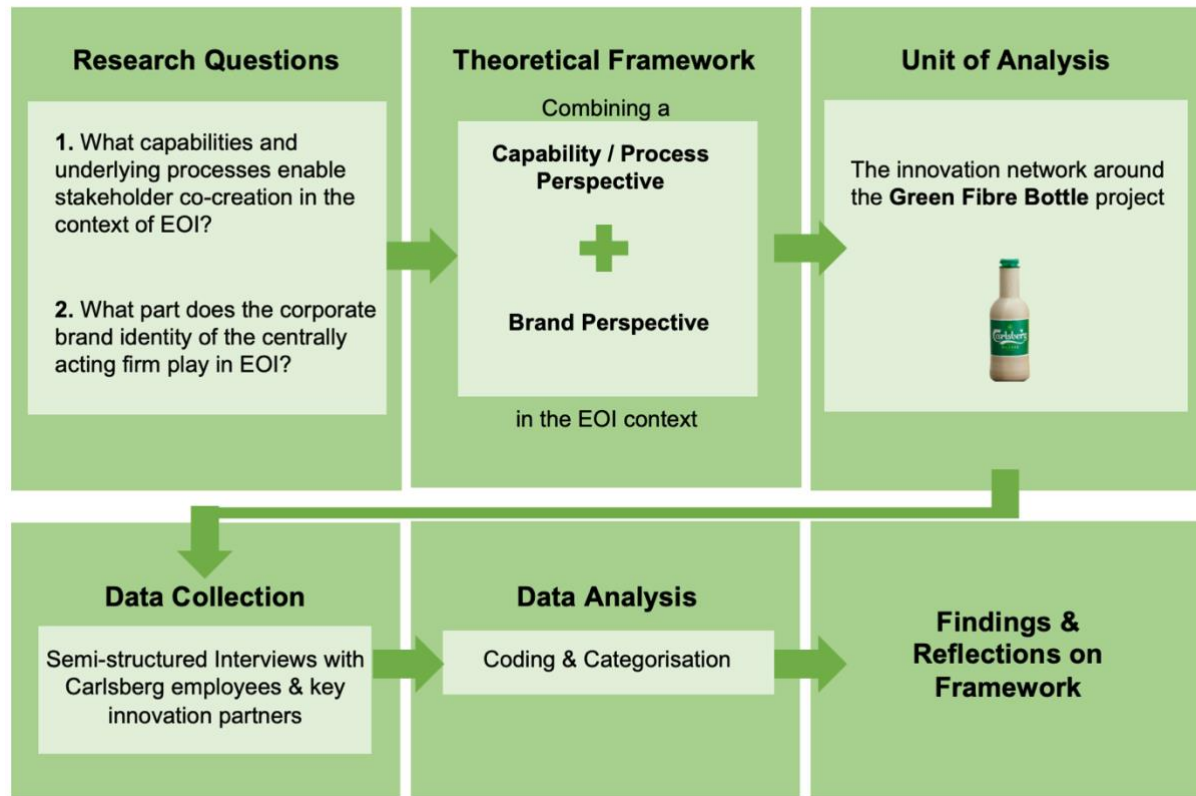
Figure 11: Research Design; own creation

6.4 Case Study Approach

The underlying research adopts a case study approach as a result of the nature of the research objectives, the theoretical framework as well as its philosophical stance. According to Halinen & Törnroos (2005), a case strategy can be defined as "an intensive study of one or a small number of business networks" (p.1286). This definition is in line with the aim of this thesis to explore the innovation network around the Green Fibre Bottle from the perspective of the central brand Carlsberg. In particular, the aim is to explore the capabilities and processes that facilitate radical environmental innovation and the role of Carlsberg's corporate brand purpose within the innovation processes. Yin (2018) defines a case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident." (p.17). Based on this, the innovation ecosystem, the collaboration, and the Carlsberg brand are viewed as contemporary phenomena that are explored in the context of the Green Fibre Bottle innovation project.

The case study strategy is essentially chosen for two main reasons. Firstly, case studies make it possible to identify and analyse essential factors, processes, and relationships rather than develop normative statements (Rashid et al. 2019). In line with this, Järvensivu & Törnroos (2010) suggest that case studies

are a suitable research method for exploring business-to-business relationships and networks. Given the first research question - *What capabilities and underlying processes enable stakeholder co-creation in the context of EOI? -* it is evident that a case study strategy benefits this study. A case study approach enables an in-depth exploration of the phenomenon, including its success factors and stakeholder co-creation processes. Moreover, such an in-depth exploration enables to dig deep into participant's perspectives and understand their motives and interests that have shaped the collaboration and processes (Rashid et al., 2019).

Secondly, case studies are a useful methodology in providing answers to "how", "why", and exploratory "what" questions about contemporary events which the researcher has little control over (Yin, 2018). When considering the second research question – ***What** part does the corporate brand identity of the centrally acting firm play in environmental open innovation?* – a case approach seems appropriate to answer these exploratory "what" questions. Moreover, the case study aims to explore the brand-innovation relationship in the context of EOI and therefore is rather aiming at "theory creation" than "theory testing". As case studies are particularly well suited for new or unexplored research areas – like the brand-innovation relationship – it is considered to a beneficial approach to develop useful knowledge in this field.

Yin (2018) differentiates between three different purposes a case study can take on, namely exploratory, descriptive, and explanatory. This research primarily is an explorative study that aims to investigate the new research field of EOI and the overlooked brand-innovation relationship domain. Of course, within the findings section there will also be descriptive elements of the EOI project, but at the heart the aim is to gain an understanding of how collaborations, open processes, structures, and a strong corporate brand can facilitate radical environmental innovation.

6.5 Unit of Analysis

It is suggested that the case, otherwise referred to as unit of analysis, must be selected based on the research purpose, the research questions and the theoretical context (Bryman et al., 2011). This thesis aims to investigate the collaboration between diverse partners striving towards radical environmental innovation. Subsequently, the unit of analysis is an innovation network, comprised of diverse innovation partners (organisations). Furthermore, this research aims to investigate the role of a strong corporate brand within innovation and open innovation. Thus, it is essential that the innovation network is built around a strong corporate brand. Based on these conditions, the case of the **Green Fibre Bottle innovation network** is selected to be the unit of this study. The Green Fibre Bottle is an EOI project which is centred around the established Danish beer brand Carlsberg. While it can be considered as an

innovation project, it can also be referred to as an innovation network or ecosystem consisting of multiple and diverse innovation partners ranging from technology start-ups, established consumer brands, universities and mid-sized packaging companies. The case of the Green Fibre Bottle will be further explored in section 7.

According to Yin (2018), clear case boundaries are necessary in order to distinguish data about the "phenomenon" from data that lies within the external context of the case. The boundaries are defined as including Carlsberg employees from the branding and innovation team that were involved in the Green Fibre Bottle project as well as key employees from the innovation partners. Considering the temporal boundaries, this case investigates the Green Fibre Bottle network from its early stages until its current status in early 2020.

6.6   Collection of Data

Considering the philosophical stand of this research which is routed in social-constructivism and interpretivism, this paper aims to comprehend motives, meanings and experiences through the lens of the social actors involved in the co-creation innovation process of the Green Fibre Bottle. As such, this thesis argues that the social phenomena of this case can be understood to the fullest only when explored within the context of this particular innovation network and hence through the eyes of the participants (Rashid et al., 2019; Saunders et al., 2007). Subsequently, the research method of semi-structured interviews was applied in order to enable a thorough insight into the particular context of the Green Fibre Bottle network.

The chosen research method of semi-structured interviews is considered to be aligned with the case study approach as well as with the research objectives of this study. The aim of the case study approach and the formulated research questions is to identify fundamental factors, processes, relationships and hereby explore a real-life phenomenon (Rashid et al., 2019). The semi-structured method allows the researchers to focus directly on the case study topic apart from also providing insightful explanations, real-life experiences, and personal views (Yin, 2018). The semi-structured interview type gives room for a certain control over the conversations, whilst it permits participants to speak freely and even elaborate further on topics not necessarily included in the interview guide. As a result, the thesis may turn out exploring other areas than initially considered and may thereby gain a greater overall comprehension of the case in question (Bryman, 2012).

6.6.1 Sampling & Interview Guide

The criteria for interview sampling was based on individuals presently or previously being involved in the Green Fibre Bottle project. The aim was to specifically focus on the most key process participants/stakeholders. A majority of the interviewees were selected out of the Carlsberg employees as the Green Fibre Bottle is specifically connected to the beer company. The selection of individuals from various departments within Carlsberg allowed for obtaining different perspectives and experiences. As this thesis seeks to understand the brand-innovation relationship within the context of EOI this method was considered relevant to apply.

As shown in table 5, employees interviewed are from the areas of branding, PR, sustainability, packaging and innovation. In light of the objective of this study to investigate the open innovation collaboration, key innovation partners were selected. This is considered relevant in order to obtain a holistic overview of the innovation network and their perspectives on the collaboration. The key innovation partners include the Technical University of Denmark (DTU) and Paboco (formerly the technology start-up ecoXpac). Paboco, also referred to as the Paper Bottle Company, represents a joint venture between the paper packaging material developer BillerudKorsnäs and the bottle manufacturing specialist ALPLA. These two firms were contacted for potential interviews, however due to the Covid-19 it was not possible to conduct interviews with these two firms. In October 2019 the community around the Green Fibre Bottle (Paper Bottle Community) expanded its network by inviting three big consumer brands L'Oréal, Coca-Cola and The Absolut Company to join their efforts. Since this new extended community is relatively young, and there have only been two meetings with all the new partners, the newly entered consumer brands have not been considered for this particular study. An overview of the interviewees is exhibited in the table 5 below and an overview of the various responsibilities in relation to the Green Fibre Bottle can be found in Appendix 2.

The conducted interviews were based on predefined interview guides, which are semi-structured in nature and thereby allow for flexibility (Bryman, 2012). The semi-structured approach is considered appropriate to apply as this thesis aims to explore stakeholder co-creation capabilities within EOI as well as the role of the brand purpose in these specific types of innovation projects.

Name	Organisation	Position	Employment	Involvement	Nationality	Interview Format	Duration
Julian Marsili	Carlsberg	Global Brand Director	5 years	5 years	Italy	Microsoft Teams	45
Sam Wainwright	Carlsberg	Global Brand PR Manager	5 years	3 years	UK	Microsoft Teams	60
Håkon Langen	Carlsberg	Packaging Innovation Director	19 years	5 years	Norway	Microsoft Teams	45
Simon Boas Hoffmeyer	Carlsberg	Senior Director, Sustainability & Communications	14 years	5 years	Denmark	Microsoft Teams	50
Michael Michelsen	Paboco ecoXpac	Business Development Manager Global Business Manager	2 years 5 years	7 years	Denmark	Microsoft Teams	50
Mattia Didone	DTU ecoXpac	PhD student R&D Manager	3 years 6 months	3,5 years	Italy	Microsoft Teams	30

Following the stated principles in the abductive approach, the interview guides were derived from theory, yet they were adapted and modified in accordance with the interviewees field of expertise in order to focus specifically on each individual's experience within the innovation project. Additionally, questions and formulations were adjusted while conducting the interviews. All in all, 3 interview guides were created (see Appendix 3). The questions of these guides were grouped into discussion topics with various sub-questions. This flexible interview format enabled the researchers to pick up on particular cues throughout the interviews and hereby allowed for deepening the contexts and formulations (Kvale & Binkmann, 2015) As a consequence, the interviews varied in length from approximately 30 to 60 minutes. All of the interviews were conducted in English via Microsoft Teams, thus prohibiting the risk of being lost in translation. Moreover, the Microsoft Team software allowed for all interviews to be recorded and subsequently transcribed. The online interview set-up was the only available format given the current Covid-19 situation which did not allow for the intentionally planned face-to-face meetings. Moreover, Covid-19 has led to two interviews being cancelled and many being rescheduled.

6.7 Data Analysis

Qualitative data analysis plays an essential part in qualitative research as it assists in systemising the acquired data into central categories from which finding statements can be derived which subsequently, can be related to the original research questions and the theoretical framework (Yin, 2011). The process of analysing the data follows Yin's (2011) five analytical phases illustrated in figure 12.
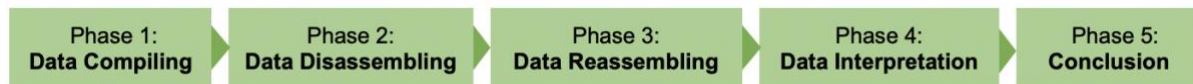
Figure 12: Data Analysis Process based on Yin (2011); own creation

The initial phase is concerned with *compiling* the database which includes the transcription of the interview recordings, seeking approval of the written transcripts from participants and including their feedback, and lastly arranging the texts in NVivo 12, a qualitative data analysis software. As the interviews were conducted, transcription was done on a continuous basis in order to modify the interview guide for future interviews.

The second phase - the *disassembling* phase - relates to the manipulation of data by breaking it down into smaller fragments (Yin, 2011). This study adopts Saldana's (2013) process of manipulation which involves codifying and categorising the qualitative interviews. Given the voluminous amounts of data, the qualitative data analysis software NVivo 12 was utilised to organise and manipulate the data. The analysis was conducted in two cycles. The first cycle produced the initial codes. These codes aim to capture the primary content and essence of the datum by attributing interpreted meaning to them for later purposes of categorisation (Saldana, 2013). In the first coding cycle, the researchers remained open to everything that seemed interesting without it necessarily being valuable for the research objectives and questions. The process of coding enables the organisation and grouping of similar data (codes) into categories (ibid.) Lastly, based on the identified categories and underlying codes finding statements were derived. The identified categories were interpreted in connection to the conceptual framework. However, the explorative nature of the study also allowed and encouraged the emergence of new categories.

The third phase includes the *reassembling* of data, or in other words, the second cycle of coding and adaptation of categories. Lastly, the *interpreting* and *concluding* phases generate a comprehensive understanding of the main empirical findings which were expressed in the form of finding statements. An illustrative example of the coding scheme can be found in Appendix 4.

6.8 Quality of Research

As outlined in the previous sections, the research design takes on an explorative approach, routed in an abductive strategy in order to uncover underlying themes and theory emerging from the real-life context of the Green Fibre Bottle innovation network. In light of the research objectives and questions those themes and theory relate to stakeholder co-creation capabilities and their underlying processes as well as the brand-innovation relationship within the innovation project. Taken into consideration the research design and analysis of this study, the following section aims to assess the quality of this study and of the qualitative data with regards to Yin's (2018) proposed evaluation criteria for exploratory case studies, namely, *construct validity, external validity, and reliability.*

High **Construct Validity** implies that the research is able to identify the correct operational measures for the concepts that are being investigated, which is particularly challenging in case study research (Yin, 2018). Qualitative case studies have been criticised for their "subjective" judgements and not sufficiently operationalised measures (Flyvbjerg, 2006). This study, therefore, draws upon two suggested tactics by Yin (2018) to improve construct validity, namely using *multiple sources of evidence* and establishing a clear *chain of evidence* during data collection. Regarding the use of multiple (data) sources, the construct validity of this study would have benefited from including documents and notes from collaborative meetings between the different innovations stakeholders or project presentations that have been shared in the internal network. However, as the innovation of the Green Fibre Bottle is still being developed such documents were not accessible for the researchers for confidentiality reasons. Therefore, this study aims to achieve construct validity by using a wide array of theoretical sources that are at the foundation of the conceptual framework which guides the entire research process. Moreover, the chain of evidence tactic was considered by setting up a clear research design and analysis approach as illustrated in figure 11 and 12.

External Validity relates to the generalisability of the case study findings. Criticism has been raised against assessing case studies with an abductive approach based on their generalisability. Rashid et al. (2019), argue that generalisability criteria relates to a positivist approach and is hence not applicable to the abductive, interpretivist research strategy of this study. The findings of this study cannot be generalised for various populations and diverse contexts (Yin, 2018). Merriam (1998) argues that the intention of qualitative research is the interpretation of the social phenomena and not to generalise the findings. In contrast, Yin (2018) that case studies can achieve analytic generalisation that go beyond the context of a specific case. These analytical generalisations may be based on either (a) advancing and modifying theoretical concepts that were part of designing the case study or (b) new concepts and themes that emerge during the case study. This generalisation is therefore on a higher conceptual level.

By relating the findings to a conceptual framework which ultimately leads to its modification, this study seeks some degree of external validity. Nevertheless, the context of the Green Fibre Bottle project is unique and cannot be replicated in the exact manner. However, by relating the case phenomena to the conceptual framework, the findings can to some extent be transferred to similar context, meaning other EOI networks which are currently emerging.

Lastly, **Reliability** relates to the degree to which data collection procedures can be repeated by later researchers and to which extent they would arrive at the same conclusions (Yin, 2018). In the context of this case study, this would mean, that researchers who studied the same case with the same framework would arrive at the same findings. Consequently, the reliability criteria aims to minimise errors and biases in a study inflicted by the researchers. Yin (2018) suggests that in the case study context the development of a case study database increases reliability. For this purpose, all transcriptions of interviews have been attached to the Appendix 5 as well as the interview guides and questions that were asked. Moreover, the coding has been organised in NVivo, which allows to arrange the data narratively and numerically.

7   The Case of Carlsberg and the Green Fibre Bottle

This section outlines the selected case of the Danish beer manufacturer Carlsberg and its Green Fibre Bottle project. The study aims to understand the underlying capabilities necessary to facilitate EOI, including the comprehension of the brand's role and specifically the role of the brand purpose in managing EOI projects. Therefore, this thesis focuses on the innovation of the Green Fibre Bottle. This specific case was deemed appropriate to investigate as it shows how a complex sustainable packaging innovation challenge can be overcome through open innovation.

7.1   The History of Carlsberg

In 1847 when J.C. Jacobsen was 36 years old, he founded his first commercial brewery in Copenhagen. Jacobsen named the brewery after his son, "*Carl*" and the Danish word for hill "*bjerg*", – consequently *Carlsberg* was born. In 1875 Jacobsen set up the first industrial research laboratory, which later on would put the Carlsberg brewery on the map as being in the forefront in terms of research science and innovation. Jacobsen was a true believer in sharing knowledge and prioritised research. Hence, he also stood for innovation and openness. Due to this specific mind-set all discoveries made in the lab were openly shared and distributed to anyone interested, including other brewers. In the words of Jacobsen; "there is nothing to fear from your competitors, when you brew probably the best beer in the world"

(Carlsberg, 2020b). In line with this spirit, Jacobsen established the Carlsberg Foundation in 1876 in order to support Danish scientific research. When Jacobsen passed away in 1888 the Carlsberg foundation took control over the brewery. The foundation has two main objectives; (1) to own a controlling interest in the company and (2) to be supporting basic scientific research at an international level. Focus lies on natural science and humanities with the purpose of being beneficial to the society (Carlsberg Group, 2020f). During the 1900s the Carlsberg brewery expanded by opening up breweries around the world. In 1970 Carlsberg was listed on the Copenhagen Stock Exchange and in 1973 Carlsberg's iconic tagline "Probably the best beer in the world" was created (Carlsberg Group, 2020c). The "probably" tagline has since then been communicated to consumers with the intention of showcasing Carlsberg's commitment in terms of delivering high quality (Carlsberg Group, 2015).

7.2 The Carlsberg Company of Today

"Some have to dig deep to find their purpose. For us it has always been there" (Carlsberg Group, 2020a). The original values of Jacobsen have evolved over the years into forming the present signalised brand purpose: **brewing for a better today and tomorrow**. As of today, Carlsberg is a global leading brewery group. A company with more than 40.000 employees and products sold in more than 150 markets worldwide. Carlsberg breweries are established in 33 countries across Western Europe, Eastern Europe, and Asia. The corporate portfolio consists of more than 140 brands. However, the flagship brand is Carlsberg. The Carlsberg family consist of the Group, three grand awarding foundations (The Carlsberg Foundation, The Tuborg Foundation and The New Carlsberg Foundation), two international museums (Ny Carlsberg Glyptotek and The Museum of National History), and the Carlsberg Research Laboratory (Carlsberg Group, 2020a).

7.2.1 Brewing for a Better Today and Tomorrow

When Cees 't Hart became CEO of Carlsberg in 2015 it became clear that the purpose needed to be reinvigorated. Hart stated back then: "I believe that many companies are trying really hard to define their purpose. When I joined Carlsberg, it became clear to me that at Carlsberg the purpose has always been there" (Chesbrough et al., 2018, p. 6). The purpose is described as a phenomenon being rooted in the heritage and in the mentality of the founders – "their pioneering spirit, passion for brewing and proactive contribution to society are what makes us who we are today" (Carlsberg Annual Report, 2019, p. 22). Professor Flemming Besenbacher, Chairman of the Carlsberg Foundation explains the ownership structure, strategy and operations by referring to the three Ps. "P" as in profit: "We are here to create value for our shareholders, that is for sure". "P" as in purpose: "**We are a purpose-driven company**" and finally "P" as in planet: "I do not believe that you can run a company in the twenty-first

century without taking care of the planet." (Chesbrough et al., 2018, p. 6). Achievement is to be reached by living the purpose, by focusing on the brands, by focusing on the art of brewing, by offering quality brews to consumers and by constant pursuit of aiming to do better (Carlsberg Annual Report, 2019). "Our purpose guides everything we do: Our pursuit for perfection through our actions, our continued focus on research and innovation, always focusing on what our consumers want, and driving more sustainable brewing and contributing to society" (Carlsberg Group, 2020a). See figure 13 for a summary of Carlsberg's brand purpose. Additionally, living the purpose is considered to be key in order to successfully execute the corporate strategy - SAIL'22. The Carlsberg corporate strategy was launched in 2016. The Strategy is aiming to bring life to the Carlsberg purpose by growing the business, by creating value for the shareholders and by making a positive contribution to the society (Carlsberg Annual Report, 2019). See Appendix 6 for an overview of the key ambitions and priorities of the SAIL'22 strategy.

"Some have to dig deep to find their purpose, for us it has always been there.

We pursue perfection every day.

We strive to brew better beers. Beers that stand at the heart of moments that bring people together.

We don't settle for immediate gain, when we can create a better tomorrow for all of us.

Brewing for a better today & tomorrow"

Source: (Carlsberg Group, 2020a)
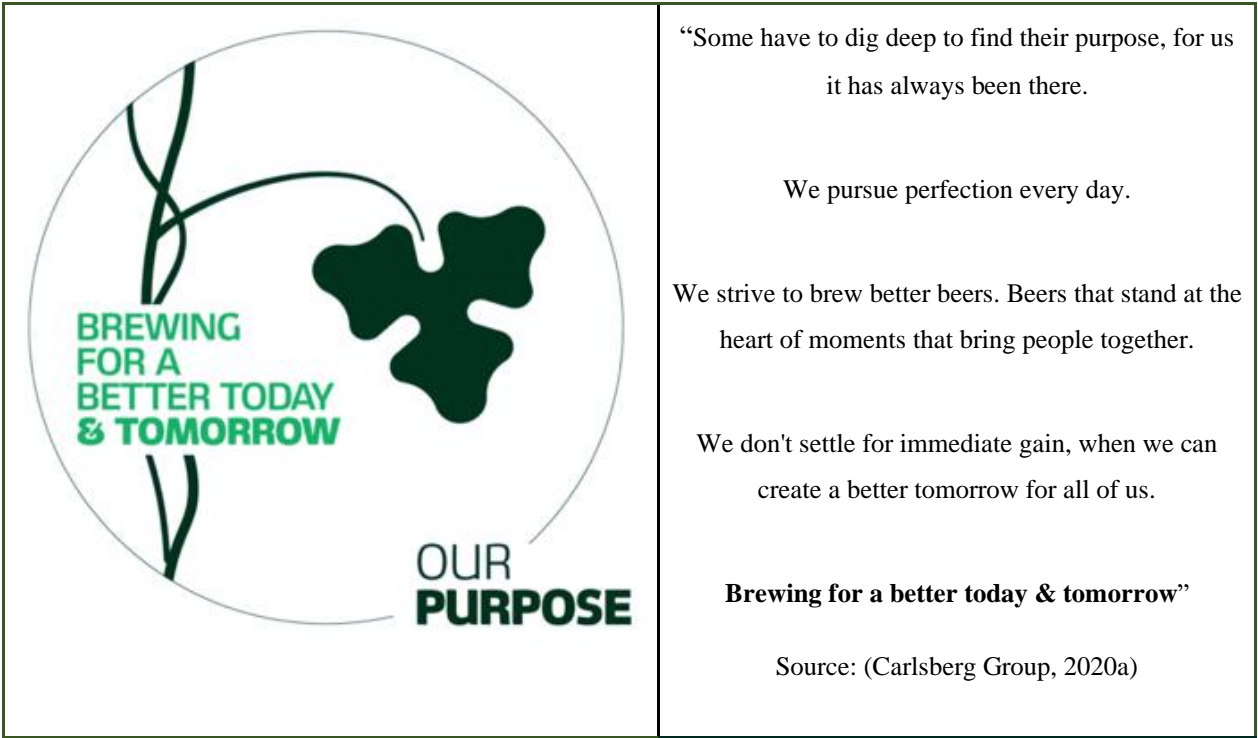
Figure 13: A summary of Carlsberg's brand purpose; own creation

Sustainability is considered to be central to the Carlsberg purpose and as such deeply embedded in the company's corporate strategy (Chesbrough et al., 2018). In response to the global issues of today Carlsberg in 2017 decided to progress and take a lead on sustainability by launching the sustainability program *Together Towards Zero*. This very sustainability program sets out to achieve zero carbon

footprints, zero water waste, zero irresponsible drinking and a zero accidents culture. To underpin each ambition Carlsberg is furthermore setting up individual measurable targets to the year 2022 respectively the year 2030. Additionally, the Carlsberg company adapted to and aligned with the UN's Sustainable Development Goals (SDGs) (Carlsberg Sustainability Report, 2019). The CEO of Carlsberg emphasises the word "together" as being critical in the context of the company's sustainability program. "Nobody can solve the challenges the world faces alone. By working in partnerships, we are able to make faster progress and deliver change that would otherwise not be possible" (Carlsberg Sustainability Report, 2019, p. 4). Partnering is well rooted in the Carlsberg's philosophy. "A belief in the power of partnerships is deeply rooted in our business – stemming from our founder's belief that bringing together bright minds is the most effective way to improve our business and society" states 't Hart (Carlsberg Sustainability Report, 2019, p. 4). "Always Sharing" is additionally described as a fundamental part of the organisation's culture (Carlsberg Group, 2017) – "we believe that our inventions should be shared with the world, for the common good of all of us" (Carlsberg, 2020c).

Apart from emphasising "sharing" as being a fundamental brand value, Carlsberg also underlines the philosophy of always striving for and pursuing to do better. This philosophy is derived from Carl Jacobsen's motto "Semper Ardens" which translated to "Always Burning" (Carlsberg Group, 2001; Mary Jo Hatch & Schultz, 2017). Figure 14 below applies the Purpose Driven Core Identity Model to the Carlsberg brand in order to give an overview of the purpose, vision, promise and core values. Carlsberg's "constant pursuit of better" philosophy is divided into two pillars (1) *Better Beer Experiences* and (2) *Better Tomorrow*. "Better Beer Experiences" includes ideas to create better experiences for the consumers, whereas the "Better Tomorrow" pillar includes sustainable ideas. The "Better Tomorrow" pillar is connected to the sustainability strategy and can be exemplified by historical breakthroughs such as the pH-scale innovation and the purified yeast. It can furthermore be exemplified with new sustainable innovations that have over time been developed in order to meet zero carbon footprint targets. Examples of such innovations are recycled shrink film, greener label ink, and the Snap Pack. The Carlsberg Snap Pack utilises a novel glue technology to keep the beer cans together without using any of the traditional plastic wrapping. Yet another example is the Green Fibre Bottle project, which is the innovation project this study aims to investigate (Carlsberg Group, 2020e).
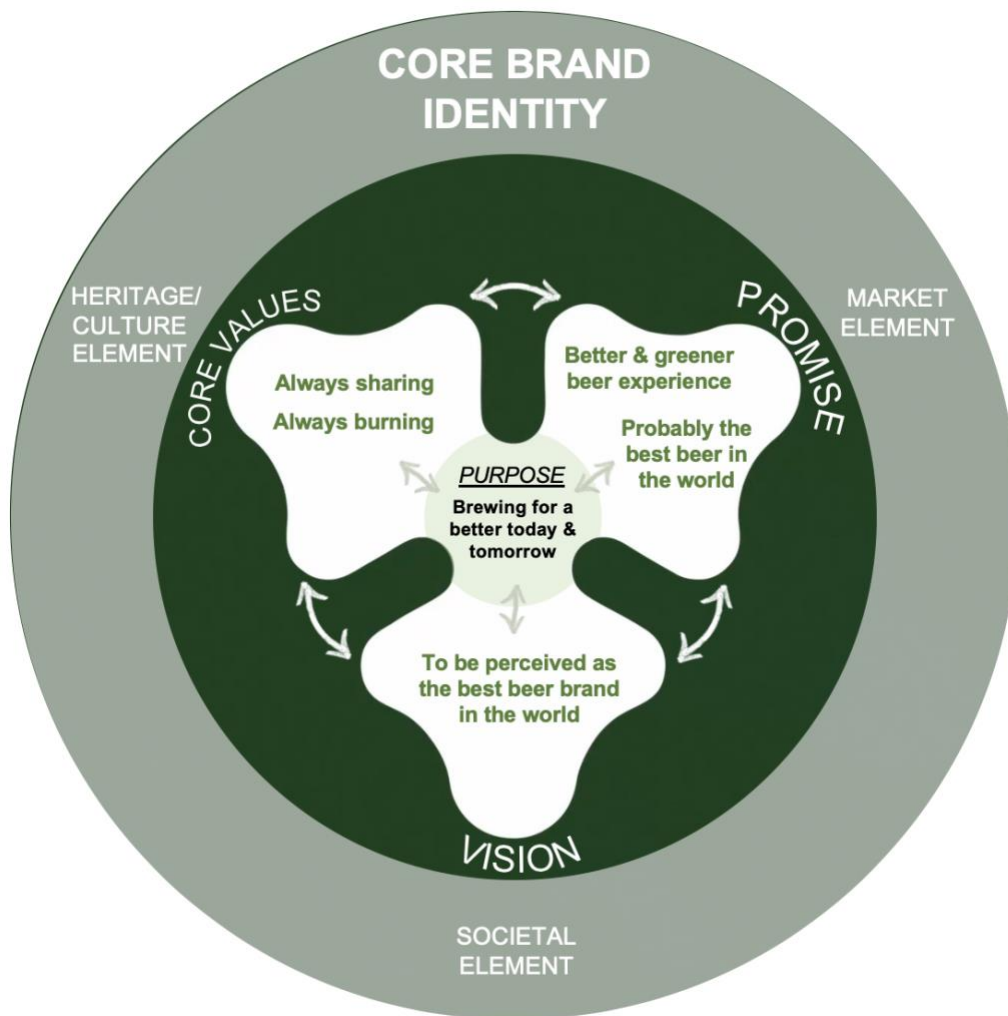
Figure 14: Application of the Core Brand Identity Model to the Carlsberg brand; own creation

7.3 The Green Fibre Bottle

With the Green Fibre Bottle project Carlsberg aims to develop the world's first 100% bio-based paper beer bottle made out of sustainable sourced wood. The innovation project has, since its start in 2015, matured into an innovation network that is centred around a partnership with the paper bottle company – Paboco. As of today, Carlsberg has developed two fully recyclable prototypes. The prototypes are made out of sustainable-sourced wood-fibre with inner barriers containing the beer. The one prototype is equipped with a thin recycled PET polymer film barrier, whereas the other one is equipped with a 100% bio-based PEF polymer film barrier.

The Green Fibre Bottle project represents one of the first formal cases of how open innovation can drive innovation when it comes to addressing grand sustainable challenges. The project demonstrates

a convergence between sustainability and open innovation, which this study refers to as EOI. The following section will elaborate further on the project by exploring the history of Green Fibre Bottle project and by shedding light on the partners involved in the project (Carlsberg, 2020a).

7.3.1 The Background Story of the Green Fibre Bottle

In 2015, at the World Economic Forum in Davos, Besenbacher announced the development of the world's first fully biodegradable wood-fibre bottle for beverages by presenting the first fibre-based bottle prototype. The project, supported by the Innovation Fund Denmark (IFD), was originally initiated as a three-year project involving experts from ecoXpac and post-doctoral researchers from the Danish Technical University (DTU). The aim was then and still is to be enabling and allowing for the bottle to be responsibly degraded. Focus is on the bottle (including the cap) to be developed out of bio-based and biodegradable materials (primarily sustainable sourced wood-fibres) (Carlsberg Group, 2015). See figure 15 for a timeline over the Green Fibre Bottle project.
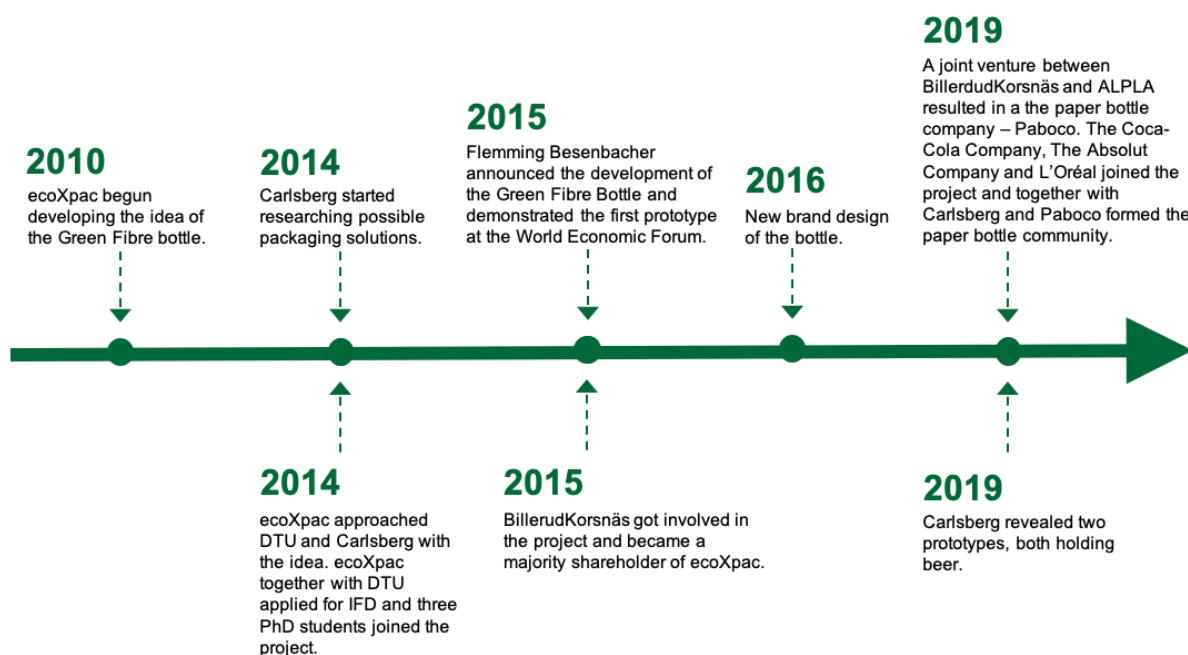
Figure 15: Timeline of the Green Fibre Bottle project; own creation

The paper bottle innovation was originally conceived in 2014 when Simon Boas Hoffmeyer, (Director of Sustainability at Carlsberg) and Håkon Langen (Packaging Innovation Director at Carlsberg) scrutinised Carlsberg's packaging strategy. They started with collecting data on sustainability and through social listening in order to identify topics trending among consumers (Chesbrough et al., 2018).

One plausible solution that surfaced was a biodegradable beer bottle. Carlsberg was however not the only company looking into this idea.

As early as 2010 a company by the name of ecoXpac had independently begun developing the idea of a Green Fibre Bottle. In early 2014 ecoXpac approached DTU and Carlsberg and presented the idea of its Green Fibre Bottle project. Via DTU ecoXpac was able to apply for funding from the IFD. (Chesbrough et al., 2018). As soon as the funding from IFD was granted, three PhD students from the DTU joined the project. The PhD students joined the mechanical engineering department to work on the Green Fibre Bottle project.

Following Besenbacher's public announcement at the World Economic Forum, BillerudKorsnäs, a Swedish packaging company, got involved. Initially they contributed to the project by delivering raw materials that were needed. BillerudKorsnäs realised the importance of the project and that the project would in the foreseeable future require even more resources in order to progress. Subsequently, BillerudKorsnäs made up their mind to become a majority shareholder of the ecoXpac company. In 2019 BillerudKorsnäs and the bottle-manufacturing specialist ALPLA made a joint decision to continue developing the project within the frameworks of a new company named Paboco (Paboco, 2020). In 2019 the project was joined by The Coca-Cola Company, The Absolut Company, and L'Oréal. These companies, together with Paboco and Carlsberg, then formed the Paper Bottle Community which represents the latest innovation network (Carlsberg Group, 2020b). As of today, a key priority is to develop a biodegradable barrier that separates the liquid beer from the wood pulp packaging material. The ultimate objective in this context is to create a circular packaging innovation in which the barley straws (a by-product of the brewing process) are converted into the packaging for the beer (Chesbrough et al., 2018).

8 Findings & Analysis

Taking into account the conceptual framework, the abductive case study approach, and the case description about the Carlsberg brand and the Green Fibre Bottle innovation, the following section analyses the qualitative interview data and presents the key findings. In light of the two research questions - (1) *What capabilities and underlying processes enable stakeholder co-creation in the context of environmental open innovation?* and (2) *What part does the corporate brand identity of the centrally acting firm play in environmental open innovation?* - it is key to understand the motivations, different value-frames, as well processes and structures that enabled diverse companies to form strong relationships and collaborate towards radical environmental innovation. The semi-structured interviews offer views on the different processes from different perspectives within the innovation network. From the Carlsberg perspective, employees from branding, innovation, sustainability, and PR were involved and shed light on different aspects of the radical innovation project. To illustrate the external perspective, central actors from Paboco and DTU shed light on their motivations, challenges and the collaboration within the network. An overview of the interviewee is illustrated in table 5 (section 6.6.1).

As elaborated in the methodology section, the finding statements were derived from the categories that were generated based on first-order codes. In order to bring the finding statements to life and to fulfill the reliability criteria, lengthy quotes from the interviews are presented and thus enable the reader to follow the researchers' interpretations.

8.1 Stakeholder Co-Creation Capabilities

The established framework (see section 5) suggests that seven stakeholder co-creation capabilities facilitate radical EOI. These are Competence Mapping, Networking Capability, External Engagement Capability, Internal Engagement Capability, Value-Framing Capability and Systemised Learning Capability. Based on the research objective to better understand how these capabilities manifest in microfoundations, examples of structures and processes in the context of EOI will be provided. Apart from investigating the capabilities rather deductively, the findings also illustrate the emergence of elements within the capability perspective that did not play an initial role in the conceptual framework. In particular, the human and meaning element within these capabilities emerged from the interviews and will be presented in the following.

8.1.1 Competence Mapping & Networking Capability

In the following, findings with regards to the two capabilities Competence Mapping and Networking Capability will be presented. Competence Mapping refers to the ability to produce and explicit

overview of competencies in the external environment while Networking Capability entails the ability to attract and recruit external actors to be engaged in the project.

8.1.1.1   Finding 1: Competence Mapping does not play a significant role

Competence Mapping is described in the literature as creating an explicit overview of stakeholder competencies and regularly updating this through exploratory meetings with stakeholders. However, due to the complex nature of the Green Fibre Bottle project, the required competencies were not always laid out, neither where the competencies of external partners explicitly written down. Instead, a strong Networking Capability was essential to attract and select the right partners at the right time. This will be further elaborated in the following finding statements about Networking Capability.

8.1.1.2   Finding 2: Networking Capability is elevated by going public early via top-management and through creating a strong reputation for sustainability-commitment

When Carlsberg initially teamed up with ecoXpac they knew that they would need more partners onboard because ecoXpac did not have the financial resources and capabilities to realise the radical innovation together with Carlsberg alone:

> **Simon:** Our core competency is to create beer, not to create packaging. So we decided to (...) make an external call for action to the outside world, in order to bring the right partners on board of the project. Because we could see that ecoXpac didn't have the equity, they didn't have the strength, and they didn't have the right capabilities to make this happen alone. (...) So we really needed to make a shout out for help. And this is where we really made something quite innovative, when looking back. It's not something you see very often, going public with an innovation like this.

> **Sam:** We know we can't do this ourselves so we want partners to come on board and to bring their expertise to the project, (...) That was the only reason we went public. And it worked. Lots of partners came on board. On the back of that came the Carlsberg Circular Community, which included lots of different partners with different expertise. Many of them were technical experts. Many of them were branding guys and then we also had universities and researchers.

In order to attract the right partners Carlsberg went public with its commitment to creating the world's first fully biodegradable wood-fiber bottle for beverages. Not only, did Carlsberg go public with the innovation idea at a very early development stage, but it was the Chairman Besenbacher who presented the first prototype to the panel and expressly called for partners. As expressed by the Carlsberg interviewees, this showed a special commitment to the project from top-management that was perceived internally and externally. As a result, BillerudKorsnäs (a swedish pulp manufacturer) and ALPLA (a packaging specialist) joined the project and invested financially and with their capabilities:

Simon: We got Flemming Besenbacher, our chairman of the board, to stand in Davos in a panel, which was on packaging, and say: "We are a beer producer but we actually would like to be able to sell products in fibre bottles." And then he took out this paper shell and said: "We would like to call upon suppliers, upon partners, start-ups, whoever is out there in the world, who can help us realise this." That meant something to the world but also for Carlsberg internally.

Simon: The feedback [after Carlsberg went public at Davos] was just absolutely amazing. It was overwhelming, I must say. We did not expect it. The positive sentiment was just incredible. (...) What happened after was that BillerudKorsnäs came on board, which is a Swedish pulp and paper manufacturer. They basically went in and bought 10% of ecoXpac.

8.1.1.3 Finding 3: A higher purpose enhances the Networking Capability

Moreover, the **higher purpose** of the project, namely to create a more sustainable path for the packaging industry, attracted many companies and packaging specialists, who even offered to work for the project free of charge because they believed in its potential to create positive impact:

Håkon: Even private persons who were packaging specialists, which had similar ideas back then, were offering to work for free for us, because they really believed in this and its potential to change the entire industry for the better. So it was quite crazy how many people and organisations contacted us for the Green Fibre Bottle project.

Based on this, it can be derived that a clear presentation of a vision of a radical innovation with a higher purpose plays a crucial role in attracting and motivating potential innovation partners to join. Furthermore, by going public and showcasing the commitment to a radical environmental innovation, Carlsberg build up a reputation for its sustainability commitment which ultimately enhanced its Networking Capability with regards to other environmental innovations. This is further discussed within the findings of the brand-innovation relationship (see finding 22).

8.1.1.4 Finding 4: Selection of innovation partners was not only based on complementary resources but also on matching value-frames and professional identities, shared openness, and avoidance of direct competition

Simon reported how the decision to work together with ecoXpac in the initial stages of the project was based on two factors - match of interests and capabilities:

Simon: I think it goes back to the initial fit of both interests and capabilities. When ecoXpac first came to us, they were a tiny company with a **vision of a paper-based, more sustainable packaging solution**. They had no money and they didn't have all the capabilities they needed, and they didn't have any customers. So what Håkon and I were able to bring to the project was a whole lot of skill on sustainability, knowledge on environmental assessment, and on technical feasibility in terms of what it actually requires for a beer to be in

> such a fibre bottle. It also means that ecoXpac got a customer [Carlsberg] which is pretty damn important to them. When you look at it like that it was a very, very good fit because we had and still have overlapping interests and a good match of capabilities.

The above statement shows that the decision to enter the partnership with ecoXpac was driven by more than just complementary resources, as they did not have all the necessary capabilities yet. However, what drew Carlsberg to the partnership was the shared vision of a more sustainable packaging solution, which Simon refers to as the "match of interests". Therefore, it can be derived that the decision to team up with ecoXpac was based on a fit of value-frames as both parties strongly valued the sustainability-centered vision of the project. This is closely related to a third factor that seemingly also played a role in the selection of the partner - the match of professional identities of the partners manifested in a shared personal belief and passion for a more sustainable future:

> **Simon:** And on a more personal level, we shared very similar beliefs about how we see the future and how we think about sustainability. So that created a solid basis which enabled a good relationship.

Another factor that might have played a role in the initial decision for Carlsberg and ecoXpac to join forces is the similarity in a transparent and upfront culture as reported by Michael when talking about how they complement each other:

> **Michael:** Of course, there were some unknowns because it was still innovation, but Carlsberg was very upfront, very transparent. And equally ecoXpac was very transparent, saying what it could help Carlsberg fulfil within those fields of their strategy.

However, not at all interviewees reported that the selection of partners is based on a match value-frames and cultures. For instance, Håkon and Mattia view the selection of partners as being mainly based on complementary resources and technologies that would benefit the project. Equally, so the selection of the DTU and ALPLA as partners for the Green Fibre Bottle was mainly mentioned in the context of getting necessary knowledge or technology that would drive the project forward:

> **Håkon:** We have certain requirements when we choose our partners, but they are not listed as such. We have, of course, some financial requirements. They don't necessarily need to be a big company, but they need to be healthy financially. Apart from that, who becomes a partner in this project is determined by our believe in their technology and our believe in their abilities to develop that technology for our bottle.

> **Mattia:** DTU was involved in the project because usually when you apply for fund it is valuable to have a institution behind it. Another reason is that it was a in progress development project, meaning that they needed a lot of research to be done to improve the technology.

> **Simon:** However, they needed skills on the barrier and the blow-moulding technology. And that's when ALPLA came in.

This highlights the different angles from which the partner selection can be viewed - through a value-frame angle as well as through a more resources-based, functional lense. Arguable, both lenses - functional knowledge complementarity and value-frame-complementarity need to be considered when choosing the partners for the innovation network. This is further illustrated by Michael's consideration when choosing partners for the paper bottle community. His selection criteria included aligned CSR strategies, similar vision and mindsets, which ultimately links to similar value-frames:

> **Michael:** Not to temper with confidentiality here, but I think I can say the following. So, one thing we learned from our collaboration with Carlsberg is, that alignment on CSR is pretty key for a project like this. You need to have the same vision and mindset. So of course, this was a predetermined factor in scouting the marketplace for who else might be of interest.

In addition, when selecting the right partners for the Paper Bottle Community, factors such as a common willingness to be open and the avoidance of direct competition, were taken into account:

> **Håkon:** This has been very interesting actually. We had a lot of discussions about who to involve and making sure that we would get the right partners in the right categories so that we would not be competing with each other. And we asked ourselves who we would need so that we can **share the most**, learn the most, and get the fastest progress with.

> **Michael:** One thing, if you look at the pioneer network, what you might not initially see you, but if you look closer, you'll see that none of the organisations are in direct competition with each other. (...) That's step one, make sure that there is no direct competition. It seems like such an obvious thing, but it needs to take place. If you have someone that could potentially infringe on each other's gains from participating in the project you will have a lot of road to cover to take that first step.

8.1.2 External Engagement Capability

External Engagement Capability is centred around the ability to manage different relationships within the external innovation network. The following findings illustrate the processes, structures and strategies applied to build and maintain strong relationships with diverse partners.

8.1.2.1 Finding 5: In order to work together with diverse partners alignment on a common project vision, sustainability ambition, external communication principles and openness is key

One aspect that was crucial to successfully engage with diverse partners was the creation of a **clear project vision** on which all partners were aligned. Michael, Simon and Mattia report on the same vision of the project, namely the creation of the world's first fully biodegradable packaging:

> **Simon:** The vision has not changed. The vision is still to create the world's first fully bio-based and biodegradable beer bottle. That has not changed an inch. What has changed are the milestones on the way there. (...) We always kept it very focused on the vision (...).

> **Mattia:** I would say that all the stakeholders, ecoXpac and Carlsberg were very on board with the vision of proposing a more sustainable bottle - everybody was aligned on that.

> **Michael:** (...) we were actually able to set a very clear [project] vision, together with Carlsberg. So they presented us with what would be their initial stages of their 'Together Towards Zero' strategy, (...) Key aspects of that revolved around what their targets were, what the ambition level was, and also what their criteria for entering into such an early-stage project was. And those matched very well with ecoXpac back then.

Apart from a clear project vision and sustainability ambition, **alignment on external communication principles** is described as another important factor. This became especially evident in the Paper Bottle Community in which partners had to align on a common communication style. Consequently, they collaboratively defined a set of communication principles and a messaging hierarchy:

> **Håkon:** But when involving so many new partners there of course are difficulties. Especially, with regard to external communication. (...) aligning the timings and the content for the external communication with some of the big companies was difficult. Now it's clarified so we had to had extra meetings and discuss rules for how we communicate and how we inform each other. (...) The main difference between the partners was maybe that some of the brands were a bit fast with communicating about the project and the results without putting that much thought into the challenges and questions with media. For instance, whether their communication could be taken as green-washing. To be honest, this has been a little bit of a journey but it's fine. We needed to find the right borders and find out how to collaborate.

> **Sam:** So that alignment is still going on. So we're agreeing on different principles regarding when you communicate, how you communicate and I think the big thing is just making sure there aren't any surprises, or misalignment with that. So we really wanted to communicate a set of principles that we need to have to

> make sure we don't mislead anyone. (...)We've been really trying to make sure that we get that view across and that's helped to build the basis of the alignment with other good input from Paboco and the other companies.

> **Simon:** We don't want any partner to talk about this project as something that could be viewed greenwashing. So we're creating a very clear messaging hierarchy about the project and about the traits of the final bottles so that the total community can't be accused of greenwashing.

Moreover, when welcoming new members to the innovation network it is essential to establish a common understanding, in that everyone needs to be willing to share information and knowledge from their internal projects. This shared understanding of **openness** is necessary to foster and enable necessary knowledge flows between the companies:

> **Michael:** And second, break down the initial barriers. Be clear that people need to share the base-line information based on their own individual projects. Because Paboco, as a central leading entity, knows where each party but the other partners might not have this knowledge about each other.

8.1.2.2 Finding 6: An element that fostered the engagement was the sharing of challenges and past experiences

Sam, Håkon, and Michael mention that **sharing current challenges and past experiences** was helpful in fostering the relationship among the partners. Håkon states that they had regularly informal meeting with the ecoXpac managers in which they would share their current challenges and struggles. Moreover, when the new consumer brands joined, Carlsberg presented their past experiences in front of the new partners which in turn built a good foundation for their relationship.

> **Håkon:** We had regular meetings with that committee. But we also had these regular meetings with Jesper and with Martin [former CEO of ecoXpac] where we were sharing our challenges. These meetings with Jesper and Martin were kind of informal.

> **Sam:** I think we have more experience with this project than other partners have. So we have shared our experiences and we have been really open about our experiences.

> **Michael:** Carlsberg has done an excellent job presenting, on their previous learnings, on what they did right, and on what they did wrong. Here, I actually have a memory of Simon standing up in one of our community meetings and presenting specifically what he might have done differently, had he had the knowledge that he brought into the project today. For the community, this is a massive help (...).

8.1.2.3 Finding 7: Trust was perceived to be essential in EOI relationships to facilitate openness throughout the innovation process

Trust was mentioned as an essential element in order to foster the collaboration. This trust was seemingly established by allowing access to inter-organisational facilities, open and direct inter-personal relationships, and lastly by creating a sort of legal insurance - a contract that would give Carlsberg the first right of refusal once the technology is developed. Once the technology is developed Carlsberg has the right to claim the technology for themselves (as the first beer brand). However if they refuse, Paboco may to sell the technology to their competitors:

> **Mattia:** Although with ecoXpac we had a continuous collaboration. We built a **good trust**. It was very easy to go there and run the experiments, since they allowed **us to use their facilities**. (...) It was a very ongoing collaboration. Without them I could not have done any experiments, because DTU doesn't have any facilities to produce paper.

> **Simon:** One of the other things that played a big role were **interpersonal relationships**. Since the beginning Håkon and I have had a very open and **very direct relationship with the ecoXpac** company since the beginning, both with the CEOs and with the project managers. That this is something that is difficult to quantify in the traditional sense, but I think the **interpersonal relationships, and the social capital and the trust that we built were so important**. So whenever we were facing problems, we treated it as a team and we didn't start shooting at each other with unconstructive feedback.

> **Simon:** And they **assured us that they were not thinking of bringing in another beer company** and that we would be the first one on beer. That's also part of the agreement. **We have a right of first refusal**. Once it is developed, we can say if we want to buy it or not and then they can sell it to anyone.

8.1.2.4 Finding 8: The creation of the pioneering community fostered the collaboration and meaning through enforcing the higher purpose of the project

The Paper Bottle Community is still relatively new, however, it can be observed that it is used to create a **central collaboration platform** that embodies the higher purpose and defines what the collaboration stands and aims for:

> **Sam:** (...) now there is this pioneering community behind the Green Fibre Bottle where more companies are on board to **change the packaging industry for the better**. In a sense, the community represents a **movement for sustainable change in the industry**. And it's great that we literally have the biggest companies on board such as Coca-Cola (...).

The choice of words like "pioneering" and referring to the consumer brands as "pioneers" can arguably be seen as part of defining what the community is trying to achieve. In other words, it is about doing something that no one else has done previously. It is about developing a radical environmental innovation and thus taking the leap into a new future with more sustainable packaging. Naming them

"pioneers" is not only seen as a tool for engaging and motivating the partners, but also seemingly enriches the personal and professional identities of the participants. It thus provides meaning to all participants and fosters collaboration between the partners:

> **Sam:** The community is something that Paboco and Carlsberg created to kind of **foster this collaborative approach**, because everybody wants to get to the end goal. With the pioneering community we want to change the industry and to lead the movement towards sustainable change. (...) We are basically four companies, all going in at the same moment saying that we're all committed to paper bottle technology. We're working to achieve this, and we will work together where we can.

The community offers a central platform around which engagement is fostered. This engagement is structured around large community meetings focusing on community alignment, direction and definition, while small technical meetings are held on an ad hoc basis with relevant pioneers:

> **Michael:** The other approach is then related to the joint community sessions. Here we have the project champions, for example, Simon being one of them, and Håkon being another, who then meet at pre-decided dates at the site of one of the pioneers. So they actually all fly out to discuss one topic, in particular.

> **Håkon:** The first meeting was about setting up what the community is, what it's role is and discussing how we share and how we work together. The second one was in Copenhagen and mainly about external communications. How do we communicate externally and how do we inform each other. The next meeting will be in June about sustainability. This will talk more about the technical side, the specific technological barrier development. Of course, during every meeting we have a general update on the current status, but we also have focus topics.

> **Håkon:** The first meeting was about setting up what the community is, what it's role is and discussing how we share and how we work together. The second one was in Copenhagen and mainly about external communications. How do we communicate externally and how do we inform each other. The next meeting will be in June about sustainability. This will talk more about the technical side, the specific technological barrier development. Of course, during every meeting we have a general update on the current status, but we also have focus topics.

> **Michael:** The technical sort of meeting are held at a progressive ad hoc basis. So when there are key learnings or key results from testing to share, we have a group, a predefined group that then calls into the same teams call. We keep it small. We keep it a couple of participants from each partner, and select them according to whether it's relevant for them specifically.

Noteworthy is that the community has created a **visionary board,** which is composed of the project champions from each company. As mentioned by Michael the board is particularly focusing on the alignment of the partners and the future direction of the community. While Carlsberg still plays an important role, the center of community activities has shifted towards Paboco as the main driving force:

> **Michael:** And we have a more higher, I would say not a steering committee, but a **visionary board** that we call our community meetings, which are dedicated to solving exactly these issues of alignment. Of course, Paboco being the driving force here and telling what the paper bottle is, what it will become in the future, and what is the sort of generational story that we present.

8.1.3 Internal Engagement Capability

Internal Engagement Capability is about engaging, empowering and aligning internal employees with regards to the radical environmental innovation. The following findings illustrate how Carlsberg not only engaged relevant internal actors needed in the innovation process, but let every employee be part of the innovation process.

8.1.3.1 Finding 9: EOI requires internal engagement of multiple departments and cross-functional alignment

The Green Fibre Bottle project started out between the sustainability (Simon) and the innovation department (Håkon). However, soon after other teams needed to be engaged in order to create cross-functional alignment. Sam emphasise that it was essential to align with the supply chain team before committing to revolutionise the packaging process as they are the ones who own the process of buying all resources and equipment. Moreover, the branding team was involved in all matters regarding the visual identity of the future bottle as well as all brand related communications:

> **Sam:** So internally, that was the media team, the sustainability team, the packaging experts, and the brand team were involved. The brand team was involved because the Green Fibre Bottle was associated with the Carlsberg brand and all the communications we've done through the Carlsberg brand. Also our supply chain team was really important because, we're actually going out with a communication in which we were publicly committing to continue to innovate on a process which was very standardized. If you think about it, we couldn't have gone out with a communication and have our supply chain team find out through our communication video that we were going to potentially radicalize some of our packaging. Our supply chain team is the one who purchases all of our equipment to keep our breweries running. (...) So there was loads and loads of alignment with the supply-chain guys.

In summary, from an internal Carlsberg perspective, the innovation, supply-chain, branding, PR and sustainability team interacted with each other and were hence involved in the Green Fibre Bottle project. However, mainly the sustainability team (Simon) and the innovation team (Håkon) interacted with the external stakeholders. The branding team was involved in creating the visual identity for the paper bottle and in all external communications about project updates. The PR team (Sam) was further involved in the community meetings in order to align on communication principles with the other partners. The particular role of the branding team will be further elaborated in section 8.3.3.

8.1.3.2 Finding 10: Passionate project champions from sustainability and innovation defend project and engage others in the experience through internal activations

The original project champions of the Green Fibre Bottle from Carlsberg are Simon and Håkon, who refer themselves as "fathers" of the project. This in itself illustrates their passion and dedication to the project as they view the Green Fibre Bottle project as their "child" which they need to nurture and defend internally. They do so seemingly because their personal values align with what the project stands for and the sustainable future that they envision. Sam states that in his eyes having this stability and passion through the project champions is essential for the project in order to move it forward internally:

> **Simon:** This project had a mother and a father. Well, this project actually had two **fathers.** Håkon and I were the two fathers of the project.

> **Håkon:** There was a lot of **passion** and I think that was a big driver of the project that helped us move forward. Because we were **working a lot for free** and put in extra work although we didn't get any credit from colleagues, really.

> **Sam:** One thing that is so important for me is that you've got two people that have been at Carlsberg for 12 and 14 years, respectively. So Håkon has been there for 14 years as packaging innovation director and then you've got Simon who's been at Carlsberg for 12 years. And that's the only reason this kind of thing gets to where it gets because **it's two guys who really care about this stuff and have been able to see these projects through**. And let's be frank, **no one is getting a bonus for seeing this project through**. It's almost been defended and defended and defended and they've been doing it because their personal values align with looking towards the future and radical innovation. So that's been so key as to how it enabled us to get to this point which where we got four global brands actually on board with it. And it's not just from Carlsberg, there are obviously the guys from ecoXpac and the other partners, which have seen the project through. But I think this long-term view and the stability of long-term employees that really **support it with their heart** is essential.

Moreover, the project champions engage other internal employees around the radical innovation thus enables them to partake in the experience. This can be exemplified with internal events introducing the Green Fibre Bottle at the Carlsberg Museum as well as displaying the prototype at the atrium situated next to the entrance. So everyone who entered the Carlsberg office would pass the Green Fibre Bottle prototype. Both initiatives were led by Sam who became one of the key actors in the communication (internally and externally) of the project. By displaying the prototype internally, employees interacted with it, touched it and thus became part of the experience. According to Sam, it made the purpose of Carlsberg "Better today and tomorrow" tangible and more real for many employees. Seeing the paper bottle every day when entering the Carlsberg office makes employees feel like they are part of something good, which in turn motivates them. This is further elaborated upon in finding 17:

> **Sam:** I would say, displaying it in the atrium brought it to life internally. **The interest was massive**. Literally everybody stopped, touched it, felt it because it's something so different. You are so used to glass. So when

> you see the paper bottle you just want to kind of feel it and imagine what it would be like to drink out of it. (...) In terms of the effects it had internally, I believe, putting it in the atrium made **Carlsberg's sustainability purpose "Better today and tomorrow" feel more real.** And it made people proud and motivated. That's the biggest thing. People are proud to work for a company that is sustainable or at least really strives to be. I think it took it from being an abstract idea that people had heard about for years but never actually seen it, to something that was much more tangible for them.

The effects of the Green Fibre Bottle and the display have been noticeable in Carlsberg's annual reputation survey. As a result, Carlsberg's internal (and external) sustainability ratings increased continuously over the years:

> **Sam:** We saw the scores on environmental responsibility among employees increase quite a lot. I am not saying this is all due to the Green Fibre Bottle, but it definitely played a major role. The Green Fibre Bottle and also Snap Pack were big part of that.

8.1.4 Value-Framing Capability

Value-framing is referred to as the ability to manage and align different value-frames (priorities, expectations, goals) of external and internal actors. The following findings illustrate how divergent value-frames were aligned or fused.

8.1.4.1 Finding 11: Divergent value-frames were overcome by changing ownership structures, discussing expectations openly, assigning top-level importance to alignment and collaboratively creating KPIs

When asked about challenges in working together, the interviewees reported on differences in organisational settings, ambitions and time perceptions. These inter-organisational differences can be related to different value-frames that are defined by the interests and priorities and outcomes certain actors value. As the pioneering community is relatively young and discussion topics mostly confidential, participants were seemingly hesitant to answer questions about differences between the new community partners. Hence, most findings on value-framing are based on the earlier innovation network comprised of DTU (the university), ecoXpac (the technology start-up), and Carlsberg.

Divergent time value-frame

One evident divergent value-frame is illustrated by Michael and entails the difference in time perception. The difference in time-perceptions was overcome by changing the ownership structure of the start-up which lead to the joint venture of Paboco. Compared to ecoXpac, Pabaco now has a similar

value-frame in terms of time perceptions as Carlsberg and thus views its efforts in years rather than month:

> **Michael:** Time was perceived differently within the different organisations. So back then as a small innovation company, people from ecoXpac were thinking in months. On the other hand, Carlsberg would have been thinking of it in years. Now, this has transitioned into a different ownership structure, where Paboco also thinks in terms of decades and many of our pioneers do the same.

Divergent product-centred and technology-centred value-frames

Moreover, divergent value-frames between ecoXpac and Carlsberg were initially based on different priorities within the early stages of the project. While Carlsberg was looking at the collaboration with a product-centric value-frame, ecoXpac was looking at it from a technology-centric value-frame. Meaning that Carlsberg was more interested in the creation of a product than in the advancement of the technology. The alignment of the differences in value-frames were done in a meeting with high-level attendance, showing the CEO commitment to the alignment process. Moreover, detailed discussions about the expectations of each partner were the bases for the alignment. As a result of the discussion they collaboratively set measurable KPIs for the technology development as a strategy to overcome the differences and make Carlsberg part of the process:

> **Michael:** If I reflect to when this was a technology-centric project the expectation from Carlsberg was the focus on creation of the product itself, the paper bottle. Here ecoXpac had a much higher interest in advancing the technology principles of its manufacturing technology. This led to misalignment where Carlsberg would experience little product development, while ecoXpac undertook high-risk and uncertain process technology developments. Now, this was some time ago – but, it culminated in a meeting where ecoXpac had to detail its expectations on technology development results (lower production cycle time, leading to energy savings, leading to cost savings) to smooth over the difference between a commercial entity (Carlsberg) and a technology developer (ecoXpac). The way we overcame this, was to actually set measurable KPI's for the technology developments of something called Impulse Drying Technology. The meeting was held at Carlsberg, with Simon and Håkon (plus his superior) present. It also included the then CEO and Founder of our company, as high-level alignment requires high-level attendance.

8.1.4.2 Finding 12: The value-frame of the leading actor was more dominant when inter-organisational value-frames were fused

The finding above shows concrete strategies on how misaligned value-frames were fused. However, there were not always clear actions and strategies taken to align value-frames. In two cases interviewees reported on divergent value-frames that were fused by essentially aligning with the more influential actor at that time. This implicates that value-frames of some organisations are more dominant than others and strongly influence the alignment.

Divergent sustainability-value-frames

Interviewees in particular Håkon (as shown from his statements below) and Simon, reported on misaligned value-frames with regards to the sustainability ambition of the project. In the earlier days of the project Carlsberg upheld a strong environmental-centric value-frame that was expressed through an uncompromising sustainability ambition and vision of a **completely bio-based packaging.** However, other partners were questioning the technical feasibility of this ambition and wanted to lower that ambition level towards a **partly bio-based packaging:**

> **Håkon:** (...) sometimes the other partners said this is too hard, but we would not compromise on the final ambition of the project. No way. We said we can compromise along the way, but we would not compromise on the final bottle that we want to achieve in the end. We have kept that very strict in a way.

> **Håkon:** Well, there was some misalignment at one point when BillerudKorsnäs came in, who owned around 20% of the shares. They got in and became stronger and stronger within ecoXpac and some of them thought that maybe we could do it a little bit easier and maybe not get the ultimate sustainable solution that we set out for. And there we had some arguments. **We had to be quite strict there and put our foot down to let them know what Carlsberg would be a part of, and what not.** Luckily, we had the backup of the guys from ecoXpac who were actually aligned with us.

As can be seen from the above quotations, different value-frames were negotiated around the sustainability ambition and essentially merged in favour of the more influential (dominant) value-frame, which in this case was that of Carlsberg. Carlsberg played a decisive role at that time in building the innovation network, in attracting partners and in the realisation of this project. They also represented a potential customer base for the project, which among other things made them a central and very influential actor.

Divergent research-centred value-frames

The interviews also revealed divergent value-frames between Carlsberg and DTU (the university), which were expressed by Carlsberg, Paboco, and by DTU themselves. The PhD student entered the collaboration with a **research-centered value-frame,** as he was aiming to provide scientific results and to advance current knowledge in that field. In contrast, Carlsberg was rather interested in the technological advancement of the project in order to fulfill their purpose of brewing for a better tomorrow. Essentially, these different entities have different purposes (knowledge advancement vs. creating more sustainability around beer) which resulted in a clash of value-frames:

> **Mattia:** From my perspective, it was not easy to combine these actors. When you do a PhD you have to provide some scientific results and publish scientific articles. This was not a priority for the ecoXpac or Carlsberg.

They were rather interested in the technology development. Meaning not so much on the scientific advancement of this field. I would say that Carlsberg's and ecoXpac's main concern was how and when we could scale up the production. It was a little bit tricky to combine all the different tactics to different stakeholders. For me the main thing was to do my PhD, i.e. to provide with scientific evidence and report the results in scientific journals.

Michael: Keep in mind that if you are a corporate identity your vision will always be the ability in doing better, but you will of course need to build a sustainable business. I mean you need to have financial stability and real world sustainability. If you are a university you don't have that driving point. You have other deliverables to focus on publications and generation of knowledge. Although not necessary the implementation of knowledge and here there is a major differentiator between organisations and universities.

It was not particularly mentioned how the differences were overcome in this case, rather it appears that these different value-frames simply co-existed and resulted in weaker relationship between Carlsberg and DTU. Seemingly what held the network together was the more aligned value-frames between ecoXpac and DTU, which resulted in a closer relationship between the two:

Simon: So when we look at the initial partnership, I think it is pretty clear that the partnership worked much better between us and ecoXpac and DTU, than actually us three as a whole.

Michael: (...) back then ecoXpac might have had a better relationship with DTU, in some aspects of it. But there is a definite branch in the machinery when you have two corporate entities, one large and one small, and then you add a university into the mix. Because here you don't have timelines or goals necessarily that align quite well.

8.1.4.3   Finding 13: **The higher purpose unites divergent value-frames**

In the case of the Green Fibre Bottle, the higher purpose of the innovation network acted as a "uniting force" which goes beyond individual agendas, goals, and strategies. As explained by Michael the higher purpose of the innovation network is to create a lasting, sustainable alternative to today's packaging and thereby to change the entire packaging industry for the better. Now, as Paboco takes the central role in the new pioneering community, the technology company communicates and represents this higher purpose:

Michael: Now with such an extensive collaboration network Paboco is actually a driving force behind presenting the higher purpose of the paper bottle. And then we align that within the community. **You need it. It is a driving and uniting force.** But you also need to have it occur from one central point, you cannot have it grow organically within collaboration.

Michael: Any target ambition is always going to be bound into price, launch deadlines, sustainable impact categories. But when you work with such a diverse crew, you also need to consider that you need to file off

> some very hard figures, you need to put it into a category where diverse people could agree to it. And that category is the purpose.

> **Michael:** I usually refer to it as shifting sand. you have this big lump of unknowable that you start with. You have to co-align individual projects, timelines, visions, ambitions and internal strategies. But essentially, we are all here to change the industry. So as more aspects drift away as non-essential aspects of the collaboration, what you're left with are these tiny nuggets which then become our focal points. These are what we are here to collaborate on.

8.1.5 Systemised Learning Capability

Systemised Learning refers to the ability to reflect upon and learn from stakeholder engagement activities and to use that knowledge to improve the collaboration. The following findings illustrate that Systemised Learning was particularly sparked by the inclusion of new partners into the network.

8.1.5.1 Finding 14: Systemised Learning includes the adaptation of partner selection and sharing of learnings in the innovation network

Systemised Learning was mentioned in two accounts; once from Michael and once from Carlsberg. Due to the long-time horizon of the project Systemised Learning happened during the development phase. For instance, Michael reflected on the selection criteria for partners based on his experience with Carlsberg and learned that a matching vision, mindset and sustainability ambitions are key factors when selecting new partners. He then went on to include those criteria in the selection of the new partners:

> **Michael:** Not to temper with confidentiality here, but I think I can say the following. So, one thing we learned from our collaboration with Carlsberg is, that alignment on CSR is pretty key for a project like this. You need to have the same vision and mindset. So of course, this was a predetermined factor in scouting the marketplace for who else might be of interest.

Moreover, Systemised Learning was demonstrated in relation to one early community meeting. In this particular meeting Carlsberg openly reflecting upon what they should have done differently:

> **Michael:** And here, I think, Carlsberg has done an excellent job presenting, on their previous learnings, on what they did right, and on what they did wrong. Here, I actually have a memory of Simon standing up in one of our community meetings and presenting specifically what he might have done differently, had he had the knowledge that he brought into the project today. For the community, this is a massive help that he was ready to present (...). And you can certainly only gain from these learnings.

8.2 Human Element and its Relation to the Capabilities

A striking theme in the interviews was the human element, which seemingly played a role in facilitating EOI capabilities and the underlying processes. The human element was mentioned by five of the six respondents. The following results show the important role the human element plays in EOI, as it has the ability to stimulate the motivation, to strengthen the cooperation and to thus advance the radical innovation project. As the human element was not part of the initially designed framework and not part of the interview guide, it is considered a new insight.

8.2.1 Finding 15: Human element in EOI strengthens collaborations through visionary and passionate project champions who are driven by meaning

Michael in particular acknowledges the importance of considering the human aspects within extensive corporate collaborations, as these are often overlooked. By human aspects, he refers to visionary key actors who drive the project forward through their passion for sustainability. They strengthen the collaboration by creating a close-knit inter-organisational group of people, that are centered around meaning:

> **Michael:** And then lastly, there's the very human aspect of it. And I think that's equally important and very easy sometimes to forget in these big corporate collaborations. We had a **visionary founder**, **a great driving force**, we had a very young and passionate staff, myself included. Meeting with people of truly visionary sustainable goals, such as Simon. People who could think of what the future of packaging might look like, but not necessarily implement it within a one- to two-year structure, such as Håkon. Having those types of project champions, both within Paboco, and within Carlsberg, really created this **close-knit group that could foster this project** internally and motivate everyone involved.

As illustrated by the quote above, the human element seemingly is an important aspect of the **External Engagement Capability**, in that it creates **strong bonds (relationships)** between diverse partners through meaning. The meaning is driven by the passionate project champions and manifests in intrinsic motivation and a shared vision of a sustainable future - on an organisational but also on a personal level. The fact that there were people who really believed in the path of the project created a **forward momentum around meaning**:

> **Michael:** It [the Green Fibre Bottle Project] has grown, it has taken its punches, but it has always kept **forward moving momentum.** So that driving force that goes behind that is really what you can attribute this to. Having people that **truly believe** that this is a path for the future on a personal and organisational level.

> **Håkon:** I think that the main people, the core people, that were working on the project had a s**trong believe in the sustainability aspect of it.** (...) **There was a lot of passion** and I think that was a big driver of the project that helped us move forward. Because we were working a lot for free and put in extra work although we didn't get any credit from colleagues, really.

8.2.2 Finding 16: Human element in EOI strengthens collaborations through interpersonal relationships and supports the alignment of diverse partners

The human element was also brought up by Simon who highlighted the importance of the interpersonal relationships between Carlsberg and ecoXpac employees. This can further be seen linked to and be a part of enabling the **External Engagement Capability** as well as **Value-Framing Capability**. These interpersonal relationships - based on shared beliefs and values (similar professional identities) - built social capital and trust between the partners. As a result, partners reacted with empathy and understanding towards challenges the other partner was facing in reaching the expectations (value-frames) of the respective other partner.

> **Simon:** And on a personal level, we [ecoXpac and Carlsberg] share very similar beliefs about how we see the future and how we think about sustainability. So that created a solid basis which enabled a good relationship.

> **Simon:** One of the other things that played a big role were interpersonal relationships. Since the beginning Håkon and I have had a very open and very direct relationship with the ecoXpac company since the beginning, both with the CEOs and with the project managers. That this is something that is difficult to quantify in the traditional sense, **but I think the interpersonal relationships, and the social capital and the trust that we built were so important.** So whenever we were facing problems, we treated it as a team and we didn't start shooting at each other with unconstructive feedback. We always kept it very **focused on the vision** and we always knew that **people were doing their best**. So when they [ecoXpac] came to us and said, "Oh, by the way, regarding the recycled PT barrier that you requested to be transparent, because that's better for recyclability, the only recycled PT we can get for launch is green." They came in said that two days before the launch and that was not so great (laughing) because from a sustainability perspective transparent polymer is much better because it can be recycled into many more things. So I didn't want green PT in my Green Fibre Bottle (laughing). But hey, I also knew that ecoXpac didn't do it to sabotage anything, it was just because that was the only thing which was possible at that moment.

8.2.3 Finding 17: Human element plays a role in fostering engagement around environmental flagship project and other sustainability initiatives internally

While the previous findings show how the human element played a role in the collaboration with external partners, this finding shows how the human element plays a role in fostering internal support and engagement in the Green Fibre Bottle project. As previously argued (see finding 10), the display of the Green Fibre Bottle prototype in the office atrium spurred motivation among internal employees and created enormous interest for the Green Fibre Bottle project and paved the way for other environmental ideas and projects. Reportedly, employees felt proud to be a part of a company that has sustainability at its core and that pushes the boundaries through radical innovations. Seemingly, this flagship project and the meaning it entails plays a role in enhancing the professional identities of Carlsberg employees and increases motivations to pursue sustainability. In other words, by being a Carlsberg employee they are indirectly part of pushing the boundaries. Through the meaning that the

flagship project provides, employees are motivated and more open to engage in other environmental ideas and innovations. This is seen as evidence for the human element and its role in **engaging internal employees** around environmental ideas and projects (**Internal Engagement Capability**).

> **Sam:** I also think that it influenced other departments to a degree. Everyone wants to get involved with sustainability. I think it inspires people and other departments to involve sustainability in their processes as well. They are proud and pleased that it is a point of difference that we have.

> **Simon:** I think what became very clear to me with the Green Fibre Bottle project and the attention we got, was that it's really, really good to have a **flagship project** to showcase what you are doing and what you are trying to do with regards to sustainability. Because nothing has communicated environmental responsibility to the general consumer and the general employee better than the Green Fibre Bottle project. People go like, **"Wow, this is amazing**! This is totally crazy". Some people are sceptical and say that it's never going to happen. Other people say, **"Wow, I am so proud** to be working in a company that is pushing the boundaries."(...) But for me personally, it has really shown the power of having a flagship project that is very close to what you do, your products. (...) I think that to some extent the awareness we generated, internally and externally, with the Green Fibre Bottle project might have **paved the way for a lot of the other projects** we then did because we got attention. Then suddenly we could start having discussions on recycled content in PET bottles and in plastic shrink wrap.

8.2.4   Finding 18: Human element plays a role in attracting partners through meaning

As discussed in finding 3, the higher (sustainability) purpose of the project enhanced the **Networking Capability**, as many people contacted Carlsberg to be part of the Green Fibre Bottle project without expecting payment. This intrinsic motivation to join the project further symbolises the human element. In other words, the intrinsic motivation by external partners to contribute to a better, more sustainable future played a significant role in attracting the right competencies and people:

> **Håkon:** But we also got offers from other companies who really liked the idea and the concept so much that they kind of offered their help. Even private persons who were packaging specialists, which had similar ideas back then, were offering to work for free for us, because they really believed in this and its potential to change the entire industry for the better. So it was quite crazy how many people and organisations contacted us for the Green Fibre Bottle project.

8.2.5   Finding 19: Human element plays a role in starting the value-framing process

Having a deep understanding of not only the organisation but the individuals who are driving these projects forward, is seen central in aligning diverse partners. Arguably this is important in the context of **value-framing** which should be done not only on an organisational level but more importantly on a individual (human) level. In other words, attention needs to be shifted from the organisation towards the people that are representing these organisations and their motivations:

Michael: Within this community of pioneers, we have four organisations, with completely different corporate cultures and completely different national cultures as well. So you have a really a great lot of alignment that needs to take place, just before you get into the heart of the project. **So the first step of this innovation project, or this collaboration project in particular, is understanding, not only the whole organisation that's behind it, but specifically the people that you have within your network. In particular you need to understand those people that are fighting to make this a reality and their motivations.** They need to coalesce into something more than just representatives of their organisation.

Michael: This would maybe be my final takeaway. So you don't need it [alignment] for the entire organisational culture of your partners, but you definitely need it within your project team.

8.3   The Brand-Innovation Relationship

The results below illustrate the role of Carlsberg's brand purpose in facilitating radical EOI (the Green Fibre Bottle project). In addition, insights on the interaction between the branding and the innovation team are presented. Finally, the role of the brand purpose in enabling the co-creation capabilities of the stakeholders is outlined.

8.3.1   Role of the Brand Purpose in EOI

The following findings illustrate the role of the brand purpose in the Green Fibre Bottle project.

8.3.1.1   Finding 20: The brand purpose takes on different roles in EOI: it inspires change, acts as a filter, influences the higher purpose, acts as motivational driver, guides alignment and attracts innovation partners

Brand purpose as catalyst for change

The Carlsberg brand purpose seemingly plays a significant part in the EOI process and is seen taking on different roles to support the innovation process. The Carlsberg brand purpose "brewing for a better today and tomorrow" is well aligned with the Carlsberg philosophy (core value) of always striving to do better. It sparks the question of what can be improved to create a better tomorrow. Therefore, it appears that the purpose, together with the "always strive for better" mentality, has led Carlsberg to carry out a comprehensive materiality assessment in order to determine where Carlsberg has the most negative impact on the environment and where there is the greatest potential for change. As a result of this assessment it became apparent that packaging (the production and recycling of all materials) makes the largest contribution to Carlsberg's carbon footprint. Consequently, Carlsberg saw the need to strive to develop a more sustainable packaging solution:

> **Sam:** There is this philosophy internally that we need to continuously assess our packaging and try to find more sustainable solutions. And that was purely it [the reason why Carlsberg committed to the GFB project]. As I said, the content was brought to us from ecoXpac, which was something which would potentially diversify our packaging mix and lower the carbon footprint of some of our packaging, which is really important. And obviously, it was something which would enable greater recyclability. There was an opportunity there to reduce our carbon footprint and reduce waste.

> **Simon:** Basically, we've done this assessment and the whole area of circularity and packaging came out as one of the material issues, as we call it. Basically, that means it's situated in the upper-right hand corner of the **two by two matrix with high importance to society and high importance to business** as the two dimensions.

Simon's quote illustrates that the material assessment takes into account not only economic factors but also social factors. This inclusion of social impact considerations seemingly shows the influence of the brand purpose on driving action and decisions towards a better tomorrow. This initially sparked the motivation to look into more sustainable packaging innovations and is ultimately a contributing reason to why Carlsberg saw value in committing to a long-term radical innovation project like the Green Fibre Bottle.

In line with this Julian emphasises the role of the brand purpose as **inspiring actions towards the Green Fibre Bottle project.** In his view the the Green Fibre Bottle project is an example of how the Carlsberg brand purpose inspired the organisation towards pursuing this radical sustainable innovation:

> **Julian:** I mean, if you have a good brand purpose, it should **inspire action**, it should drive motivations and activities and innovation. So you could say the brand purpose is at the core of the Green Fibre Bottle project.

> **Julian:** So to conclude, a clear compelling purpose, brand meaning and positioning will **inspire sustainable innovations in the future**. And this is what happened here with the Green Fibre Bottle project.

In other words, the brand purpose could be seen **acting as a catalyst for change, action and innovation through meaning**. In accordance with this, the Carlsberg brand purpose is seen as not only communicating who the organisation is and what it does, but also how it drives change:

> **Julian:** I think it's coming from the company purpose which is 'Brewing for a better today and tomorrow'. It is matched with our philosophy of always striving for better simpler ideas which are looking at how to improve things from what is in the beer but also what is around the beer. Together with our ambitious sustainability targets we asked ourselves, in terms of packaging, what the most sustainable solution after a returnable bottle would be.

> **Julian:** However, now the narrative is moving on to companies who use their purpose to tell people who they are, how they do stuff, and how they drive change. In particular the focus shifts towards how the brand's actions and communications can drive change.

Brand purpose as filter and evaluation tool

Apart from its role as a catalyst for innovation, the brand purpose is further described as a **filter and evaluation tool** for innovation ideas.

> **Julian:** So again, having a clear brand positioning or purpose makes it also easy for an innovation team, or packaging innovation team, or even liquid innovation team to know what ideas could work well for Carlsberg.

However, the only participant who describes the role of the brand as filter is Julian the Global Brand Director of Carlsberg. Therefore, it is questionable to what extent and how exactly the innovation team utilises the brand purpose as filter for the innovation ideas. One indication that shows how potential innovation ideas are evaluated with regards to the brand purpose is Simon's mention of the two-by-two matrix of high economic relevance and high social impact. Essentially, he places the Green Fibre Bottle project in top-right hand corner of this matrix at "high social impact" and "high economic relevance". Arguably, this can be seen as an inclusion of the purpose in the evaluation of innovation ideas.

Brand purpose influencing the higher purpose of the network (project)

Moreover, the brand purpose is also seen **influencing the higher purpose** of the project. In other words, the higher purpose of the Green Fibre Bottle could be considered originating from the Carlsberg brand purpose. While the brand purpose lives within the organisation (Carlsberg), the higher purpose lives within the innovation network on the project level of the Green Fibre Bottle. The higher purpose of the project can be understood as positive impact that can be created through the development of the innovation. The quote from Julian illustrates the need for the higher purpose of the project to be in line with the overall Carlsberg brand purpose. Moreover, the statement from Michael shows that Carlsberg and ecoXpac together created the higher purpose, which can also be seen as an indicator for the influence of Carlsberg's brand purpose:

> Julian: Carlsberg asked itself what an alternative to the downward spiral could look like and what would be the most sustainable packaging? It would be one that if it were to finish in nature, that would be biodegradable, social and possible - not to incentivize that you should throw it in nature. So, that was the [higher] purpose of it. To see whether we can develop a packaging that is sustainable, and that matches with current consumer behaviour and also **which moves ourselves and others towards better**. That was the purpose.

> Michael: I would say that you need one organisation that presents a higher purpose. ecoXpac and Carlsberg **produced this together in the past.**

The Carlsberg brand purpose, as mentioned previously, is essentially about creating a better world in the process of brewing beer. In line with this, the higher purpose is defined as creating a sustainable packaging solution that will in the end change the entire packaging industry for the better and thus lead to a more sustainable world. The above and below quotes exemplify not only the similar sustainable core of the Carlsberg brand purpose and the higher purpose, but they also show how the brand purpose which essentially is about "betterment" influences the higher purpose:

> **Michael:** The higher purpose of the paper bottle project is to create a lasting, sustainable alternative to the packaging we know from today. It is a co-development effort to show how partnership can enable new global leadership and co-creation. Please consider that in this definition of the purpose the word "sustainable" takes on both of its intended interpretations: **It must be a betterment on what we see today from a packaging perspective.** It must also be a concept that can sustain itself for years to come, allowing it to grow in the market of packaging offerings.

Brand purpose guiding the sustainability ambition

Apart from its role of influencing the higher purpose, the brand purpose is further seen as **influencing and guiding the ambitions and expectations** of the innovation project. It becomes clear that the Carlsberg team was not willing to compromise on the final end product - a fully biodegradable bottle. In other words, the team did not want to lower the ambition level of the Green Fibre Bottle, which is seen inspired by the Carlsberg brand purpose. The ambition could be seen rooted in the "always striving to do better" philosophy. Noteworthy is how very aligned this element is with the brand purpose of "brewing for a better today and tomorrow", which is also noted by Julian above. Subsequently, they could be seen inspiring and influencing each other. Seemingly the guidance the brand purpose provided, helped Carlsberg, ecoXpac and BillerudKorsnäs to **align** on a common final ambition of the Green Fibre Bottle (further explained in finding 23):

> **Håkon:** Well, there was some misalignment at one point when BillerudKorsnäs came in, who owned around 20% of the shares. They got in and became stronger and stronger within ecoXpac and some of them thought that maybe we could do it a little bit easier and maybe not get the ultimate sustainable solution that we set out for. And there we had some arguments. We had to be quite strict there and put our foot down to let them know what Carlsberg would be a part of and what not. Luckily, we had the backup of the guys from ecoXpac who were actually aligned with us.

> **Håkon:** And then we [Carlsberg] have steered (...) how we see the solutions and what our ambitions are. Because sometimes the other partners said this is too hard, but we would not compromise on the final ambition

> of the project. No way. We said we can compromise along the way, but we would not compromise on the final bottle that we want to achieve in the end. We have kept that very strict in a way.

> **Michael:** I think definitely back then the target ambition, what we set as the criteria for success, were heavily influenced by Carlsberg. Now speaking on behalf of ecoXpac back then, we had our own ambition statements and strategy. But being more of a technology incubator, we relied heavily on understanding the needs for commercialisation through the Carlsberg brand.

Håkon's statement above shows that he is driven by the meaning that is created from the brand purpose - "brewing for a better today & tomorrow", and is thus not willing to compromise on this "better tomorrow". The meaning in this instance is related to creating a sustainable packaging innovation that will lead to a beer industry having less negative impact on the environment.

Brand purpose as motivational driver

Elaborating further on the above notion, the brand purpose is seen as taking on a role as a **motivational driver**. The above quotes from Håkon demonstrate how the meaning motivates him and the Carlsberg team to be persistent and to not change the ambition level, despite the challenges that arose. In other words, the motivational force of the brand purpose could be defined as supporting individuals to see the project through and overcome obstacles along the innovation process.

Brand purpose attracting innovation partners

In addition, it is found that Carlsberg's actions with regards to the Green Fibre Bottle project, have enabled Carlsberg to build a credible reputation around its brand purpose and its commitment to sustainability. Ultimately, this credible reputation has enhanced the organisation's ability to **attract innovation partners** for other sustainable initiatives. This will be further explored in finding 22:

> **Sam:** (...) when we as Carlsberg say something people really listen, and they also trust it because we have quite a strong reputation for being scientists, for being good people, for doing the right things.

8.3.1.2 Finding 21: Environmental innovation needs purpose, likewise purpose needs environmental innovation

The above statements demonstrate how the brand purpose of Carlsberg supports the EOI process by playing different roles. However, the brand purpose also needs the environmental innovation as it enables organisations to talk about and activate the their brand purpose internally as well as externally:

> **Sam:** So what we've actually done is to move the positioning much closer to enable us to talk about what the brand really means and what the Danes see. Essentially, that's why this is the perfect project. Because it's so difficult to just talk about it. You can't get that message across just from talking about it. As much as it seems easy to run an ad that says: "Did you know our research lab has been around for 108 years?". It doesn't work. You can't deliver that in a 32 second TV series. All you need to do is deliver them through actions, and hopefully the media can help us to slowly build that brand equity for all the good stuff that Carlsberg has done. And this (the Green Fibre Bottle project) is the perfect way to do that, because as I said, it's an action.

> **Simon:** I think what became very clear to me with the Green Fibre Bottle project and the attention we got, was that it's really, really good to have a flagship project to showcase what you are doing and what you are trying to do with regards to sustainability. Because nothing has communicated environmental responsibility to the general consumer and the general employee better than the Green Fibre Bottle project.

The Green Fibre Bottle, referred to as the flagship project by Simon, helps the company to explain and signal the purpose of its brand (what the company stands for) in a tangible way. In addition, the flagship innovation project lends credibility to the organisation by illustrating that the purpose is not just a PR stunt. In other words, the project provides proof that Carlsberg is "walking the talk". A radical environmental innovation flagship project is thus seen as powerful means to activate the brand purpose internally and externally.

> **Sam:** From my side, purely from a branding and communication perspective, I think one of the things is that it enabled us to tell the story to a modern-day audience of **what the company stands for and what it has always stood for in the past**. I think that's a huge one for me.

> **Sam:** And that then enables you to start to tell a story about how this isn't a one-off project. It's something that the Carlsberg brand stood for, for many years. (...) **So I think this project means more than just the brand. It means everything the company has been doing**.

> **Julian:** I think that approach has also strengthened the **credibility** that the Carlsberg Group has in that it only says things that the company is actually working on and thereby confirming that **it's not just a PR stunt**.

8.3.2 The Brand Purpose's Connection to the Co-Creation Stakeholder Capabilities within EOI

The following finding statements demonstrate the connection between Carlsberg's brand purpose and the stakeholder co-creation capabilities.

8.3.2.1 Finding 22: The brand purpose enhances Networking Capability by creating a strong and credible sustainability reputation among business partners

As discussed in finding 20 , Carlsberg has built a credible reputation around its brand purpose - brewing for a better today and tomorrow - and its commitment to sustainability which ultimately has enhanced their ability to attract partners, specifically innovation partners with sustainable technologies or ideas.

> **Sam:** (...) when we as Carlsberg say something people really listen, and they also trust it because we have quite a strong reputation for being scientists, for being good people, for doing the right things.

> **Julian:** And one of the, let's say, legitimate sons of the Green Fibre Bottle is the Snap Pack [another sustainable packaging innovation]. (...) our partners, the people who invented the snap pack or who were the producers of packaging, when asked who should we go to, they would ring Carlsberg first because they knew we are working on the Green Fibre Bottle. So for example, the snap pack guy, is a guy who worked in a company that does packaging for cans. His boss told him that developing the glue was going to cost a lot of money so he could develop it only if he finds a client for it. So the first person he called was us, because he knew that we had that mindset.

Publicly committing to a radical environmental innovation builds a strong and credible reputation around Carlsberg's sustainability-centred brand purpose. A strong and believable brand purpose, that is activated through radical EOI, is thus seen as enhancing a firm's Networking Capability when searching and attracting new innovation partners.

8.3.2.2 Finding 23: The brand purpose influences the value-framing by guiding the ambition of the project

As mentioned previously the purpose seemed to guide the alignment around the sustainability ambition for the Green Fibre Bottle project. With their uncompromising ambition, Carlsberg exhibited a strong sustainability-centered value-frame that was partially conflicting with more economic-value frames exhibited by BillerduKorsnäs (see finding 12). The below quote from Håkon shows how the team of Carlsberg was very clear on its ambition level. In addition, the quotes from Michael suggest that ecoXpac (nowadays Paboco), and BillerudKorsnäs had to align their targets and ambitions in correspondence to Carlsberg, who at that time was one of the most influential actors within the innovation network. Subsequently, Carlsberg's value-frame could thus be seen as the most influential and dominant one (mentioned in finding 12). Based on this, a link can be drawn in which the brand

purpose influences the value-frame alignment through guiding the ambition level between innovation partners:

> **Håkon:** Well, there was some misalignment at one point when BillerudKorsnäs came in, who owned around 20% of the shares. They got in and became stronger and stronger within ecoXpac and some of them thought that maybe we could do it a little bit easier and maybe not get the ultimate sustainable solution that we set out for. And there we had some arguments. We had to be quite strict there and put our foot down to let them know what Carlsberg would be a part of and what not. Luckily, we had the backup of the guys from ecoXpac who were actually aligned with us.

> **Håkon:** And then we [Carlsberg] have steered (...) how we see the solutions and what our ambitions are. Because sometimes the other partners said this is too hard, but we would not compromise on the final ambition of the project. No way. We said we can compromise along the way, but we would not compromise on the final bottle that we want to achieve in the end. We have kept that very strict in a way.

> **Michael:** I think definitely back then the target ambition, what we set as the criteria for success, were heavily influenced by Carlsberg. Now speaking on behalf of ecoXpac back then, we had our own ambition statements and strategy. But being more of a technology incubator, we relied heavily on understanding the needs for commercialisation through the Carlsberg brand.

8.3.3   The relationship between the branding and innovation team within EOI

The following findings illustrate the interaction between the innovation and sustainability team with the branding team throughout the Green Fibre Bottle project.

8.3.3.1   Finding 24: **Branding team plays no role in building the innovation network**

From the below quote it becomes evident that the branding team was not directly a part of acquiring new innovation partners in relation to the Green Fibre Bottle. This was rather a role of the sustainability and innovation team (Simon & Håkon). However, Simon's quote demonstrates how Simon (as one of the "fathers" of the Green Fibre Bottle) is strongly familiarised with the Carlsberg brand and what it stands for. Hence, it was seemingly not deemed necessary to include the branding team at this stage. In other words, Simon (and Håkon) represented the brand even though they are form the sustainability and innovation team. This moreover indicates how well the Carlsberg brand and its purpose is manifested among all employees and not just within the branding team (see Simon's statement):

> **Julian:** I don't know. I did not build that partnership. The guy you should be talking to about this is Simon. So he will give you the whole shenanigans because it's him who built it directly.

> **Simon:** Yeah, so the Green Fibre Bottle is in line with Carlsberg's "constant pursuit for better" and for a better tomorrow as it's really about creating better packaging with less environmental impact.

8.3.3.2 Finding 25: Branding team collaborates with sustainability and innovation teams to activate brand purpose and to strengthen the brand through environmental innovation

The situation explained in the below quote in which Julian reached out to the sustainability team not only describes the cross-functionality of the teams but also indicates how the Carlsberg brand team activated its brand purpose through environmental innovation. As he planned to relaunch the Carlsberg brand around the tonality of "betterment" he was actively seeking new innovations that will support this specific tonality. It also shows that innovation is viewed as vital part of brand management. Through the utilisation of environmental innovation, such as the Green Fibre Bottle and Snap Pack, the Carlsberg brand purpose comes to life internally and externally. In the future, when the Green Fibre Bottle hits the shelf for consumers and others to see and touch, it will make the brand purpose tangible for consumers. Notably, this finding is closely related to finding 21 in which Sam explains the importance of activating the brand purpose through actions in order to achieve credibility and communicate what the Carlsberg brand stands for:

> **Simon:** When Julian came to us and said "If I want to create a new tonality for the brand which in the essence describes that we want to make everything better, what should I do?" And then I would say that, "I have a couple of ideas. You could use recycled shrink-wrap, you can use Snap Pack, you can make the Green Fibre Bottle, and you can use Greener Green Inks. So basically, the Carlsberg brand came at a good time where we had a whole lot of sustainable innovations under the shelf.

> **Simon:** And going forward, I know that the Green Fibre Bottle project is something that Julian (Global Brand Director) is keen to embrace, because it's what makes the brand amazing.

Simon further implies that the above described situation might become the new reality between brand and the sustainability/innovation team. In other words, a new **brand-led innovation** future where the brand team will reach out to the sustainability/innovation team rather than them looking for brands internally to activate innovations:

> **Simon:** So it started out from being something that is developed on a corporate level and the brand taps into. But I believe where we will go in the future is that the brand actually comes to us with, "We want to do something. Can you help us do it?". Yes, I believe that brand-led innovation is the direction for the future.

The statement makes it clear that Simon considers brand-led innovation to be initiated and led by the branding team. However, given the previous findings on Green Fibre Bottle, it can be argued that brand-

led innovation can also be understood as being driven by what the brand stands for, by the core brand identity and thus the meaning it provides. In this holistic view of brand-led innovation, the brand is not tied to the branding team, but rather lives in the core identity throughout the entire organisation. It was in this spirit that the sustainability and innovation team, spurred on by the brand purpose led to the Green Fibre Bottle innovation. This is further exemplified in finding 24, in which Simon demonstrates how familiarised the sustainability/innovation team is with the Carlsberg brand and what it stands for.

In conclusion, this illustrates that the branding team does not necessarily need to reach out to the innovation and sustainability team in order to "inspire innovation", rather the brand and its purpose is seen as "acting by themselves". Notably, this does not mean that the brand-management should not be involved in the process. On the contrary, as illustrated by Simon above, the brand team should actively seek the collaboration with the innovation and sustainability teams as it enriches the brand.

8.3.3.3 Finding 26: Branding team contributes with insights to guide the technological development and visual identity of the innovation

The statement from Michael describes how Paboco was influenced by and relied on Carlsberg's brand expertise in form of consumer insights for the technological development. It also demonstrates the importance of being able to commercialise a radical innovation and to comprehend whether there is a demand for the innovation:

> **Michael:** But being more of a technology incubator, we relied heavily on understanding the needs for commercialisation through the Carlsberg brand. So let say Carlsberg had expressed to us that there was an interest for biodegradability or bio-based solutions in the market. We relied on them to tell us what could be a sellable product and what the demand for sustainability from a customer perspective looks like.

The findings below illustrate clearly how the branding team played an important part in the visual identity and design process of the Green Fibre Bottle. Even though the Green Fibre Bottle entails a completely new packaging solution it still has to be associated with the look and feel of the Carlsberg brand. Assumingly, this is crucial as consumers should be able to associate the physical product with the brand:

> **Håkon:** Yes, of course we had shared meetings. However, they were mainly about the design because the Green Fibre Bottle looks strange compared to our main packaging formats. So we had discussions together, on how to best design the elements of the bottle. Also different people in the branding team were involved including all the different levels of brand managers, like Jessica Spence (former Chief Commercial Officer), Russell Jones (former Marketing Operations Director – Core Beer) and Julian (Global Director Carlsberg Brand). And also the design team was involved.

Julian: So we were trying to figure out what would be the best shape and what the design intention should be. Should it be a natural shape or should it be a as close as possible to the bottle shape? We decided to do it as close as possible to the bottle shape.

Simon: They are involved in everything that relates to the visual identity and the design. So during the design process with regards to shape and size of the bottle, of course there are some technical limitations, but we have made sure that it was consistent with the whole new look and feel of Carlsberg.

8.3.3.4 Finding 27: Branding team is involved in the communication process by acting as communication platform

From both a branding as well as an innovation perspective, it is apparent that the branding team was involved in all communication stages in which the Carlsberg brand was utilised to communicate about the Green Fibre Bottle project. Based on the below statements the Carlsberg brand can be seen as a communication platform that signifies the commitment to the EOI project to internal and external stakeholders. Meaning that the communication platform, offered by the Carlsberg brand, seemingly makes an important contribution to promoting the EOI process:

Sam: The brand team was involved because the Green Fibre Bottle was associated with the Carlsberg brand and all the communications we've done previously were through the Carlsberg brand.

Mattia: I know that the Green Fibre bottle project appeared in many magazines and many articles. This happened because of the Carlsberg brand behind the project. From my understanding it seems to be a well-known brand that had the possibility to easily spread the idea and tell the world about the paper bottle.

Håkon: (...) we have used the Carlsberg brand in order to drive the project through brand communications.

Furthermore, Simon and Michael highlight how the brand, and the branding team, will be heavily involved in the commercialisation stage of the Green Fibre Bottle project. However, this is yet to come as the project is still in the development phase:

Simon: And going forward, when the project moves from being a more technical to being more consumer-oriented, the branding team will be hugely involved; for example, with all the events, where we will trial it, the tonality, and so on. But that's also the stage where we won't only have the marketers and brand guys on board, but also the sales side. So the on- and off-trade, depending on where we will trial it and deciding on which customer has shown a particular interest in showcasing it.

Michael: But, of course, as the project transitions into operations and the commercial side, we need to have talks with the branding, supply-chain guys.

8.4   Summary of Findings

In order to give an overview of all finding statements the following table 6 is created. It shows the finding statements in numerical order and indicates the topics and research question they relate to. The first half of the table shows the findings relating to stakeholder co-creation capabilities, and thus refers to research question (1) *What capabilities and underlying processes enable stakeholder co-creation in the context of environmental open innovation?.* The second half of table 6 comprises the finding statements relating to the brand-innovation relationship, and thus refers to research question (2) *What part does the corporate brand identity of the centrally acting firm play in environmental open innovation?*

Table 6: Overview of finding statements

Research Question & Topic Area			Nr.	Finding Statements
Research Question 1 What capabilities and processes enable stakeholders' co-creation in the context of EOI?	**Stakeholder Co-Creation Capabilities**	**Competence Mapping**	1	Competence Mapping did not play a significant role.
		Networking Capability	2	Networking Capability was elevated by going public early via top-management and through creating a strong reputation for their sustainability commitment.
			3	A higher purpose enhances the Networking Capability.
			4	Selection of innovation partners was not only based on complementary resources but also on matching value-frames and professional identities, shared openness, and avoidance of direct competition
		External Engagement Capability	5	In order to work together with diverse partners, alignment on a common project vision, sustainability ambition, external communication principles and openness is key.
			6	An element that fostered the engagement was the sharing of challenges and past experiences
			7	Trust was perceived to be essential in EOI relationships to facilitate openness throughout the innovation process.
			8	The creation of the pioneering community fostered the collaboration and meaning through enforcing the higher purpose of the project
		Internal Engagement Capability	9	EOI requires internal engagement of multiple departments and cross-functional alignment
			10	Passionate project champions from sustainability and innovation defend project and engage others in the experience through internal activations
		Value-Framing Capability	11	Divergent value-frames were overcome by changing ownership structures, discussing expectations openly, assigning top-level importance to alignment and collaboratively creating KPIs
			12	The value-frame of the leading actor was more dominant when inter-organisational value-frames were fused
			13	The higher purpose unites divergent value-frames
		Systemized Learning Capability	14	Systemised learning includes the adaptation of partner selection and sharing of learnings in the innovation network

Research Question & Topic Area			Nr.	Finding Statements
Research Question 1	**Human Element**	*Relates to External Engagement Capability*	15	Human element in EOI strengthens collaborations through visionary and passionate project champions who are driven by meaning
		Relates to External Engagement Capability	16	Human element in EOI strengthens collaborations through interpersonal relationships and supports the alignment of diverse partners
		Relates to Internal Engagement Capability	17	Human element plays a role in fostering engagement around environmental flagship project and other sustainability initiatives internally
		Relates to Networking Capab.	18	Human element plays a role in attracting partners through meaning
		Relates to Value-Framing Capability	19	Human element plays a role in starting the value-framing process
Research Question 2 What part does the corporate brand identity play in EOI?	**Brand-Innovation Relationship**	**Role of the Brand Purpose**	20	The brand purpose takes on different roles in EOI project: it inspires change, act as a filter and motivational driver, guides alignment, and attract innovation partners
			21	Environmental innovation needs purpose, likewise the purpose needs environmental innovation
		Brand Purpose connection to co-creation stakeholder capabilities	22	The brand purpose enhances networking capability by creating a strong and credible sustainability reputation among business partners
			23	The brand purpose influences the value-framing by guiding the ambition for the project
		Relationship between Branding and Innovation Team	24	Branding team plays no role in building the innovation network
			25	Branding team collaborates with sustainability and innovation teams to activate brand purpose and to strengthen the brand through environmental innovation
			26	Branding team contributes with insights to guide the technological development and visual identity of the innovation.
			27	Branding team is involved in the communication process by acting as communication platform.

Apart from the inclusive overview of the generated findings in table 6, the following table 7 aims to summarise the microfoundations (processes, structures, elements) that were identified for each stakeholder co-creation capability.

Table 7: Overview of stakeholder co-creation capabilities and their microfoundations

Networking Capability	**Microfoundations (Processes, Structures, Elements)**
	• Articulating a higher purpose of the project attracts relevant and passionate project partners through meaning • Going public with the innovation during the early stages of the project process at international networking events (e.g. conferences) • Selecting partners not only based on complementary resources/knowledge but also based on similar mindsets, visions (identities and value-frames), and openness • Giving continuous public status updates and showcasing innovation prototypes to attract new partners along the development process

External Engagement Capability	**Microfoundations (Processes, Structures, Elements)**
	• Aligning on a common project vision, sustainability ambition, degree of openness and external communication principles • Establishing trust by investing in interpersonal relationships, informal meetings, giving full access to external facilities and legal assurances • Open and constant dialogue about challenges within the project • Sharing past experiences about the innovation project with new innovation partners • Creating a "pioneering" community that defines the higher purpose and fosters collaboration between partners • Conducting regular community sessions at different partner sights • Forming a visionary board for the community with the project champions from each partner who focus on the alignment and guidance of the community

Internal Engagement Capability	**Microfoundations (Processes, Structures, Elements)**
	• Involving cross-functional units in early stages of the development (for instance: sustainability, supply-chain, branding, PR) • Engage every employee around the innovation experience by hosting internal events about the radical innovation and by displaying prototypes in central office locations • Appoint dedicated, passionate, and (long-term) project-champions who advocate and defend the project internally and engage other employees • flagship project that activates the purpose motivates internal employees to engage in the environmental innovation and other environmental ideas

Value-Framing Capability	**Microfoundations (Processes, Structures, Elements)**
	• Organise the collaboration network around a higher purpose that is represented by the central organisation • Create meetings in which value-frames (expectations) are openly discussed and reflected upon • Attach top-management importance to value-frame alignment (e.g. CEO attendance in alignment meetings) • Establish a common set of KPIs to ensure continuous alignment of value-frames

	• Starting the value-framing process by getting a deep understanding of not only the organisation's identity (the corporate brand), but also the individual people and their professional identities (motivations, values and beliefs)

Systemised Learning Capability	**Microfoundations (Processes, Structures, Elements)** • Sharing past experiences and failures in the innovation project with new innovation partners • Continuously reflecting on partner selection based on previous experiences in the collaboration

9 Discussion and Implications

The discussion aims to elaborate on the key findings in the context of the two research questions - (1) *What capabilities and underlying processes enable stakeholder co-creation in the context of environmental open innovation?* and (2) *What part does the corporate brand identity of the centrally acting firm play in environmental open innovation ?*. In order to guide the discussion around these questions the initial framework, which was introduced as a synthesis of the literature review, is adapted in accordance to the insights generated through the qualitative interviews. Figure 16 shows the final conceptual framework of this study which combines both, stakeholder co-creation capabilities and the role of the brand in facilitating EOI. Further, the framework illustrates how the brand purpose is connected to and influences the capabilities. The following sections aim to further explain figure 16 and simultaneously answer the research questions.
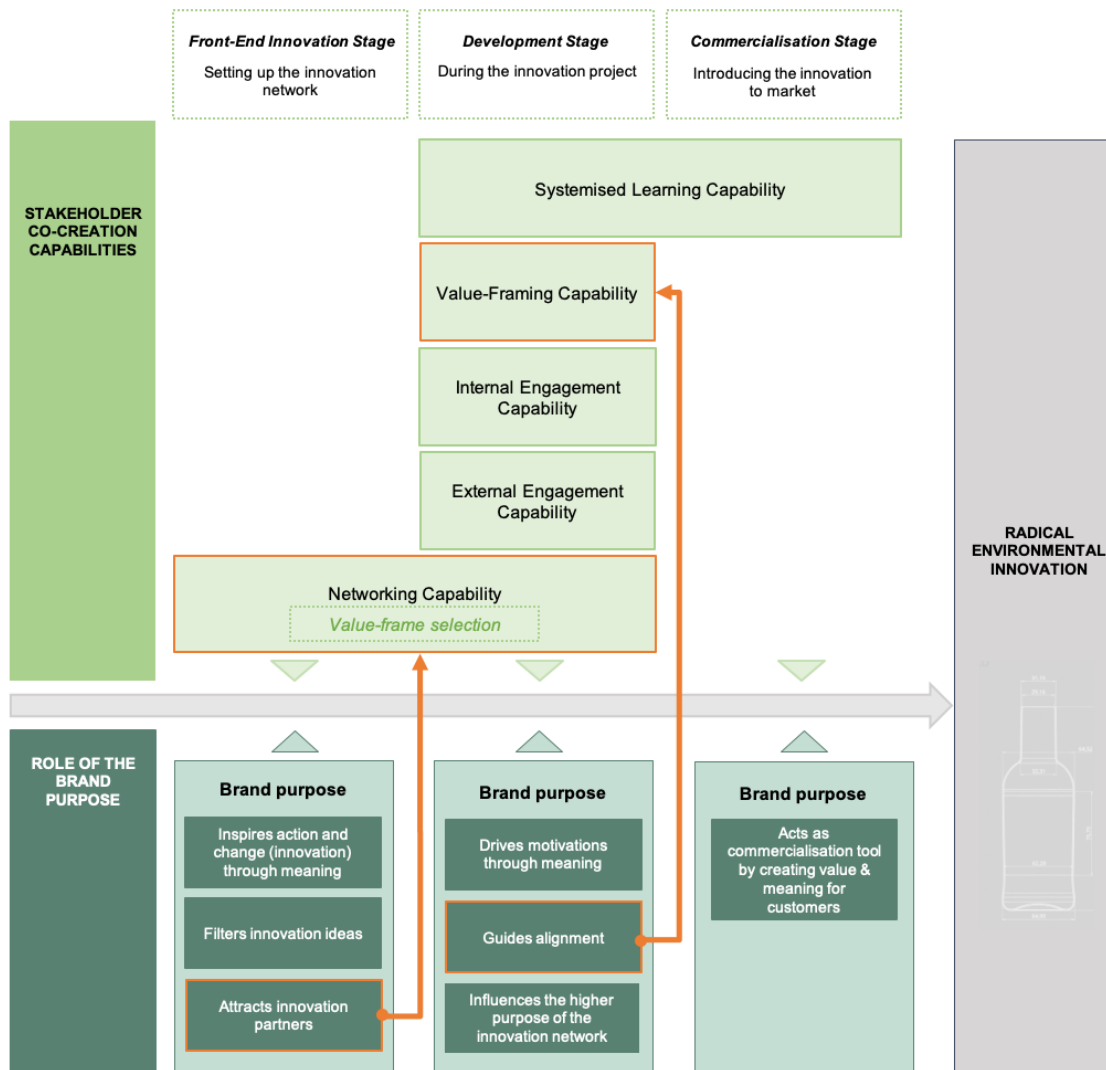

Figure 16: Final conceptual framework

9.1 What capabilities and underlying processes enable stakeholder co-creation in the context of environmental open innovation? (Research question 1)

Taking a capability perspective on environmental innovation, the findings show that five stakeholder co-creation capabilities play an important role in enabling the development of radical EOI. These are **Networking Capability, External Engagement Capability, Internal Engagement Capability**, **Value-Framing Capability**, and **Systemised Learning Capability**. When investigating these capabilities the role of meaning and the human element (motivations, values, beliefs) emerged from the findings and were found to play a crucial role in enhancing these capabilities. The following paragraphs aim to show when these capabilities play a role and how by explaining its underlying microfoundations. Given the complex, uncertain, and dynamic nature of radical EOI, Competence Mapping (the ability to create an explicit overview of the competencies of external entities) was not found to be relevant and is thus excluded from the final framework.

In regards to the phases of the framework, the findings indicate that Networking Capability is not only important in the *front-end innovation stage* as suggested by Kazardi et al. (2016), but rather throughout the entire project. As new challenges arise, new technologies and new partners need to be attracted, engaged and selected. In the *development phase* (or during the project), all identified capabilities play an important role, which will be elaborated further below. In contrast to previous literature, which only includes Systemised Learning in the post-innovation phase (Watson et al., 2018), this study shows that experiences and decisions regarding engagement should be continuously reflected upon in order to embed learnings as the innovation network grows. Due to the long time-horizon of EOI projects, the Systemised Learning Capability is arguably not only relevant after the innovation is developed, but also during the process of development. Researchers (e.g., Watson et al., 2018) have called for an in-depth analysis of the underlying microfoundations (processes, structures, elements) of these co-creation capabilities in the context of environmental innovation. Therefore, the following section will illustrate how the microfoundations found in this study contribute to and complement the existing literature, thus making the abstract capabilities more tangible.

Networking Capability

As previous research has stated, engaging in networking opportunities (e.g. conferences, industry roundtables), as well as openly communicating about partner selection criteria and required competences, are seen as valuable microfoundations (Kazardi et al., 2016). This can also be confirmed by the underlying study. However, this study further enriches the understanding of the the Networking

Capability by identifying new microfoundations and the role of the human and meaning element within these.

It is found that the Networking Capability is central in the context of radical environmental innovation and should involve top-management (CEO) or board-representatives. Moreover, as seen in the Green Fibre Bottle project, one of the main successfactors is "going public" with the innovation at an early development stage. This is intended to draw attention to the project, which will ultimately increase the chance of attracting more and better-suited partners.

The ability to attract external actors can be enhanced by placing emphasis on the meaning aspects of innovation projects, which is seen driving individual motivations (human element). The communication of a clear and compelling project vision, sustainability ambition, and a higher purpose motivates professionals to participate beyond economic considerations, as their personal values and beliefs align with the project. This paper defines the higher purpose as the positive impact that can be achieved through realising the innovation. In contrast to the brand purpose, which lives on an organisational level, the higher purpose lives within the innovation network (Draper, 2013; Ollila & Yström, 2016).

Another theme that emerged was the selection of partners, which should not only be based on complementary resources (technology, knowledge), but also on matching mindsets, sustainability strategies and cultures. The latter can be related to the match of value-frames and corporate identities (see section 2.3.5) The selection of partners based on matching value-frames can prove as a valuable strategy when extending the network in order to ensure a synergetic and successful collaboration.

External Engagement Capability

As derived from the literature, the capability for external engagement focuses on the management of the external innovation network by maintaining the various partner relationships (Watson et al., 2018). This study confirms the need for achieving alignment by setting a shared vision and sustainability ambition which further guides the collaboration. Moreover, previously identified microfoundations, such as the facilitation of ongoing and direct communication, and the creation of trust within the network (Behnam et al., 2018; Watson et al., 2018), were also considered as important elements in this study. Trust in particular, can not only be established via legal contracts (e.g. right of first-refusal), but also via the open access to partner facilities and the interpersonal relationships between key actors of different organisations.

Moreover, this study contributes by enriching the External Engagement Capability with microfoundations such as sharing individual challenges in regular (informal) meetings as well as sharing past experiences and failures upon the entrance of new innovation partners.

Furthermore, the formal creation of a pioneering community, which is centered around meaning (i.e. the higher purpose; making a positive impact), motivates and drives individual participants (human element). Through this motivation the inter-organisational collaboration is fostered and functional knowledge flows are enabled. Therefore, it is a valuable strategy to center the collaboration around meaning. The human element can further be seen as manifesting in visionary project champions from each innovation partner. Through their shared beliefs, visions and values they build and drive a close-knit collaboration and thus enhance the External Engagement Capability of the key actors.

Value-Framing Capability

Although previous studies view value-framing as crucial, both internally and externally, (Watson et al., 2018), the findings of this study indicate that it is more relevant in the external context of aligning diverse innovation partners. Therefore, it is seen more closely related to the External Engagement Capability, at least in the context of EOI. As previous studies have shown, value-framing microfoundations include the creation of time and space for open and honest dialogue that make it possible to acknowledge and reflect on the differences (goals, values, interests, structures) between the various innovation partners (Watson et al., 2018). These value-frames are essentially characterised by what the respective partners value and seek within the collaboration. Examples in the context of EOI can be environmentally-centered, product-centered, technology-centered, and economic-centered value-frames that need to be aligned in order to enable synergetic knowledge flows (Le Ber & Branzei, 2010). This study identifies several strategies to overcome and align diverse value-frames.

Firstly, it is important to truly understand your partner not only on an organisational level (corporate identity), but also on a personal level (professional identity). Therefore, the value-framing process should start with getting a deep understanding of not only the organisations (their identity), but also the individual people and their professional identities (motivations, beliefs). As mentioned by one of the interviewees, it is essential to understand the motives and values of key participants from each partner before alignment can take place. Thus, the consideration of individual drivers (human element) is seen as an important factor within the value-framing capability.

Secondly, it is important to include top-management in the aligning processes as high-level alignment requires high-level attendance. Therefore, alignment meetings should involve respective CEOs,

sustainability, and innovation team members. In these meetings expectations of each partner should be openly discussed. Additionally, creating a steering committee for the innovation network which focuses on the alignment, is a valuable structure to enhance the value-frame capability.

Thirdly, the creation of a **higher purpose** that goes beyond individual agendas and goals, enables diverse companies to work collaboratively within the network. In other words, it enables companies to work together through the meaning and motivation it sparks within different key actors. The higher purpose should be created and inspired by the initial members of the innovation network and managed from one central point within the community.

Fourthly, concrete actions to unite value-frames would be to implement presentations and discussions about the expectations of each individual partner. Furthermore, in the case of the Green Fibre Bottle, these aligning discussions led to jointly defining KPIs for the technical development.

Lastly, it must be taken into account that the value-frame of the most influential actor has a tendency to be more dominant and therefore more uncompromising in adapting to others.

Internal Engagement Capability

The literature on Internal Engagement Capability reports a number of microfoundations that facilitate environmental innovation. Among these are, (1) creating space and time for employees to share their environmental ideas, (2) establishing communications routines to share environmental information with the entire organisation, (3) selecting the relevant internal partners to collaborate on environmental innovation, and (4) empowering employees for enhanced commitment to and engagement in the radical environmental innovation project (Watson et al., 2018; Behnam et al., 2018). This study contributes to these microfoundations by further elaborating on how enhanced internal commitment to radical environmental innovation can be created. Firstly, internal support starts with selecting passionate and dedicated project champions who advocate the project and engage all employees around the innovation. These engagement initiatives can range from displaying a prototype of the innovation in a central office location, to hosting events around the radical innovation. Essentially, a radical environmental innovation flagship project (such as the Green Fibre Bottle project) makes employees feel part of something greater and enhances their professional identities by making them part of a "ground-breaking" project that pushes industry boundaries. Again, this can be seen as related to the human element within the capability perspective. Through the meaning the innovation provides, employees are motivated to engage in the project or to encourage future environmental innovation ideas within their departments. This will be further elaborated upon in section 9.2.2.

Systemised Learning Capability

Previous research, in regard to Systemised Learning, include the (1) process of gathering experiences from individuals from previous innovation projects, (2) reflecting and embedding these learnings across the organisation and within future external stakeholder relationships, and (3) developing online-resources such as case studies and best practices (Watson et al., 2018). Arguably these Systemised Learning processes indicate that the reflection and learning happens after an innovation project. However, this study found that especially in the context of radical EOI projects, which may take several years if not decades, reflection happens continuously and is especially sparked by the entrance of new partners. As seen in the case of the Green Fibre Bottle project, partners learned from their initial collaboration and found that similar CSR, mindsets and visions enable a better collaboration. Therefore, when scouting new partners, these learnings were embedded in the partner selection

9.2 What part does the corporate brand identity of the centrally acting firm play in environmental open innovation? (Research question 2)

The following chapter is divided into two sections; *How can the corporate brand purpose facilitate environmental open innovation?* (Research question 2a) and *How does the corporate brand purpose affect stakeholder co-creation capabilities?* (Research question 2b). Together these sections will shed light on the brand-innovation relationship which is the focal point of research question two.

9.2.1 How can the corporate brand purpose facilitate environmental open innovation? (Research question 2a)

The findings show clearly that the brand purpose drives and facilitates EOI by taking on different roles throughout the innovation processes, Figure 16 illustrates the specific roles along the three innovation stages. Within the *front-end innovation stage*, the brand purpose is seen **inspiring action and change** through meaning, **acting as a filter for innovation ideas** and supporting the **attraction of innovation partners**. In the *development stage*, the brand purpose **drives motivation** through meaning, **guides alignment** between various stakeholders and is seen as **influencing the higher purpose** of the innovation network. Lastly, in the *commercialisation stage*, the brand purpose takes on a role as a **commercialisation tool** by creating value and meaning for customers.

Within the *front-end innovation stage*, the brand purpose is seen as a **catalyst for action and change** through meaning. How the meaning unfolds and is created depends on the respective corporate brand purpose. In Carlsberg's case, the meaning provided by the brand purpose is about creating a better

tomorrow, a better society, and better environment in the process of brewing beer. Through this meaning the brand purpose acts as a catalyst for action towards radical, industry-shifting environmental innovation. This particular role of the brand purpose is in accordance with what previous management papers have proposed (EY & Harvard Business Review, 2015; Accenture, 2018).

Furthermore, the brand purpose acts as a **filter for innovation ideas** as it supports the evaluation of innovation concepts based on brand-/purpose-fit in the early phase. This confirms the previous conceptual framework. Here the brand purpose can act as guiding the evaluation of innovation concept through determining their potential to create a positive impact on society and/or the environment. However, it needs to be further investigated how exactly and to what extent the purpose guides the evaluation of different innovation ideas.

Moreover, an organisation that is committed to sustainability and that has managed to create a credible reputation around its brand purpose, has an enhanced ability to **attract innovation partners**. This is an emergent finding derived from the qualitative data. Achieving a credible reputation around the brand purpose, requires the purpose to be activated through purpose -(sustainability)-motivated actions which are then communicated publicly. Actions in this context can be exemplified by sustainability programs, sponsoring research, and continuously seeking incremental/radical environmental product and process innovations.

Within the *development stage*, the brand purpose **acts as a motivational driver through meaning**, which is in line with the study's initial conceptual framework. The brand purpose is seen encouraging individuals to commit to the project, and thus helps with overcoming challenges along the innovation development process. The meaning in this context is rooted in the strong belief of creating a better and more sustainable world, which further motivates individuals to be persistent and to not change their route, even in challenging times.

The initial conceptual framework illustrates how the brand purpose guides and supports internal alignment (Collins & Porras, 1988; EY & Harvard Business Review, 2015). However, the qualitative interviews indicate that it played a more crucial role within external alignment. From the derived findings, the brand purpose is found to **guide the alignment** between innovation partners, through setting ambitions and expectations. Even if it is not clear from the interviews how the purpose guides the internal alignment of different departments, does not mean that the brand purpose does not create internal alignment. Instead, the lacking emergence of its internal alignment role is rather due to the focus of the interviews on the external collaborations. After all, academia shows that a strong brand purpose encourages employees to team up across internal departments (Collins & Porras, 1988; EY &

Harvard Business Review, 2015). Subsequently, the brand purpose is seen acting as a unifying focal point, which guides internal as well as external alignment in the *development stage.*

Another finding that emerged from the interviews is the role of the corporate brand purpose as **influencing the higher purpose** of the innovation network. In this case study, the Carlsberg brand purpose is essentially about creating a better and more sustainable world in the process of brewing beer. The higher purpose of the Green Fibre Bottle, on the other hand, is seen as creating a sustainable packaging solution that ultimately will change the entire packaging industry for the better, henceforth result in a more sustainable world. From the Green Fibre Bottle case, it is established that the corporate brand purpose influences the higher purpose of the innovation network. It becomes evident that these two phenomena need to be in line with each other and work in harmony as the higher purpose could be seen as an "extension" of the brand purpose.

In the after-innovation (or *commercialisation stage*), the initial conceptual framework suggests that the brand purpose is seen as a **commercialisation tool** by creating value and meaning for customers (Abbing, 2010). Since the Green Fibre Bottle has not yet reached its market introduction, this could not be investigated and therefore needs further exploration.

In conclusion, this research identifies seven roles of the brand purpose. Three of them - namely (1) inspiring action and change through meaning (2) filtering innovation ideas (3) driving motivation through meaning - were stated in the initial conceptual framework and could be confirmed based on the qualitative interviews. Additionally, this research identified three emergent roles - namely, (4) attracting innovation partners, (5) guiding alignment, and (6) influencing the higher purpose. These roles further contribute to the understanding of how the brand purpose can facilitate EOI. Lastly, it is suggested that the role of the brand purpose as commercialisation tool needs further exploration.

9.2.2 Environmental innovation needs purpose and likewise purpose needs environmental innovation

The case study illustrates the power of a flagship environmental innovation project that is sparked and led by the purpose, yet also activates and strengthens the brand purpose internally and externally. Therefore, as seen in figure 17, brand purpose and the flagship innovation are in reciprocal relationship in which both facilitate and foster each other. In simpler words, environmental innovation needs purpose and likewise purpose needs environmental innovation.
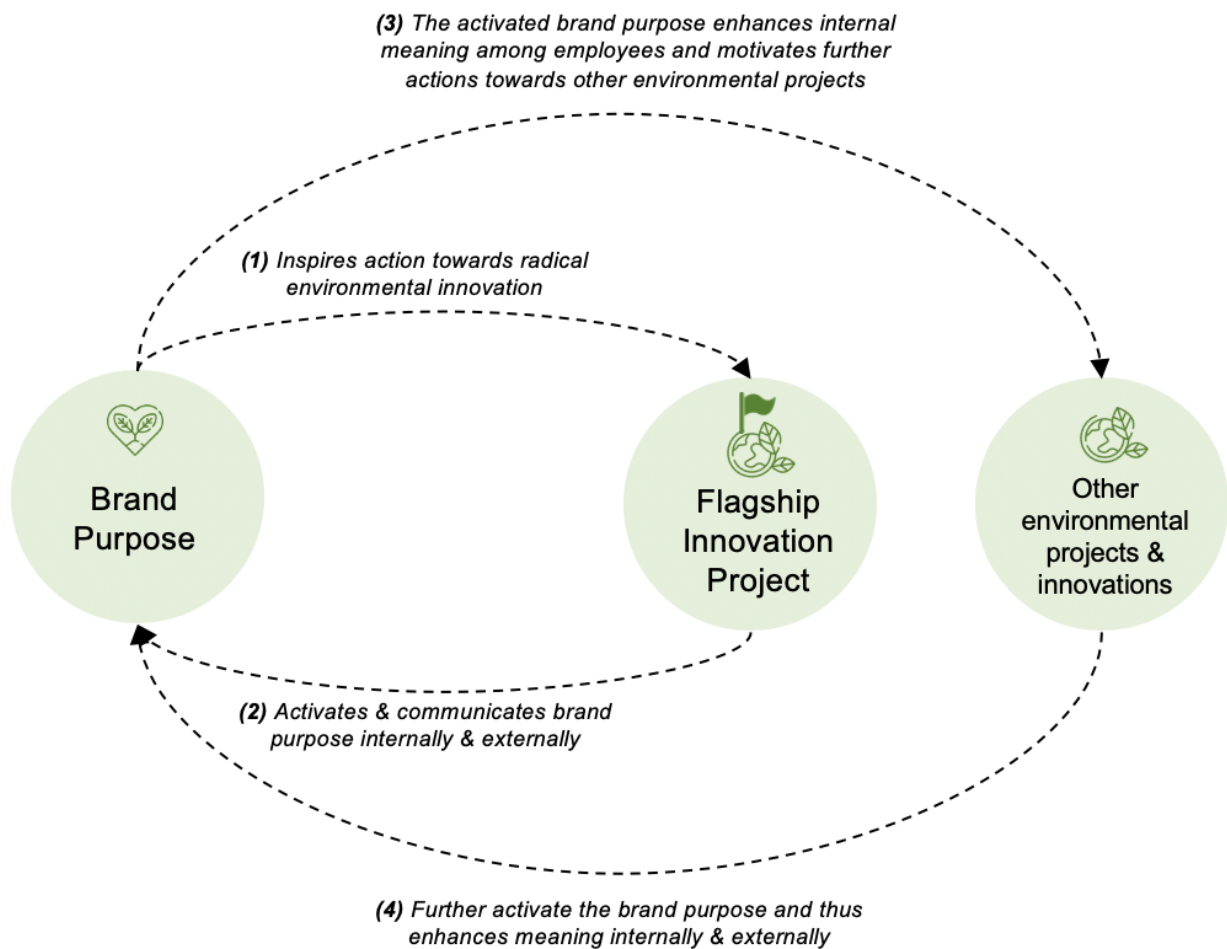
Figure 17: Interrelationship between brand purpose, flagship innovation project and other environmental innovations; own creation

A flagship environmental innovation that is system-shifting yet tangible and easy to understand for the general consumer and employee, has the power to bring the brand purpose to life and make it accessible for various internal and external stakeholders. A flagship project, such as the Green Fibre Bottle, enables the organisation to explain its brand purpose and signify what the company stands for in a meaningful and relevant way. It shows both on an internal and external level that the brand is "walking

the talk" and, as a result, adds credibility and substance to the brand purpose. Therefore, a strong environmental flagship innovation lends the power to the branding team to structure its communication and activations around a strong purpose.

By fostering and activating the brand purpose, the flagship project further paves the way for other environmental ideas, technologies, and innovations as indicated by the outer loop in the visualisation. The meaning the flagship project creates, drives and motivates other employees to pursue environmental ideas in their own respective departments. They do so because they feel proud to be part of a company with a strong environmental flagship project. This is further seen enhancing their professional identities by making the employees feel part of something groundbreaking that is important to society and the environment. Notably, this shows the influence of the meaning behind the brand purpose and how it can drive employee motivations in pursuing and engaging in environmental ideas and projects (human element).

In summary, a flagship project is not necessarily intended solely for commercial success, rather it is igniting the brand purpose, driving internal meaning and spurring future environmental innovations within the the organisation.

9.2.3 How does the corporate brand purpose affect stakeholder co-creation capabilities? (Research question 2b)

Research question 2b aims to explore the connection between the brand purpose and the stakeholder co-creation capabilities. The brand purpose was found to influence two co-creation capabilities, namely Networking Capability and the Value-Framing Capability. These emergent links complement the literature and demonstrate not only that the corporate brand purpose has the potential to influences stakeholder co-creation capabilities but also shows how it does so.

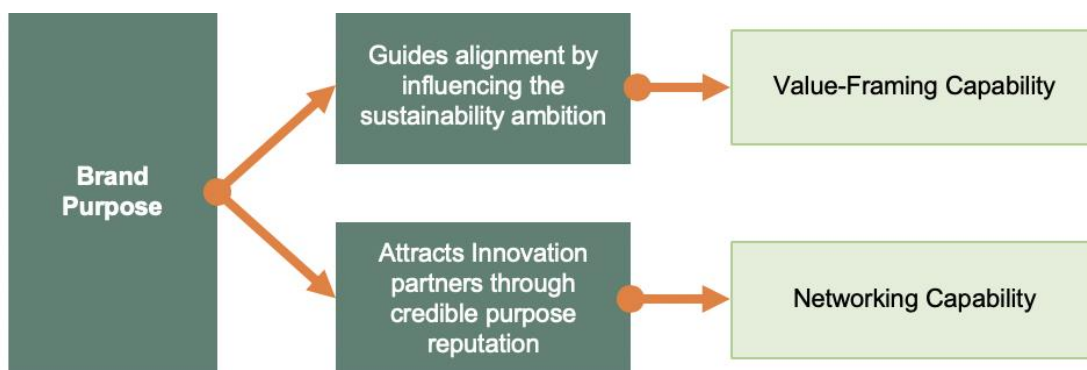*Figure 18: Brand Purpose and its connection to Stakeholder Co-Creation Capabilities; own creation*

Figure 18 illustrates how the brand purpose influences the capabilities. As mentioned above, the brand purpose has the ability to attract innovation partners, if the organisation has achieved a commendable reputation around its purpose. Based on this, it is established that the brand purpose enhances the Networking Capability by attracting relevant innovation partners. Furthermore, it is found that the brand purpose influences the Value-Framing alignment. As mentioned in the above section, the brand purpose supports the alignment through guiding the ambition level between innovation partners. Noteworthy, in this regard, is that the ambition level is seen influenced by the brand purpose.

9.3 Holistic Brand-Led Innovation

This research enhances the brand-innovation relationship by showing the important role of the brand purpose in enabling and driving (radical) environmental innovation. By doing so it further illustrates how a holistic brand-led innovation should be understood as a phenomenon that is not entirely situated within the branding-team, but instead manifested within the entire organisation.

The case of the Green Fibre Bottle shows that the brand is not tied solely to the branding team, but rather lives in the core identity of the organisation. In other words, a holistic brand-led innovation is driven by what the brand stands for, its core identity and purpose, and thus the meaning it provides to employees, customers, and other stakeholders.

All in all, this means that the branding team does not necessarily have to reach out to the innovation and sustainability team in order to inspire innovation, rather the brand and its purpose are seen as "driving" the innovation and the sustainability department. Nevertheless, this does not mean that the brand departement should not be working closely with the innovation team, as this paper still argues that it is important to have a collaborative nature within organisations. It is strongly suggested that the innovation and branding team work closely together, along the entire innovation process (front-end to commercialization) not only to ensure brand-fit for future innovations but also to enrich brand communications and activations through innovations.

9.4 Functional versus Human & Meaning Perspective

As a final synthesis of this study, the following section elaborates on the functional, human and meaning elements within EOI. Previous research on open innovation, and EOI, is primarily viewed from a functional perspective. Emphasis is placed on functional knowledge flows in the form of complementary resources (e.g. competencies, knowledge, and skills), and how to enable these knowledge flows through stakeholder co-creation capabilities. However, what this functional capability perspective lacks is an understanding of what drives and motivates these knowledge flows and what

creates strong relationships between partners, despite their differences. This study shows how meaning (corporate brand purpose) and personal values, beliefs, motivations (human element) fill a gap the open innovation and capability perspective has been lacking. It does so by shifting the focus from synergetic synergistic knowledge flows (functional perspective) towards meaning, motivations and relationships that enable these flows.

As found in the case of the Green Fibre Bottle innovation, EOI processes are motivated by meaning and driven by visionary key actors who inspire and drive internal and external engagement around the innovation project through their strong values, beliefs and passion for a more sustainable future. By centering the collaboration and innovation network in the meaning (i.e. the higher purpose), they create a close-knit group of key actors who are motivated to defend the project internally and to overcome inter-organisational differences that manifest in divergent value-frames. As illustrated in Figure 19, it is this meaning that is rooted in the organisational identity (the brand purpose), the higher purpose of the innovation network and within the beliefs and values of the individuals (professional identities) that enable strong relationships between partners, which in turn enable functional and synergetic knowledge flows.
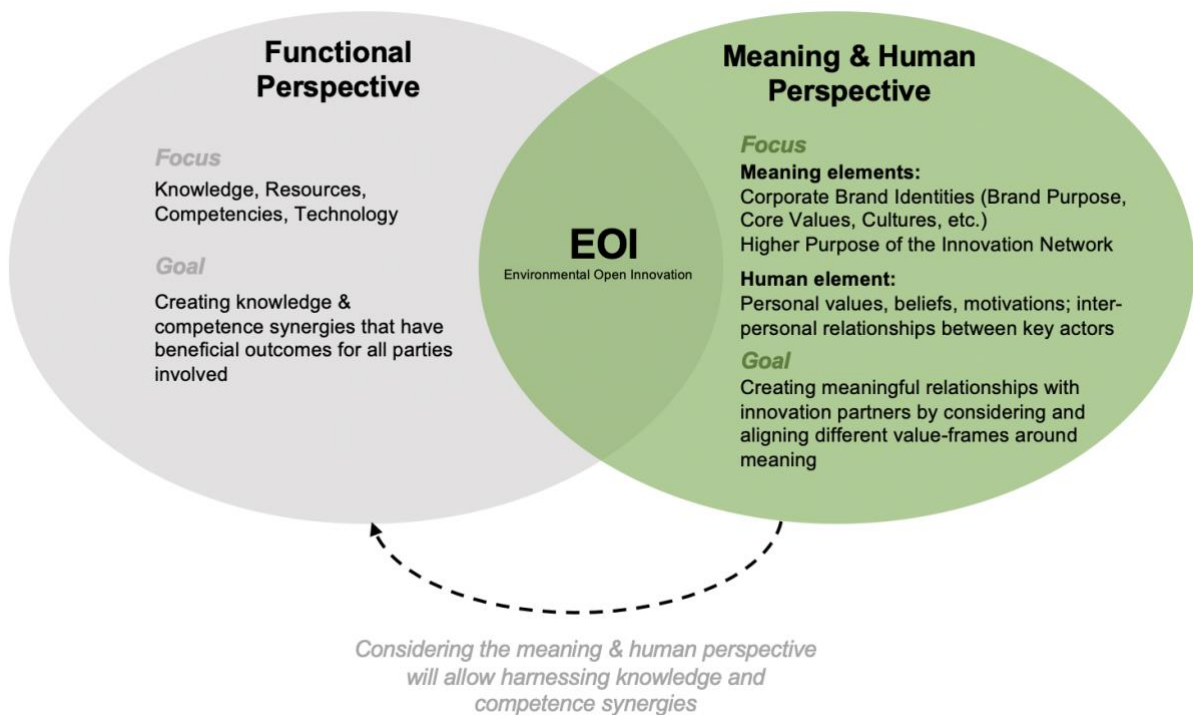

Figure 19: Functional vs. meaning and human perspective in EOI; own creation

9.5   Theoretical Implications

This study responds to calls for better understanding about how firms can effectively engage and collaborate with diverse innovation partners, in the context of radical environmental innovation. This paper answers this call by contributing with a framework that combines both a capability and brand perspective and shows how each facilitate EOI. By advancing the understanding of dynamic capabilities and their microfoundations in the context of EOI this study contributes to making the rather abstract capabilities more tangible and manageable. Moreover, this research shows the importance of meaning (manifested in the brand purpose and higher purpose) and the human element (manifested in internal motivations, beliefs, values and interpersonal relationships) in inspiring and motivating external engagement and alignment of value-frames between diverse partners. By identifying the different roles the brand purpose takes within EOI processes, this study further contributes to the understanding of the brand-innovation relationship, and establishes the brand's role in driving and guiding EOI.

9.6   Managerial Implications

From a managerial perspective, firms who want to engage in complex and uncertain sustainable innovations should ask themselves how they can adapt their current innovation processes and capabilities for the specific context of EOI. This study helps managers of innovative firms who plan to engage in EOI, by offering an initial overview of relevant stakeholder co-creation capabilities and providing them with tangible processes and elements that they can adapt to their context. Furthermore, this research underlines the importance of relationship work, which managers should emphasise. Firms should be conscious of competing value-frames between diverse partners and should invest in external engagement processes to fully understand the different motivations and expectations each partner holds - on an organisational as well as personal ("human") level. Equally important, is the assimilation and reflection upon engagement experiences and the ability to continuously learn from them.

Moreover, firms should carefully consider who they select as their partners. The selection should not only be based on the synergetic complementarity of resources, but should also take into account a match in vision, core values, sustainability ambitions, and culture, which are manifested in the corporate identity of the organisation. Thus, it is suggested to thoroughly investigate the corporate identity of potential innovation partners in order to enable a good fit and fruitful relationship.

This study further shows that managers should be aware of the powerful role of the brand purpose within EOI processes. A strong and compelling brand purpose that is rooted in making a positive impact will not only attract the right partners to the firm's innovation network, but will also help to generate

internal commitment and guide external alignment. Consequently, the firm should clearly articulate and communicate their brand purpose internally as well as externally. Pursuing a radical environmental flagship project can in turn activate the brand purpose and make it more tangible for the employees, consumers and other stakeholders. It enables companies to "walk the talk" and inspire increased openness to environmental ideas among employees.

Moreover, this study shows that when building an innovation network for radical environmental innovation, it should be centered around a higher purpose that unites different value-frames and encourages close-knit collaboration through meaning. In other words, it is not only crucial to articulate the higher purpose within the innovation network, but also to include it in every aspect and process of the project. This can be done through metaphors and naming the community "pioneering community" and referring to each partner as "pioneer".

9.7 General Limitations and Future Research

There are certain limitations of the thesis that should be addressed in order to provide a correct apprehension of the research. All in all, six interviews were conducted from the innovation network: four from Carlsberg and two from external partners (DTU and Paboco). The key employees involved in the Green Fibre Bottle project from Carlsberg were interviewed, although this research could have benefited from additional qualitative interviews from the external perspective. This was the original intention, however, the data collection was conducted during Covid-19 which affected our possibilities of gathering more external participants. Thus, future research should include more interviews, covering a more diverse range of actors, not only from the central organisation but also from its partners.

Moreover, including other internal Carlsberg employees, who were not directly involved in the Green Fibre Bottle project, could have been valuable in order to understand how the Green Fibre Bottle project affected them, their motivations and their actions, and thus encouraged internal engagement. Furthermore, this thesis was not able to include perspectives from the most recent partners of the Paper Bottle Community (Coca-Cola, The Absolut Company and L'Oreal), which could have led to a more profound comprehension of the innovation ecosystem and the underlying processes of the stakeholder co-creation capabilities within the new ecosystem. The community was established in the end of 2019 and since then only two meetings have taken place. As they are still in the process of setting up the collaboration between the different partners, it was not made a focus point of this study. However, it presents a valuable direction for future research once the Paper Bottle Community has reached a more mature stage.

Some of the respondents have been involved in the project for a longer time, and more intensely than others, and hence may have expressed more knowledge about the innovation project. Nonetheless, all interviewees have been equally evaluated. It is also relevant to mention the potential different power-dynamics within the innovation network; Paboco as a small technology company and DTU as an research institution versus Carlsberg as a global organisation. Based on this, one could assume that the external partners (Paboco and DTU) were perhaps hesitant towards exemplifying situations which would describe the relationship with Carlsberg in a negative manner. Especially, considering that the collaboration between Paboco and Carlsberg is still ongoing. Moreover, confidentiality of the innovation, prohibited participants to provide the researchers with full details of the interaction between the partners. In line with this, meeting materials (e.g. powerpoint presentations) could not be shared, but would undoubtedly have been of great value to this research.

The developed conceptual framework within this research is based on the findings and discussions from the particular case of the Green Fibre Bottle of Carlsberg. Inevitably, this entails and necessitates further research to validate the framework by applying it to other cases of radical environmental innovation projects. It is notable that the framework views EOI from the perspective of an established global brand (organisation) and thus the application to medium-sized or small enterprises is questionable. Moreover, while this particular case study has looked at a radical environmental innovation, future work, might look at what capabilities, processes and structures are necessary for incremental environmental innovation and how that compares to the framework presented in this study. In addition, the role of the brand (purpose) and the human element within incremental innovation could be further explored.

While this study focuses in particular on the brand purpose and its role within EOI, future research could investigate the influence of other core identity elements such as brand promise, vision, and core values in open innovation processes. The developed Purpose Driven Core Identity Model (see figure 7, p. 31) and the adapted Corporate Brand Identity Matrix (see figure 8, p.31) could offer guidance for future research in this regard. As these models have been derived from literature, validation on multiple cases is needed.

10 Conclusion

This research aims to investigate (1) *What capabilities and underlying processes enable stakeholder co-creation in the context of environmental open innovation* and (2) *What part does the corporate brand identity of the centrally acting firm play in environmental open innovation*. The latter involves exploring how the corporate brand purpose can facilitate environmental open innovation and how it affects the stakeholder co-creation capabilities. The study takes a starting point by introducing a conceptual framework, which draws upon and summarises existing literature within the area of innovation theory, brand theory and brand & innovation theory. The initial conceptual framework presents stakeholder co-creation capabilities found to facilitate radical EOI processes and includes the role of the corporate brand purpose. In addition, the initial conceptual framework is further explored in relation to the case study of Carlsberg and its Green Fibre Bottle project, thus an organisational perspective is applied to the framework.

The findings generated from the analysis of qualitative interviews of key actors, resulted in a redefined conceptual framework illustrating co-creation capabilities and the role of the brand purpose in facilitating EOI. Five co-creation capabilities were identified and their microfoundations analysed in the context of the Green Fibre Bottle project. These capabilities are: 1) Networking Capability, 2) External Engagement Capability, 3) Internal Engagement Capability, 4) Value Framing Capability, and 5) Systemised Learning Capability.

The framework further illustrates seven different roles the brand purpose plays in EOI processes, namely, 1) inspiring action and change through meaning, 2) filter innovation ideas, 3) attracting innovation partners, 4) driving motivation through meaning, 5) guiding the alignment, 6) influencing the higher purpose and 7) as a commercialisation tool. Moreover, it was found that a strong brand purpose can enhance two of the EOI capabilities. In particular, its role in attracting innovation partners is seen enhancing the Networking Capability. The brand purpose also influences the value-framing capability by guiding the alignment between external and internal stakeholders.

Apart from the above, other significant findings emerged from the case study. Firstly, it was found that the power of a flagship environmental innovation, which is sparked and led by the brand purpose, activates and strengthens the organisation's purpose internally and externally. Secondly, this study identifies brand-led innovation as a holistic phenomena manifested within the entire organisation, rather than solely within the branding-team. Thirdly, this research finds that the management of EOI processes and capabilities should incorporate both functional as well as meaning and human elements. Centering the engagement around purpose (meaning element) and considering the individual motivations, beliefs

and values (human element) will allow to harness knowledge and competence synergies between different partners.

In conclusion, this research provides insights into five co-creation capabilities, including micro-foundations, which prove to be essential in enabling EOI processes. Moreover, this thesis takes on a view that the corporate brand identity, specifically the brand purpose plays a crucial role in EOI. Seven brand roles have proven to facilitate the EOI processes, in which two of them have been found to be influencing the co-creation capabilities.

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12 Appendices

Table of Appendices

Appendix 1: Overview of Stakeholder Co-creation Capabilities and their Microfoundations in the EOI Context

Capability & Definition		Micro foundations – underlying processes, structures, elements	Key references
Networking Capability	A firm's ability to attract external actors to be engaged in a project (build [recruit potential partners] and grow an innovation network).	• Communicating consistently about innovation partner selection criteria and about the types of collaboration partners needed • Engaging in networking opportunities within a diverse range of external actors (e.g. industry roundtables, conferences)	Kazardi et al. (2016); Behnam et al. (2018)
Competence Mapping	A firm's ability to produce an explicit overview of the competencies of external entities	• Regularly conducting explorative meetings with partners/stakeholders • Documenting stakeholder competency assessments explicitly • Disseminating stakeholder competency assessments internally • Being able to evaluate types of stakeholders systemically and to select then appropriately when complementary resources are integrated	Kazadi et al. (2016); Behnam et al. (2018)
Relational Capability	A firm's ability to manage its network by managing the different relationships (with a comprehensive set of entities/individuals)	• Investing in the build-up of stakeholder relationships • Engaging in trust-building activities • Engaging in goal identification exercises • Assigning key contacts within the firm (gatekeepers) //Having dedicated team members for relationship management issues (i.e., understanding the nature of collaboration and compatibility of partners) • Establishing shared visions/goals, and effectively distributing information and new insights/perspectives) • Having shared experiences and a history of collaboration • Facilitating smooth & continuous communication	Kazardi et al. (2016)
Desorptive Capability	The ability to select, engage, empower, and align relevant internal actors to external actors in a project	• Effectively selecting the relevant/competent and internal departments/teams for a project with external actors • Systematically empowering employees for enhanced commitment to collaborate with external actors (e.g., through systematically internally sharing information gained from external actors • Hiring expert employees for aligning human resources and projects with external actors, assigning boundary people who transfer information between organisational groups to align groups in terms of their objectives, languages, time frames and norms in cross-functional teams	Behnam et al. (2018)
External Integrative	Capabilities that relate directly to the relationship with external stakeholders	**Building bridges -** Ability to build bridges between diverse stakeholder groups • Appointing external organisations/knowledge institutions/supply-chain partners/governments or internal individuals/advisory boards to act as intermediaries (strategic bridges) between stakeholder groups **Developing engagement processes** – Ability to develop processes that inspire continuous cooperation & trust • Schedule regular interaction, characterized by direct, open, non-hierarchical dialog that allows for diverse view points and inspires trust and transparency **Achieving alignment:** Ability to align goals of cross-functional and inter-organisational project teams • Creating a shared vision • Identifying overlapping benefits by sharing experiences • Using cooperative information systems • Selecting the right individuals	Watson et al. (2018); Verona (1999)
Internal Integrative	*Capabilities that relate to the sharing and use of the acquired information*	**Engaging employees:** Ability to engage the right employees internally • Composing teams with the right internal functions	Watson et al. (2018)

	across groups of internal stakeholders	• Creating support by leaders and top-management • Giving employees space & time to elaborate on their environmental ideas **Using environmental data:** Ability to gather and share environmental information internally • Sharing environmental information using tools such as web-platforms, databases or environmental management systems (EMS) **Integrating sustainability:** Ability to integrate environmental sustainability within the organisation and across different functions • Integrating environmental criteria into cross-functional process (strategy development, product development, marketing, performance management)	
Value – framing	*Ability to manage different value-frames of external and internal stakeholders*	**Thinking systemically/thinking purposefully** • Setting a purpose for environmental innovation that is greater than the individual agendas or internal functions and focuses on issues larger than one organisation **Empathizing** • Create time & space for open, honest and vulnerable dialogue that allows to reflect on differences and similarities • Listening openly without applying filters **Hybridizing** • Reconcile competing logics of internal and external stakeholders • Co-creating solution that unite value-frames (value-frame fusions) by collaboratively redefining what is valued and expected on individual and collective bases.	Watson et al. (2018)
Systemised Learning	Ability to learn from the stakeholder engagement activities and manage that knowledge on an organisational level	**Accumulating experiences** • Process of gathering experiences from individuals in the firm, previous innovation projects or by benchmarking activities of competitors and aggregating it on an organisational level **Embedding integrative routines** • Embed learning from these experiences across the organisations by reflecting on what worked and what didn't work • Developing online resources like case-studies and best practice guides relating to sustainability initiatives **Organizing for continuous learning** • Ability to achieve an organisational context in which the structure, the resources and culture are open and flexible enough to continuously adapt external relationships based on the previous learnings. • E.g. reconfiguring the supply chain • Eg. Changing the organisational structure to a non-hierarchical and flexible one that facilitates new ideas, supports experimentation and the seeking of opportunities at the business/environment interface	Watson et al. (2018)

Appendix 2: Overview of the Sample and their Key Responsibilities in the Project

Name	Organisation	Position	Responsibility in relation to the GFB so far in the innovation process
Julian Marsili	Carlsberg	Global Brand Director	A part of the communication and deciding on the visual identity of the GFB.
*Sam Wainwright	Carlsberg	Global Brand PR Manager	Responsible for all PR related activities in relation to the GFB.
*Håkon Langen	Carlsberg	Packaging Innovation Director	In charge of the packaging innovation and strategic aspects of the GFB.
*Simon Boas Hoffmeyer	Carlsberg	Senior Director, Sustainability & Communications	Responsible for all PR related activities, sustainable strategic aspects and tracking progress of the GFB.
*Michael Michelsen	Paboco ecoXpac	Business Development Manager Global Business Manager	Responsible for managing and orchestrating the pioneering community.
Mattia Didone	DTU ecoXpac	PhD student (Mechanical Engineer) R&D Manager	Was involved to improve and optimise the technology and manufacturing process of the GFB.
*Project Champions			

Appendix 3: Interview Guides

Julian Marsili – Global Brand Director Carlsberg

Role in Green Fibre Bottle project

1) For how long have you been employed at Carlsberg and what is your current position at Carlsberg?
2) What is your relationship to the Green Fibre Bottle project? How were you involved in the project?
    a) What was your role in this particular project?
    b) Which meetings did you join?
    c) Who were the main partners you interacted with?

The Green Fibre Bottle Project

3) What is the purpose for the Green Fibre Bottle project?
4) How would you describe the outcome of the Green Fibre Bottle for Carlsberg so far? What benefits did the project generate for Carlsberg and its brand?
5) In your eyes, how does the Green Fibre Bottle innovation fit in with Carlsberg's overall strategy and your brand strategy?
6) What would you say is the role of Carlsberg's brand purpose in these innovation projects?

Brand & Innovation Relationship

7) How would you describe the relationship between the brand and Carlsberg's innovation activities?
8) Have there been instances where input from the branding team inspired or guided the innovation processes for the Green Fibre Bottle project? Explain how.
9) What is the relationship between innovation teams and branding teams?
    a) How much do you work together with innovation departments?
    b) What and how do you communicate with each other?
    c) At what stage of the innovation process is the branding team involved?

Brand & Innovation Network

10) Could you tell us about a situation when Carlsberg's brand purpose/vision/values were mentioned to external innovation partners like the DTU and Paboco and why
11) How would you describe the role of the brand and in particular the brand purpose when collaborating with external partners?

Branding & Purpose

12) How would you describe Carlsberg's brand identity?
13) What is the core of Carlsberg's brand identity in your opinion?
14) How do you define the concept of purpose for Carlsberg?
15) What is Carlsberg's brand purpose, vision and promise? And how are they related?
16) How do you communicate the brand purpose internally & externally?
17) What do you think are the challenges in fulfilling the brand purpose?
18) How does Carlsberg's brand purpose fit with its innovation projects you know about?

Closing

19) Is there anything else you would like to add?

Sam Wainwright – Global Brand PR Manager

Håkon Langen - Packaging Innovation Director

Simon Boas Hoffmeyer - Senior Director, Sustainability & Communications

Role in Fibre Bottle Project

1) For how long have you been employed at Carlsberg and what is your current position?
2) What are your key responsibilities?
3) What is your relationship to the Green Fibre Bottle project?
   a) When did you get involved?
   b) What was your role in this particular project?
   c) Who were the main partners you interacted with?

Overview of the innovation process

4) Can you give me the story of the Green Fibre bottle innovation process?
   a) How was the project initiated?
   b) Where did the idea come from?
   c) Why was the Green Fibre Bottle selected as a promising project?
5) Can you explain the current status of the innovation?

Expectations & Stakeholder Co-creation capabilities & processes

6) What was the purpose of the Green Fibre Bottle project? Why did Carlsberg initiate this project?
   a) How would you describe the purpose and the shared vision of this project?
   b) What are/were the expectations towards the project?
7) Carlsberg appears to cooperate with external stakeholders in the Green Fibre Bottle Project.
   a) Can you tell us why you involved external stakeholders?
   b) What were the challenges in finding the right partners?
   c) When external partners joined where there any divergent ideas and expectations for the Green Fibre Bottle project between Carlsberg and the innovation partners?
   d) What did you do to manage conflicting expectations/goals/ideas across the different organisations?
   e) What role did the higher purpose of the project play in aligning the teams?
8) Let's focus on the collaboration between you and your innovation partners.
   a) What worked particularly well?
   b) and what did not work at all?
9) In your opinion what were the critical success factors for collaborating with the other partners?
10) How did you utilize the knowledge created within the network?
11) The relationships for the Green Fibre Bottle project must involve a lot of trust. How did you manage to continuously establish trust between you and your innovation partners?

Hurdles & Challenges

12) Could you describe the main challenges and hurdles in the project? How did you overcome them? Tell me about a period that was particularly hard?
13) Did you have to rethink or change current organisational structures, processes?

Roles in innovation network

14) What is Carlsberg's role in this innovation network?

15) Can you describe the roles of the other partners?
16) How did you agree on these roles?

Branding & Innovation

17) How does the Green Fibre Bottle project fit in with what Carlsberg wants to do strategically? And how does it fit with Carlsberg's identity, values?
18) Have you ever talked about Carlsberg's brand purpose with external innovation partners or internal innovation teams? If so when and why?
19) Could you tell us about a situation when the brand purpose and vision was mentioned to external innovation partners and why?
20) What was the relationship between your team, the branding team and the innovation team?
    a) How much do you work together?
    b) What and how do you communicate with each other?

Closing

21) How would you describe the outcome of this project for Carlsberg so far? What benefits did the project generate for Carlsberg?
22) Is there anything else you would like to add?

Interview guide 3

Michael Michelsen - Business Development Manager, Paboco

Mattia Didone - PhD Student, DTU

Personal Role in Fibre Bottle Project

1) For how long have you been employed at your company and what is your current position?
2) What is your relationship to the Fibre Bottle project?
    a) When did you get involved in the project?
    b) What was your role in this particular project?
    c) How long have you been working on the project now?
    d) Who were the main partners you interacted with?

Paboco's Role in the Fibre Bottle Project

3) How did Paboco emerge?
4) Why did you enter the collaboration?
5) What's Paboco's role in this innovation network in relation to the other partners?

Project Purpose & the role of the brand

6) What was the purpose of the Green Fibre bottle project?
7) How would you describe the shared vision of this project?
8) Did Carlsberg communicate its vision, strategy or purpose to you? When and how did Carlsberg do so?
9) How would you describe the role of the Carlsberg brand in driving and guiding the innovation process of the Green Fibre Bottle project? Can you give examples?

Stakeholder Co-Creation

10) How would you describe the overall innovation process of the Green Fibre Bottle project?
11) What value does Paboco add in the innovation process?
12) Which routines or structures did you establish to interact with the innovation partners on the Green Fibre Bottle?
    a) How did you share knowledge between the main innovation partners? Could you explain what kind of knowledge-sharing tools or other online platforms you used?
13) What would you say were the success factors for collaborating with these different stakeholders?
    a) What made it easy to collaborate with other project partners (Carlsberg included)?
14) What were the main challenges in the Green Fibre Bottle project?
    a) What made it hard to collaborate with other project partners (Carlsberg included)?
    b) How did you overcome these challenges?
15) The relationships for the Fibre bottle project must involve a lot of trust. How did you manage to establish trust-based collaboration?
16) How would you say your company culture is similar and how is it different from the cultures of your partners?
17) Can you tell us about a situation when you had competing interests and goals for the project with other innovation partners? How did you overcome these?

Closing

18) How would you describe the outcome of this project for Paboco so far? What benefits did the project generate for Carlsberg?
19) In summary, what do you believe are the key success factors for open innovation projects with a sustainability goal?
20) Is there anything else you would like to add?

Appendix 4: Example of Coding Scheme for Networking Capability

Illustrative Quotes	First Order Code	Categories
"But also our partners so the people who, invented the snap pack, or who were producers of packaging, when asked who should we go to they would ring Carlsberg first because they knew we are working on the Green Fibre Bottle?" - **Sam** ...	Attracting partners through sustainability reputation	
"So the reason for communicating back then was to get partners on board (…).We know we can't do this ourselves so we want partners to come on board, and to bring their expertise to the project, (…). That was the only reason we went public. And it worked. Lots of partners came on board." - **Sam** ...	Going public early to attract required competencies	
"Then we got our chairman of the board, Flemming Besenbacher. He then went to the World Economic Forum in Davos and asked us what he should share and if he could talk about the Green Fibre Bottle project. - **Hakon** …	Top-management expressing commitment publicly	Networking Capability
"So, one thing we learned from our collaboration with Carlsberg is, that alignment on CSR is pretty key for a project like this. You need to have the same vision and mindset. So of course, this was a predetermined factor in scouting the marketplace for who else might be of interest." - **Michael**		
"So, one thing we learned from our collaboration with Carlsberg is, that alignment on CSR is pretty key for a project like this. You need to have the same vision and mindset. So of course, this was a predetermined factor in scouting the marketplace for who else might be of interest." - **Michael**	Selection of partners not only based on competences but also on value-frames	
I think it goes back to the initial fit of both interests and capabilities. When ecoXpac first came to us, they were a tiny company with a vision. They had no money and they didn't have all the capabilities before the vision." - Simon ...		

Appendix 5: Interview Transcripts

Interview Simon Boas Hoffmeyer – Senior Director of Sustainability & Communications at Carlsberg

Simon 0:00
Hi.

Ebba 0:06
Hi Simon. This is Carolin my thesis partner, which way my screen is on camera.

Simon 0:12
Oh we are the glasses crew (laughing). Looking very smart.

Ebba 0:14
How are you?

Simon 0:19
Well besides it being a crazy world we're living in and it feeling like we're in a weird American disaster movie, things are actually okay but strange.

[connection broke off]

Ebba 1:29
Well, shall we get into this?

Simon 1:33
Let's do it.

Ebba 1:36
As you know we are very keen to learn from the Green Fibre Bottle project. So we are very interested in looking at the detailed processes and capabilities that enabled this project. We are going to start with some very basic questions about yourself and your role. I hope it is alright with you that we record this session?

Simon 1:54
Yeah, I just have another question. Is it a confidential project or is it open for everyone?

Ebba 2:01
It's going to be open for everyone.

Simon 2:07

Okay. Well then, it just means that you will get you the politically correct answer. But hey, that's up to you guys.

Ebba 2:20
I guess so. So, the first question. A very hard one. How long have you been employed at Carlsberg and what is your current position?

Simon 2:29
Third of January 2006. My current position is Senior Director for Sustainability and Communications at the Casper Group.

Ebba 2:45
What would you say are your key responsibilities?

Simon 2:48
Well, my key responsibility is the sustainability implementation across the group. Our corporate Social Media channels across the group as well as websites and also the brand PR angle. Overall, those are my responsibilities. With regards to the whole sustainability area, my responsibility is to set up strategy, to track progress, to advise top management, to push our colleagues across the business in a good way, from both the carrot and the stick angle, and also make sure that they basically start looking at things through the (sustainability) glasses that I look through. So that when they assess a project, they consider the environmental risk and see the sustainability opportunities Good colleagues might be focused on what they have traditionally been focused on. So for marketeers that might be another thing then for the guys who purchase the products. For many years I've tried to get my role rebranded as sustainability development, instead of just sustainability. Because basically I see my role as challenging the status quo and to get people out of their path dependency for the benefit of both Carlsberg and the planet. There you have it. Small responsibility (laughing). It's done easily (laughing). But that is basically how I look at my role. My job is to ensure that we transition towards a sustainable company.

Ebba 5:08
Diving a bit more into the Green Fibre project itself, what would you say is your relationship to the project? When did you also get involved in the project?

Simon 5:18
This project had a mother and a father. Well, this project actually had two fathers. Håkon and I were the two fathers of the project. Going back to the start. We had just done what is called a materiality assessment which is basically a way for sustainability professionals to quantify, and to decide which areas you should focus on as a company. So basically, you go in ask the external environment (NGO, stakeholders and media, anyone who's external to the company): "Which areas should we focus on as a company? Where do we have negative impact and where can we have a positive impact? And the other people you ask is the business (the senior leaders and colleagues. And hear you ask which areas have which impact on the business? For example, water. Which impact does water have on business with regards to water scarcity? Then the guys will say: "Well, it's pretty damn important because last year we had to bulk up water in tanks in order to keep production up, and by the way, the costs have gone up 200% over the last two to three years." So they will rate water as incredibly important. And our stakeholders are also likely to rate water as pretty damn important because 'no water, no beer'. So, this is the way to kind of quantify and assess which areas are more important than others. That is the way any sustainability department should do their work. They should make some choices, and thereby decide not to do a lot of things because if you focus on everything, then you focus on nothing. Basically, we've done this assessment and the whole area of circularity and packaging came out as one of the material issues, as we call it. Basically, that means it's situated in the upper-right hand corner of the two by two matrix with high importance to society and high importance to business as the two dimensions. And when we dug a little bit more into this area we saw that, especially on social media and online, people were very interested in biodegradability and bio-based products. And to be honest, we didn't really have a very strong angle on this. We do some cardboard boxes. But people don't look at cardboard boxes as something really interesting to talk about. It's not like they say: "We went down and bought a pack of beer and, guess what, it was a biodegradable cardboard box." (laughing). So, it was about finding out what makes people tick. And what we saw was that having a primary packaging, i.e. packaging that has direct contact to the beer itself, which was biodegradable was a huge area of interest to the outside world. And it just happened so that Håkon came to me and said that he had just had a meeting with a company, a small start-up from Northern Zealand, that had this vision of creating a bottle made from fibre that can hold beer. And I went like "wow", sometimes fate is just offering you small piece of gold. Obviously, I said to Håkon, from a sustainability, reputation, and consumer perspective, this is something we should pursue. We then went on a long process defining which type of fibre based biodegradable packaging we should pursue. We actually had a sprint. Back then we had a different strategy process where we had marathons and sprints. And Håkon and myself were setting up this strategic project on packaging. And within that project, we actually proposed different routes that we could go with this bio-based, biodegradable packaging. To cut the story short, we ended up saying that we believe most in the Green Fibre Bottle route where you have a primary packaging that looks like it is biodegradable. One of the other alternative routes was, for example, a bio-based biodegradable plastic polymer. But we didn't believe in that from a consumer attractiveness perspective because even though it's biodegradable and bio-based, it will still look like plastic. And we believe, that you gain most advantage from this by having a product that is not only bio-based and biodegradable but it also looks like it. It was very important to us to get that differentiation on the shelf because that's also where we believe that a potential competitive advantage could come from. Because yes, we are perfectly fine with making money while saving the world. I might as well, admit that. For us that is totally okay. So that's why we went down that route.

We have a lot of discussions with our ExCom (Executive Committee) on how we should approach it. At some point we were discussing whether we should buy some shares in this company so that we would be able to help them more and influence them also from an equity perspective. But we actually arrived at the conclusion that we're not a packaging company. Our core competency is to create beer, not to create packaging. So we decided to go down a different route, which was to make an external call for action to the outside world, in order to bring the right partners on board of the project. Because we could see that ecoXpac didn't have the equity, they didn't have the strength, and they didn't have the right capabilities to make this happen alone. Because one thing is to be able to create a 3D moulded structure made of fibre, but another thing is that you have the right barrier inside to separate the liquid from the barrier, or from the fibres. Another thing is to be able to create a machine that can actually produce millions of bottles a month. So we really needed to make a shout out for help. And this is where we really made something quite innovative, when looking back. It's not something you see very often, going public with an innovation like this. Because the traditional innovation process is that you lock up some very smart people in a room, potentially a supplier, potentially some PhDs or some materials experts. And then come out five years later and say look at what we have created. We got Flemming Besenbacher, our chairman of the board, to stand in Davos in a panel, which was on packaging, and say: "We are a beer producer but we actually would like to be able to sell products in fibre bottles." And then he took out this paper shell and said: "We would like to call upon suppliers, upon partners, start-ups, whoever is out there in the world, who can help us realize this." That meant something to the world but also for Carlsberg, internally.

The feedback was just absolutely amazing. It was overwhelming, I must say. We did not expect it. The positive sentiment was just incredible. If we speed up the process a little bit. What happened after was that BillerudKorsnäs came on board, which is a Swedish pulp and paper manufacturer. They basically went in and bought 10% of ecoXpac. And then they bought another 10% because they had a venture fund and they wanted to look at future development opportunities.

Later they then decided that they wanted to be majority. However, they needed skills on the barrier and the blow-moulding technology. And that's when ALPLA came in. So ALPLA and BillerudKorsnäs went together, bought a majority stake, and created a new company called Paboco. That is where we are today and that was the announcement we went out with in September. Now, there is the financial muscle and the capabilities behind the project to really scale it. And, of course, part of what made the announcement in September, was that we also opened up for other brands so that Coca-Cola, L'Oréal and Absolut also joined us.

Again to get scale and to get more customers on board in order to make this happen.

So the simple answer to where this project came from is, Håkon and I. Yeah, that would have been the short answer.

Ebba 15:16
When you talked about these partners that came to you and approached you. What were the requirements that you were looking for in these partners for them to become a part of this?

Simon 15:30
Yes. I mean they first of all had to contribute. We've had a lot of partners who came in saying that they could help us, but it then turned out they couldn't; or that whatever they were proposing wasn't feasible. They were simply just gold-diggers who were trying to get a piece of the publicity. Obviously, there were a lot of companies out there who were quite envious also about the coverage we got for basically saying, "we don't have this figured out yet, but we wanted to." And of course that was also a great risk. We could have gotten a big backlash with people saying yeah that what we are doing is just greenwashing because you don't have it. But we told the story in the right way. We have never oversold it and we've always said it was a research project that was work in progress. And then we have received close to zero negative sentiment on this. Which is a testament to many things. First, we are very strict on what we communicate and when we communicate it. It's also owed to the fact that when we as Carlsberg say something people really listen, and they also trust it because we have quite a strong reputation for being scientists, for being good people, for doing the right things. That also meant that, we could do this without negative backlash as well.

Carolin 17:05
Maybe just as a jumping into these different partners in the initial stage of getting them on board. What do you think are the challenges in starting this collaboration, working with these different people and organisations?

Simon 17:39

So when we look at the initial partnership, I think it is pretty clear that the partnership worked much better between ecoXpac and DTU, than actually us three as a whole. That was a little bit due to people issues. Because we have to remember that processes are made of people. So there were some things that got delayed because some of the PhDs went on sick-leave and weren't available so we got some delays in the project. But this is what happens in any project, right. It's not due to the actual content of the project or the Green Fibre Bottle. But that just set us back a little bit. For example, the whole arm of environmental assessment was never really concluded from the DTU side. That's also okay because doing environmental assessments in the stage zero and stage one of an innovation project like this is incredibly difficult. Because so many things will be different when you reach scale, that it's almost impossible to come up with any quantified environmental impact assessment that you can trust right. But what we did need was kind of a 80/20 assessment of what the benefits of this product would be, once it's finished. For instance, this would be five CO2 equivalence for one produced beer. There were so many unknowns. I think, especially in the beginning, so the first 1,5 to 2 years of the DTU, ecoXpac, Carlsberg era, we had a lot of interaction and we sculpted the project together. But after that period, we then went into each of the work streams and did our own thing. For example, our mechanical engineer Matteo who worked on the 3D moulded structure, he almost lived in ecoXpac in Northern Zealand working with these guys on the technical side. So yes, we just went a little bit more into different work streams.

Carolin 20:12
In this initial collaboration, did you have any like specific routines like meetings or did you do anything online between the partners? Do you have concrete examples of how you communicated and exchanged knowledge?

Simon 20:28
Yes. We would have a joint meetings where all of us we would meet. So, I think we had three or four of those meetings. Once with DTU, once with ecoXpac, once with Carlsberg. And I've had a lot of contact to the initial PhD working on the environmental assessment, Ellen Brilhuis-Meijer. We worked on scoping that out with regards to which types of assessments we want and what is relevant. And Håkon had a lot of interaction individually with the whole technical work stream, for example, the closure part. I think it is traditional project management really. Just because you have different partners, doesn't mean that you need a special operating model as such. However, in the beginning of the project, it's more about ensuring that everybody is on the same page as to what the vision is and what we do. And then it's basically run as a traditional project. You have different work streams, you have different participants, different amount of time dedicated to it, and then you do it like that. It's not rocket science just because you're a three-party initiative, rather than being just between two people. It's all about aligning on the vision in the beginning.

Ebba 21:50
Do you think it was a challenge to align with the vision and the purpose of this project?

Simon 21:57
No, I don't think it was. You could say, the first three years, I was adamant that we would never put any type of prototype bottle in the hands of consumers, until it was fully biodegradable and bio-based. Through the process it became clear to us that we would not be able to make the full jump in one go. You learn as you go. And specifically, the barrier challenge of creating a barrier that is fully bio-based, and fully biodegradable is simply something nobody has cracked globally. So we knew that we couldn't just solve it with the snap of a hand. We knew we needed time and competent partners. That's also why, personally, I was a big obstacle to putting a prototype out there that was not fully bio-based and biodegradable. But I was convinced by the colleagues that work within innovation that we needed to probe and learn. So, for example, we would test the version with the PEF barrier, which is bio-based but not biodegradable, and we would test a version with recycled PET, simply to get some learnings, to see how it works, to see how the fibre material reacts with the barrier, and to also see how consumers will react if we, for instance, put out 10,000 bottles at a certain event. So we needed that to get some learnings and accept that it's not perfect from day one. In the past, that's the bit that I've been fairly uncompromising on. Also because what I've learned from experience is that if you lower your ambition level early in the project, the ambition will proportionally go down. I also see it as my role to some kind of compass in saying what we need to do. And if it takes 2,3,4, 5 or 10 years, I don't care. This is where the end-goal is, and that's where I want to end up.

Carolin 24:26
Super interesting. Thanks for elaborating on that. You mentioned that it is essential to align on a vision and that you have been very uncompromising on that. Can you elaborate on the initial vision and maybe how it has changed across the project?

Simon 24:49

The vision has not changed. The vision is still to create the world's first fully bio-based and biodegradable beer bottle. That has not changed an inch. What has changed are the milestones on the way there.

Ebba 25:09
We have been talking a little bit about the challenges when collaborating with these external partners. So, in your opinion, what would you say enabled you to collaborate with these partners successfully? What are the success factors throughout this process that enabled you to move forward in the project?

Simon 25:36
I think it goes back to the initial fit of both interests and capabilities. When ecoXpac first came to us, they were a tiny company with a vision of a paper-based, more sustainable packaging solution. They had no money and they didn't have all the capabilities they needed, and they didn't have any customers. So what Håkon and I were able to bring to the project was a whole lot of skill on sustainability, knowledge on environmental assessment, and on technical feasibility in terms of what it actually requires for a beer to be in such a fibre bottle. It also means that ecoXpac got a customer (Carlsberg) which is pretty damn important to them. When you look at it like that it was a very, very good fit because we had and still have overlapping interests and a good fit of capabilities. And on a personal level, we shared very similar beliefs about how we see the future and how we think about sustainability. So that created a solid basis which enabled a good relationship. One of the other things that played a big role were interpersonal relationships. Since the beginning Håkon and I have had a very open and very direct relationship with the ecoXpac company since the beginning, both with the CEOs and with the project managers. That this is something that is difficult to quantify in the traditional sense, but I think the interpersonal relationships, and the social capital and the trust that we built were so important. So whenever we were facing problems, we treated it as a team and we didn't start shooting at each other with unconstructive feedback. We always kept it very focused on the vision and we always knew that people were doing their best. So when they came to us and said, "Oh, by the way, regarding the recycled PT barrier that you requested to be transparent, because that's better for recyclability, the only recycled PT we can get for launch is green." They came in said that two days before the launch and that was not so great (laughing) because from a sustainability perspective transparent polymer is much better because it can be recycled into many more things. So I didn't want green PT in my Green Fibre Bottle (laughing). But hey, I also knew that ecoXpac didn't do it to sabotage anything, it was just because that was the only thing which was possible at that moment. When you work towards developing a break-through innovation, I think that's just something you have to accept. In a project like this, there are so many uncertainties and you just have to accept that people are doing their best with what they have.

Carolin 28:46
That's very interesting. Implicitly you have kind of talked about it a little bit, but what where the different roles the partners took on within the project?

Simon 29:07
You can say that without the 3D fiber-moulding technology from ecoXpac there is no project. So in that sense, we were the support for everything else. But, but in a project like this it's impossible to say that one thing is more important than the other. Because without us joining they wouldn't have gotten the initial grant from the Innovation Fund Denmark. They got a grant because in their project description it not only said what they wanted to do from a technical perspective, but they could also mentioned that they have Carlsberg on board who is willing to contribute with "X,YZ". So we were all part of why it was a success, not one of us alone. Without Håkon's knowledge on packaging and on the rigidity of barriers, and shelf-lives and so on, they would never have been able to get to where they are. But without ecoXpac's machine that is printing the 3D moulded fibres, we wouldn't have been able to get anywhere. Without BillerudKorsnäs' new pulp formula, we wouldn't have been able to get anywhere. In a breakthrough research project like this, it's everything and everyone that needs to come together. Even more than in other projects you have to accept that uncertainty is a daily fact. So you also have to not be frustrated when things are not progressing in a linear way.

Ebba 30:53
You mentioned this community earlier, with Coca-Cola, L'Oréal and Absolute. How do you as a community share knowledge between each other? For instance, do you have a certain platform that you share this knowledge on?

Simon 31:12
That's very, very interesting because, until September it was us, ecoXpac, DTU and BillerudKorsnäs. And we had a very good relationship with all the parties. And then these other companies joined and the first time actually all of us met was in Sweden at BillerudKorsnäs. Then two months later we were all meeting up at Carlsberg in Denmark doing the announcement. We didn't know at that point in time, and we still do not, how exactly the sharing of knowledge

will take place between the partners and how exactly we will collaborate. We actually met Absolut two months ago to find out. And we actually have a follow-up call next week about what the results of the meeting were. As I also said at this meeting, before we can really start talking about a lot of collaboration between the different companies, we need to have some progress. And the company is still working on creating the next, the bigger, machine that can create more bottles. Until that point is reached, it's difficult to see how we can work together as brands because we need something to work on (laughing).

I mean all of the others, that just joined, benefit from all the work that we have done with ecoXpac since day one. Because all that intrinsic knowledge basically lies within ecoXpac, or Paboco now, and that's perfectly fine. It's safe to say that, if we would look at this journey from a return on investment perspective, the image and marketing value that we have generated through the Green Fibre Bottle project, has outweighed the actual costs multiple times. So it's in our founders spirit that we do not sit down and keep this to ourselves. That's not who we are at Carlsberg. But we're still trying to find out how we can work together. One area where we could work together, for example, would be consumer testing of the product. Imagine if Coca-Cola, Absolut, and Carlsberg would join forces and then do a giant study where we introduce consumers to a Coca-Cola in a Green Fibre Bottle, a vodka in a Fibre Bottle, and a beer in a Fibre Bottle. So co-funding market studies could be an area where we could collaborate easily. An area where we have already decided to collaborate on, is communication and the definition of the environmental aspects of the product. We don't want any partner to talk about this project as something that could be viewed greenwashing. So we're creating a very clear messaging hierarchy about the project and about the traits of the final bottles so that the total community can't be accused of greenwashing if someone is suddenly claiming this and that. So yes, the collaboration has already been kicked off in terms of defining the "Do's and Don'ts" and the guidelines for how we want everyone to talk about the collaboration, and so on. In that sense, the collaboration has already started.

Ebba 35:12
As you said, it's within Carlsberg's philosophy and kind of a core of the brand that you share your knowledge with other people and brands, even if they competitors almost. Do you think that that will be a challenge for Coca-Cola and L'Oréal because this aspect of sharing is not routed within their philosophy compared to Carlsberg?

Simon 35:35
They are the ones that the information has been shared with. So at the moment they can't really complain (laughing). I don't necessarily see at as an issue at this stage of the project. All of us recognize that we need scale behind Paboco in order for this to happen. Therefore, that's ok.

Ebba 36:07
Do you believe, at this point, that you have a shared vision, all of you together with the new partners?

Simon 36:15
I think the vision is still to create fibre-based, bio-based packaging. A lot of us have recently been discussing the whole biodegradable area, because people have misunderstood a little bit what we communicated in the beginning. When we talk about bio-degradability we don't want people to through it in nature, right. We also stated very clearly that the Green Fibre Bottle still needs to be collected. Yes, it is biodegradable in a sense that when you throw it in nature it is likely to be composted under the right circumstances, but it still needs to be collected. I think also the sentiment around bio-degradability has changed a lot since 2015. The focus now lies more on recycling and the traditional circular economy, where a product circles, compared to the bio-degradable circular economy, where you have a material that can degrade and create new fertile soil. That circle isn't as perfected as the typical cycle with aluminium, glass, and plastic. Therefore, there is a general fear in the community that we confuse people with the word bio-degradable. Because people will then think that they can throw it anywhere. So we have also started to communicate bio-based much more to avoid confusion. What we are developing is a bio-based recyclable packaging that if it ends up in the wrong place, is not harming nature. That's the kind of messaging hierarchy we go for right now. We have been discussing that a lot. It hasn't changed anything in terms of the project, but it's changed something in terms of the wording we used to describe where we want to go.

Carolin 38:26
Very interesting. I think I have one last question regarding the role of the brand in this project. You already mentioned that it's within Carlsberg's philosophy to share. So what role did the brand, in particular the brand purpose of Carlsberg play in this innovation project?

Simon 38:51

To be honest, we started the Green Fibre Bottle project as a corporate project. So, it wasn't necessary brand-led. That also goes for the "Greener Green Ink", for the recycled shrink-wrap package, for Snap Pack. So basically, that is how we usually do it with sustainability and innovation. We develop the stuff that we think is right and good, and then we go looking for the customer. Internally for us that's the brands. And it really coincided with the whole new Carlsberg brand relaunch which were able to also influence a lot. When Julian came to us and said "If I want to create a new tonality for the brand which in the essence describes that we want to make everything better, what should I do?" And then I would say that, "I have a couple of ideas. You could use recycled shrink-wrap, you can use Snap Pack, you can make the Green Fibre Bottle, and you can use Greener Green Inks. So basically, the Carlsberg brand came at a good time where we had a whole lot of sustainable innovations under the shelf. So it started out from being something that is developed on a corporate level and the brand taps into. But I believe where we will go in the future is that the brand actually comes to us with, "We want to do something. Can you help us do it?".

Yes, I believe that brand-led innovation is the direction for the future. We have also had this quite enormous branding, marketing, and PR success with the whole launch of this "Pursuit for betterment". Something that would have been a very tiny thing. Carlsberg has made a new logo and they changed their colour slightly. That is how some people might see it. But if you sprinkle all of these amazing sustainability innovations over it then suddenly the relaunch became about packaging. It became something that is relevant. It was something that was in the Zeitgeist that then gave the power of sustainability to the brand communication team. That is what I am trying to get into the heads of all of our marketeers. Just spend 10-15% of your brand budget on sustainability and I promise you, you will get much bigger reach, you will get much more organic likes, shares, and feedback. And whether that then translates into purchasing behaviour, I think that's the same calculation as with any marketing. Just spend more money on actually doing sustainability, allow a little bit higher costs of goods sold, and you will get more attention. That's the new way of doing marketing. It's not above-the-line billboards. That's why it was amazing to have a brand that understood that and could become our playground for launching these initiatives and for doing corporate PR as well. When you google "betterment" and "Carlsberg", you will see how much attention this has gotten.

Ebba 42:40
So, for this Green Fibre Bottle Project, how much was the Carlsberg branding team involved in this process?

Simon 42:55
So they are involved. Of course, Julian has said that he is the lead-brand and that I could not start putting Tuborg on it. They are involved in everything that relates to the visual identity and the design. So during the design process with regards to shape and size of the bottle, of course there are some technical limitations, but we have made sure that it was consistent with the whole new look and feel of Carlsberg. Whenever we've had communication that would include the product, then the branding team has been fully involved. And going forward, when the project moves from being a more technical to being more consumer-oriented, the branding team will be hugely involved; for example, with all the events, where we will trial it, the tonality, and so on. But that's also the stage where we won't only have the marketers and brand guys on board, but also the sales side. So the on- and off-trade, depending on where we will trial it and deciding on which customer has shown a particular interest in showcasing it. So the next level, once we move out of the gate 1 and gate 2 and move into that project phase, other people will be much more involved.

Ebba 44:22
I just have one more question. How did you decide on the specific partners, L'Oréal, Coca-Cola, Absolut? Who decided it and how come that just those particular companies came into this community.

Simon 44:46
To be very direct then, the conversations between the new companies was primarily done between BillerudKorsnäs and ecoXpac. But very early on BillerudKorsnäs and ecoXpac came to us and said: "Listen, we have this idea of getting more companies on board. How do you feel about that?". And we just said: " We have no problem with that. Of course, if you are planning of bringing in another beer company, we might need to set up some clear boundaries here.". And they assured us that they were not thinking of bringing in another beer company and that we would be the first one on beer. That's also part of the agreement. We have a right of first refusal. Once it is developed, we can say if we want to buy it or not and then they can sell it to anyone. So they asked whether we would be ok to bring more people in that fit with our production capability and with what we are trying to achieve and we said, "yes by all means, it's no problem". And then we co-developed it a little bit together and decided to do this properly and package it as a joint effort and not just as these bits and pieces. And we tried to get as much consistency into the project as possible. But it's also very important to stress, Carlsberg (including myself, Håkon and the other guys) does not decide as such upon the actions of ecoXpac, BillerudKorsnäs, ALPLA and Paboco. We have been a heavy, heavy influence on how the

project has developed and where it has gotten to. But we needn't and we shouldn't make decisions on whether they could play with L'Oréal and these other partners. But we did obviously see a very big interest in getting more scale and getting other companies on board to share the risk of the innovation but also to get more legitimacy into the project, and to just get the benefits of having others involved as well.

Ebba 47:21
Yeah. That's great. So I have two more questions. More on a personal level, what would you say does this project mean to you? What has motivated you to move forward?

Simon 47:43
I think what became very clear to me with the Green Fibre Bottle project and the attention we got, was that it's really, really good to have a flagship project to showcase what you are doing and what you are trying to do with regards to sustainability. Because nothing has communicated environmental responsibility to the general consumer and the general employee better than the Green Fibre Bottle project. People go like, "Wow, this is amazing! This is totally crazy". Some people are sceptical and say that it's never going to happen. Other people say, "Wow, I am so proud to be working in a company that is pushing the boundaries.". I think we have a wide array of different people in there, I mean we are 42.000 people. But for me personally, it has really shown the power of having a flagship project that is very close to what you do, your products. I when we are making the processes at the brewery more energy efficient, that's important, but it doesn't communicate our sustainability efforts as well as saying, "Here is a bottle made from fibres. Look at it. It's amazing!". It really was a strong realization that this flagship project could be very powerful for the general population, consumers, and employees. I think that to some extent the awareness we generated, internally and externally, with the Green Fibre Bottle project might have paved the way for a lot of the other projects we then did because we got attention. Then suddenly we could start having discussions on recycled content in PT bottles and in plastic shrink wrap. Also this was around the same time Håkon and I started to work on the Snap Pack as well. So basically, the Green Fibre Bottle and Snap Pack hat a very similar process where Håkon and I started out by championing it, believing in it, attending all meetings with suppliers, and keep funding it throughout the years until it reached the maturity of gate 2 where it really needed to get on the agenda of many other colleagues. Now, the Green Fibre Bottle is on gate 1 so we now need to start engaging supply-chain colleagues and all those a lot more and that's just the natural evolution of the project. That's definitely what it has meant for me personally.

Ebba 50:37
Do you have any other questions, Caro?

Carolin 50:40
No, I think that's it from my side. Maybe, do you know anyone who would be relevant to interview for our thesis as well? We have interviews scheduled with Paboco and DTU. Do you know anyone that would be relevant for us?

Simon 50:43
Have you spoken to Håkon?

Ebba 50:46
Yes, we have.

Simon 50:50
It might be interesting to interview the guys from ALPLA on how they got to know about the project. I don't actually know the exact story of how ALPLA came into the mix. But otherwise, I think you have the right people. I also think in these times people have a lot of other things on their minds. But you should also interview Julian about why he thinks the Fibre Bottle is awesome.

Ebba 52:19
We did (laughing). He said good stuff as well. It was very interesting.

Simon 52:32
So I have a meeting in 4 minutes so I will have to leave you guys. But good luck.

Ebba 52:36
Thank you so much. It was very valuable!

Interview with Håkon Langen - Packaging Innovation Director at Carlsberg

Ebba 0:03

I am not sure if you know exactly what we are researching about so I will give you a little short introduction to that. We are looking to learn from the Green Fibre Bottle innovation project as we think it's a really unique and successful project so far. In particular, we want to investigate the detailed processes and capabilities that helped to move this whole project forward. So we are going to can ask you a lot of questioning in relation to the process and I hope you're okay with that. And if there are any questions that you can't answer, just let us know. I hope it's fine that we record this.

Håkon 0:50

Yes, that's perfectly fine with me.

Ebba 0:58

Okay, so we're going to start with some basic questions. So the first one is for how long have you been employed at Carlsberg? And what is your current position and your key responsibilities?

Håkon 1:18

I have been at Carlsberg for 19 years (laughing). I know it's a long time. The first four years I was in Norway working with packaging at the time as well. And the remaining 15 years I have been within the area of packaging innovation in Copenhagen. So my title now is packaging innovation director and I am heading the packaging innovation team which is part of development. We are a mix of group development. Some are based in Copenhagen together with you, Ebba, and then some in Obernai, where our group development centre is located which is next to the big brewery.

Ebba 2:25

That's perfect. What would you say is your relationship to the Green Fibre Bottle project?

Håkon 2:33

I think we have a good relationship (laughing). It was me, they first contacted with the idea. Jesper Serve, the founder of ecoXpac and Martin Peterson which has been the CEO approached me. Now, they renamed the company to Paboco. Jesper and Martin came to me in summer 2014, actually, and shared their idea and or let's say their patent on making 3D molded paper bottles with a completely new technology. At that time, they called the technology 'Impulse-Drying Technology'. They were both coming from the paper industry or from a packaging background with paper and molded fibres. So they saw this technology as a very interesting production technology, both, to get a 3D molded shape and a bottle, and to produce a paper material with very little energy, compared to traditional old-scale which is using a lot of energy. So they came and shared their idea. And then I said that this is very interesting and that I would like to talk more about this, and we've planned another meeting and then they shared an offer with us. This was of course, before we had the 'Together Towards Zero' strategy but at that time we're working on a sustainable packaging strategy. Back then we had four main routes, let's say directions or innovation routes within packaging that we could take. We looked very long-term from, from 2014 to 2030, and looked how all the packaging costs would develop pricewise but also legislation-wise. We also looked at new materials were expected to come. So then we had four different groups. And then just before that I asked what it would take for us to be part of the Green Fibre Bottle and then they made us an offer. I'm not quite sure how confidential this is, but it is quite interesting for later how. So they came up with an offer and said that they would like five partners, and every partner would have to pay 20 million Danish Krone. So that's quite a high price given that there was still a lot of uncertainty. We wanted to take part in this, let's say, Simon and I, mainly.

And then I went to the executive community board meeting and presented all the four directions. And at the time, it was a tough time with Russia and the macro economy there. So, we didn't get as much money as compared to earlier and the conditions were bad. The exchange rate of the Russian Rouble were bad so ExCom (Executive Committee) said that they really liked all the directions, all the proposals we had, but some of them were very expensive and much more expensive than this one (the Green Fibre Bottle) even. So they said that we really liked the Green Fibre Bottle project but that we would not get the 20 million now, because of current economic situation in Russia. We then went back to Jesper and Martin and explained them the situation and assured them that we would like to be part of it in any way, if we can but we don't have the money now. But we discussed whether we can get the money together in some other way.

And then we asked for a Union funding and we straight away got 15 million Danish Krone, partly from the Innovation Fund Denmark and from Horizon 2020, a huge innovation fund within the European Union. So we got 15 million, and then we said let's start with this and see along the way how it goes.

At that stage we didn't want to get all the other partners on board. We decided that for now, the two of us together who both share the same high interest should focus on this. So we decided to continue with only us (Carlsberg & ecoXpac) and some other development partners, but not any other companies or brand owners.

Carolin 8:27
Can I maybe just jump into there. Can you elaborate on how you chose the different development partners when you initiated the project?

Håkon 9:10
I would say this is a continuous process because it is actually the first time that Carlsberg had done such a open process. And when I talked to many companies, they have not done it either. So it is a bit of a new way of doing it. First, we asked ourselves what kind of support we would need to develop the technology for the Green Fibre Bottle. And then we then decided to involve the DTU (Danish Technical University) so that we have the best experts from the university and the science-perspective. So we involved them and we paid them with the funding. We had four professors and three PHD students and some master students supporting us in this for three and a half years.

So that was the program there. And since we have this going on, we had a lot to do and therefore decided not to involve too many too early, because then the focus shifts to handling all the other partners, communicating with them, and steering them instead of actually doing the kind of technical development or basic development which we needed to do first.

And then we also involved the DTI Technology and Research Institute for some additional tests and consulting. And then we had a huge interest from many companies, including big brand owners like Nestle, Unilever, Coca-Cola, who asked to be part of the project. But we also got offers from other companies who really liked the idea and the concept so much that they kind of offered their help. Even private persons who were packaging specialists, which had similar ideas back then, were offering to work for free for us, because they really believed in this and its potential to change the entire industry for the better. So it was quite crazy how many people and organisations contacted us for the Green Fibre Bottle project. But of course, this happened a little bit later, because first we got the funding. Then we got our chairman of the board, Flemming Besenbacher. He then went to the World Economic Forum in Davos and asked us what he should share and if he could talk about the Green Fibre Bottle project. And then we were discussing whether it was the right timing because it was still very, very early in the project and we usually don't go out with these things that early. But we decided that this might be what we need in order to get the right attention, the right funding, and the right partners on board. It was new, but it was exciting and interesting, so we agreed to try this. So Flemming Besenbacher then went public with it at the World Economic Forum and then, of course, the project got a lot of attention. We then actually tried to hold some of the other big companies at a bit of a distance, because we had a lot of work to do.

Then we were investigating which partners we want to have, in particular, which technology partners we want, that can support us in developing the solution. There are many elements and work streams within the Green Fibre Bottle project, which represents a challenge in itself. It's not just about producing it. It is actually about the internal and external barrier, and the fibre pulp which you need to optimize. There are many, many elements to it.

Carolin 13:33
I have one question about what you just elaborated on. You said, in the beginning, in the starting phase, you had to work on communicating and working together before you could actually develop something. What were the main challenges in within this initial phase?

Håkon 14:01
Definitely one of the biggest challenges is to get interest and commitment when we're talking about very long-term solutions. Many employees internally are measured and have targets quarterly or yearly. Here we were actually looking at many years, maybe even a decade. Most people are simply not that used to thinking that long-term and are unsure if they want to commit to it as well because they don't know how the area will develop in next two to three years. Maybe, by then the area of packaging innovation has changed completely. To get the right level of commitment for such a long-term development project or innovation project was a big challenge.

Another thing. Some of us have been very passionate about and engaged in the project. To get other people to work on such an ambitious and quite huge project technology-wise, is a challenge, too.

Ebba 15:48
What do you think enabled you to move forward in that stage? What kind of factors do you think enabled you to overcome that challenge?

Håkon 16:04
I think that the main people, the core people, that were working on the project had a strong believe in the sustainability aspect of it. They really wanted to be contributing to making a change towards a more sustainable future. There was a lot of passion and I think that was a big driver of the project that helped us move forward. Because we were working a lot for free and put in extra work although we didn't get any credit from colleagues, really.

Carolin 16:41
You told us that you were working with these different partners like the DTU or the start-up ecoXpac. Can you just tell us what a meeting in that initial phase looked like? And can you elaborate on who was responsible for what in the innovation process? Were there any specific processes or routines for exchanging knowledge between the different partners?

Håkon 17:20
There were different levels. Overall, we had a steering committee for the innovation project of the Green Fibre Bottle. I believe in this committee there was a good foundation of trust. We (Carlsberg) has always been very open and shared their individual challenges along the way.

We had regular meetings with that committee. But we also had these regular meetings with Jesper and with Martin (from ecoXpac) where we were sharing our challenges. These meetings with Jesper and Martin were kind of informal. And of course, we had bigger workshops. We called them 'Green Fibre Bottle Days', where we met with all the different partners and people, probably 20 people or so working on the project and then sharing our progress. For instance, the people from DTU would present their research findings and what they are planning to do next.

Carolin 18:50
What did each of the partners contribute to the project at that stage?

Håkon 19:09
The university focused a lot on technical improvement and checking the basic of the production part. There was a lot of research done by the university in that field. ecoXpac did a lot of testing. They made the prototypes and evaluated them. So a lot of the technical work as well. They developed many prototypes and tested them and improved them.

And then we (Carlsberg) have steered the technical development when it comes to the bottle, the bottle design, and how we see the solutions and what our ambitions are. Because sometimes the other partners said this is too hard, but we would not compromise on the final ambition of the project. No way. We said we can compromise along the way, but we would not compromise on the final bottle that we want to achieve in the end. We have kept that very strict in a way.

And of course, we have played a big part with the external communication and the media.
With this extra awareness that we have created we have got extra funding as well. Those have been Carlsberg's roles.

Originally the owner of ecoXpac was Jesper and then the BillerudKorsnäs, the Swedish paper manufacturer, came in and brought a little bit more than 20% of ecoXpac. And then ALPLA came in and bought the majority so that together they approximately owned 90% of the company shares.

Of course, they invested a lot because they saw our commitment to the project. So the risk was lower for them. That's the story of moving from a small start-up with few people to a scale-up company including huge investments and different companies joining along the way.

Carolin 21:54

You already mentioned that you were very strict regarding the ambition. Were there any misalignments in terms of different goals and interests initially? And if so, how did they differ and how did you work towards alignment?

Håkon 22:42
Well, there was some misalignment at one point when BillerudKorsnäs came in, who owned around 20% of the shares. They got in and became stronger and stronger within ecoXpac and some of them thought that maybe we could do it a little bit easier and maybe not get the ultimate sustainable solution that we set out for. And there we had some arguments. We had to be quite strict there and put our foot down to let them know what Carlsberg would be a part of, and what not. Luckily, we had the backup of the guys from ecoXpac who were actually aligned with us.

But we also got in a very tricky situation because Jesper, the founder of ecoXpac, got cancer so he died less than two years ago. And then there had to be a change in the ownership. His sister actually got his shares but she was not an expert in moulding so she could have only continued as an owner, but she didn't really want to do that. BillerudKorsnäs also wanted to have a bigger share so they considered to buy all shares of ecoXpac. In that period, we also had difficult conversations and meetings. Very emotional meetings. It was very tough, but we always had the right values and feelings.

Ebba 24:00
What moved you forward in these tough times?

Håkon 24:08
Actually, it was strengthening and clarifying in terms of what we wanted to do. It is difficult to say, how it would have been if it hadn't happen. But it also was enforcing some clarifications and confirming the ambition and the road towards that ambition. And we also saw that we would need to take another step with bigger companies because there is such a huge investment needed.

Carolin 26:16
Now that the bigger brands have joined, I am talking about L'Oréal and Coca-Coca, are there any divergent interests and what are they? Can you elaborate on what the differences where in perception of the project and goals and so forth?

Håkon 26:27
This has been very interesting actually. We had a lot of discussions about who to involve and making sure that we would get the right partners in the right categories so that we would not be competing with each other. And we asked ourselves who we would need so that we can share the most, learn the most, and get the fastest progress with.

But when involving so many new partners there of course are difficulties. Especially, with regard to external communication. Internal communication was not so much of a problem. But aligning the timings and the content for the external communication with some of the big companies was difficult. Now it's clarified so we had to had extra meetings and discuss rules for how we communicate and how we inform each other. So that has been interesting (laughing).

Carolin 28:06
What would you say were the main differences between you and the other partners?

Håkon 28:22
The main difference between the partners was maybe that some of the brands were a bit fast with communicating about the project and the results without putting that much thought into the challenges and questions with media, for instance, whether their communication could be taken as green-washing. To be honest, this has been a little bit of a journey but it's fine. We needed to find the right borders and find out how to collaborate.

Carolin 29:03
Just tapping into the collaboration between you and the other partners? So you said you had meetings and you had 'Green Fibre Bottle Workshops'. Did you do anything else to share knowledge, for instance online platforms?

Håkon 29:24
We did it a bit more traditional. We had a lot of face-to-face meetings, small meetings, bigger meetings and workshops. We had a lot of technical development meetings. And lately, we've formalized the paper bottle community with

partners like Absolut and Coca-Cola. Since then we've had community meetings as well. We have those meetings every quarter.

Carolin 30:06
And what did you discuss throughout those meetings? What were the topics of these meetings?

Håkon 30:09
The first meeting was about setting up what the community is, what it's role is and discussing how we share and how we work together. The second one was in Copenhagen and mainly about external communications. How do we communicate externally and how do we inform each other. The next meeting will be in June about Sustainability. This will talk more about the technical side, the specific technological barrier development. Of course, during every meeting we have a general update on the current status, but we also have focus topics

Ebba 30:58
Speaking of this community, I guess since there is a lot of knowledge-sharing and transparency, it must involve a lot of trust. How would you describe the relationship towards the partners in terms of trust?

Håkon 31:39
In general, I think we have a good relationship with all partners that is built on trust. But I can say, that within Paboco, BillerudKorsnäs, ALPLA, Carlsberg and the other technical development partners we have very high trust. The relationship with L'Oréal, Coca-Cola and Absolut is still relatively new so we have to test that. But our take on this is, that we share everything that we can share, as much as possible, including all our learnings which could be useful for them with regard to technical learnings but also consumer insights. And we share until we see that that is not the right thing to do anymore, or that we have shared too much. But our rule is to share. It will be faster for us and faster for them and we will get better results.

Ebba 32:34
So Carlsberg is sharing a lot and it's kind of in their philosophy to do so. Do you think that the other partners within the community are sharing as much?

Håkon 32:47
Not yet. We have also been involved for many more years, so we probably have more to share at the moment. But I hope that the others will share more as well as they get more involved.

Ebba 33:14
Okay. Do you think that's a challenge at this point? Do you think it's going to evolve and get better?

Håkon 33:17
I think it's going to get better. It's not one of the biggest challenges but it is a challenge for sure. Especially, regarding what some companies are allowed to share. Big companies like Coca-Cola are, for instance, afraid of going out and making a stand on behalf of the entire company because Coca-Cola is a huge company. So it could be difficult in that sense. But I think the whole industry and society is changing towards being more open and sharing more. It's not as it was 10 years ago where everything was confidential, and you had to sign a bunch of agreements. We were spending so much more time on agreements instead of doing the innovation work.

Carolin 34:23
Cool. One question regarding the development process and the role of Carlsberg. So you said that you are sharing your knowledge and insights within packaging and around the consumer but do you part of the development process as well or is that something that is externalised to the other partners?

Håkon 34:43
Yeah, we do parts of the development as well and we do some of it together. We use our design agencies and theirs. We actually use different ones where we see the biggest benefit and the most skilled people within agencies.

So we brief our partners on making moulds and bottles and then they produce some bottles for us and we take those bottles and do technical tests on them. We examine how they perform. We make sure that they are not deforming (laughing). And we optimize them. We have several rounds of that because paper is not as strong as glass. So there have to be many rounds of modifying.

Carolin 35:35
Did you have to change your own innovation processes for this and what were the changes if there were any?

Håkon 35:52
Do you mean our innovation process or the technical process?

Carolin 36:04
Both.

Håkon 36:06
The innovation process has not changed that much. The basic stage gate model was still in place. But it definitely, in the beginning it took us longer.

Carolin 36:24
So I guess it took longer because it was so complex and there were many different people involved. Can you elaborate on what the changes were that you made to the stage gate model?

Håkon 36:48
One thing is that there is much more basic development and research that we did than in most of the other projects. The first three to four years we were mainly doing that. I think what is most different, is the openness. We are more open along the innovation process. Of course, that is challenging because we have to report to and update a lot of people.

Ebba 37:50
We have spoken a lot about the externa partners in this now and I was wondering, what the relationship between the branding team and the innovation team was, internally? Were you working together a lot? On which things did you align?

Håkon 38:10
I wouldn't say we were working together a lot. I mean this project is very long-term and it is a new packaging format for which we have used the Carlsberg brand in order to drive the project through brand communications. And of course, there is a good fit with the Green Fibre Bottle project. But in the long run the Green Fibre Bottle is not only going to be for the Carlsberg brand. The branding team has been involved in all the important decision, but they have not spent as much time on the project as other units. I hope that they feel like they are well involved in the important decision, for instance, the design decisions, the communication decisions. But I believe that they are happy and pleased about the process so far. Compared to Simon, Sam, myself and other external ones, they haven't had a lot of work with it so far though.

Ebba 39:38
So how would you describe the outcome of the project so far? Are there certain benefits that you would emphasise?

Håkon 39:49
I think the biggest benefit is the openness and the trust which has made the collaboration so much better. I think collaborating with the different partners has been fun and interesting and is definitely a benefit in itself. I also think the exposure we have gotten within different fields was a huge benefit for the Carlsberg brand and necessary for the project to evolve.

Carolin 40:32
That's great. Thank you. I just want to go back to the relationship between the innovation and the branding team. Did you arrange any meetings where both the teams talked about the Green Fibre Bottle together. And what kind of inputs did you get from the branding team that affected your innovation process? Can you tell us about a concrete meeting or talk with the branding team?

Håkon 40:59
Yes, of course we had shared meetings. However, they were mainly about the design because the Green Fibre Bottle looks strange compared to our main packaging formats. So we had discussions together, on how to best design the elements of the bottle. Also different people in the branding team were involved including all the different levels of

brand managers, like Jessica Spence (former Chief Commercial Officer), Russell Jones (Marketing Operations Director – Core Beer) and Julian (Global Director Carlsberg Brand). And also the design team was involved.
It hasn't been challenging. It has been a bit looser and more open. But I must say that we have been quite accepting that this is a totally new format and that it can't and also shouldn't look like a glass bottle, but instead be optimized for the new packaging.

But we also have discussions about the labels on the bottles. Instead of using labels, we are testing digital direct print which means printing directly on the bottle because it is actually paper which is a nice material to print on directly. But this is also under development. We are currently looking for a new partner to develop that because our previous one said that he had invested too much in this and would not continue investing.

Ebba 43:49
When you look for these new partners, would you say that you have certain requirements that need to be fulfilled in order to become one of your partners and what are they?

Håkon 43:55
Yes. We have certain requirements when we chose our partners, but they are not listed as such. We have, of course, some financial requirements. They don't necessarily need to be a big company, but they need to be healthy financially. Apart from that, who becomes a partner in this project is determined by our believe in their technology and our believe in their abilities to develop that technology for our bottle. And we are in this process now looking for long-term partners who are able to develop the technology to directly print on the bottle because our previous partner gave up their technology for this. This happens. They have invested millions of euros and now they can't invest more.

Carolin 45:14
Yeah, right. I think we are almost done now. Ebba what do you think?

Ebba 45:20
Yes, we are.

Carolin 44:21
Maybe one more question because you talked about the partners. Who do you think would be relevant people to approach in terms of the process and the collaboration for the Green Fibre Bottle? We will talk to Simon, to one PHD student from the DTU and with one guy from Paboco but are there any other people that you would recommend? Maybe also within your team?

Håkon 46:01
At least you should talk to someone at Paboco. There you should contact Michael Michelsen. He can do it or appoint someone.

Ebba 46:25
Yes, we have an interview scheduled with him.

Håkon 46:33
He knows all the processes. So that's very good.
Ebba 46:40
Okay. Thank you so much Håkon we really appreciate it!

Håkon 46:33
Of course, and let me know if you need any additional information. Bye

Ebba 0:36
Hi Julian, we're going to have a one-hour interview with you today. We are going talk to you about the Green Fibre Bottle project, but from a branding perspective. So in our view it was a very successful open innovation project and we want to learn from this project and therefore we're going to talk to you about it from a branding perspective. And we will record this as well. Is that fine with you?

Julian 1:46
Yes that's fine.

Ebba 1:54
So we're gonna start with some basic questions which you might have answered already in our previous conversations, but we need to record this here again.

Julian 2:03
Okay, maybe I don't have yet.

Ebba 2:09
So, for how long have you been employed at Carlsberg? And what is your current position as Carlsberg?

Julian 2:19
Easy, that one I know. I've been employed at Carlsberg for the last five years, and I have been the Global Brand Director over the last two years.

Ebba 2:33
What is your relationship to the fibre bottle project? How were you involved in this project?

Julian 2:40
So initially five years ago when I joined the company, the project was already in scope. It had already been presented and I was involved in the potential scoping and development under the alcohol free beers category. At the beginning one of the issues with the fibre bottle was that it could not protect contain alcohol. So that's why we were thinking that maybe we could launch it under an alcohol free beer proposition. But then, so that's why I was involved in that because I was doing alcohol free beer then of course, when I moved to Carlsberg, I was involved in it when we figured out how to put beer in it, and we decided that Carlsberg was the brand that was going to take the credit for it.

Ebba 3:39
How was that decision made? Or was that it was just to be for the Carlsberg brand and not the other brands?

Julian 3:45
Because, A it's the name on the door. What the Carlsberg brand does and the Carlsberg group does is well linked. The Carlsberg brand has over the last couple of years developed a clear and compelling strategy under what we call the tomorrow pillar. So with the Ny Dawn relaunch, all the sustainability improvements that we've brought to the packaging, basically made it a natural fit for the Carlsberg brand to be chosen over, for example, Tuborg, which is, you know, bigger in terms of volume but globally has a different positioning and therefore was not chosen for this particular launch. It doesn't mean that it's not going into Tuborg for the future.

Carolin 4:39
And which are the main partners that you interacted with within the green fire bottle project, internally as well as externally?

Julian 4:47
So internally, it was it's our packaging innovation team, our Director of Sustainability and the Corporate Affairs team and also Brand PR. These are the internal stakeholders with which we develop. And externally BillerudKorsnäse is one of them but there's a whole bunch of them so don't quote me on who they are just yet. I can give you their names later but there are many with them. I particularly collaborated with designers at the beginning. So we were trying to figure out what would be the best shape and what the design intention should be. Should it be a natural shape or should it be a as close as possible to the bottle shape? We decided to do it as close as possible to the bottle shape.

Ebba 5:42
Are those the internal people when you're talking about the design team?

Julian 5:45
The design team was an external team who were for actually designing the shape of the bottle.

Carolin 5:55
So do you think that the brand was most involved in these designing the shape and what the package should look like? Were you mainly working on the design part?

Julian 6:12
No, I mean, the overall brand appearance is the responsibility of the marketing departments which I lead so yes, we were responsible for that.

Ebba 6:27
Okay, so we're going to look a little bit more into the purpose of the green bottle. So the first question is, what is the purpose for the Green Fibre Bottle project? In your words.

Julian 6:40
I think it's coming from the company purpose which is 'Brewing for a better today and tomorrow'. It is matched with our philosophy of always striving for better simpler ideas which are looking at how to improve things from what is in the beer but also what is around the beer. Together with our ambitious sustainability targets we asked ourselves, in terms of packaging, what the most sustainable solution after a returnable bottle would be. So the most sustainable solution is a returnable bottle, it's a closed loop system, but not every market has it. And consumer behaviour is driven by two things: One is market composition. So do you have a market that's equipped to manage that? Two are the consumers. So do you have consumers that are, willing and able to return the bottles? And over the years we have seen returnable systems decline due to the fact consumers were just fed up with carrying around heavy weights and liked the scuffed bottles. Luckily this is reversing. But to intercept, Carlsberg asked itself what an alternative to the downward spiral could look like and what would be the most sustainable packaging? It would be one that if it were to finish in nature, that would be biodegradable, social and possible - not to incentivize that you should throw it in nature. So, that was the purpose of it. To see whether we can develop a packaging that is sustainable, and that matches with current consumer behaviour and also which moves ourselves and others towards better. That was the purpose.

Ebba 9:05
What would you say is the outcome so far from this project? Are there certain benefits to it?

Julian 9:12
I think one of them major outcomes of this project for me is, is similar to when you're in the car industry and you do a concept car, right? You want to go out and say that this is the best car I can make. So you present it at the Geneva festival, and you have a car show, and everyone is like "wow, it looks like something from the future and it drives driverless". I mean, driverless cars were present, 15 years ago, at that show, right? And people looked at it and knew it was something that cost a lot of money to make, and it's probably impossible to do. So I don't think that was the intention of the Green Fibre Bottle but that is what it ended up being . It opened the door to a lot of other sustainability improvements simply because that thought that action presented in that way at Davos by our chairman, got the world talking about it. And suddenly people realised, oh, this is interesting. This is not just a PR stunt. This is something that the world is interested in. We should be looking into this. And that opened a lot of doors for our packaging department to develop new improvements.

And one of the, let's say, legitimate sons of the Green Fibre Bottle is the snap pack. So, how did that get there? One, our packaging team had permission to look further, to go ahead. But also our partners so the people who, invented the snap pack, or who were producers of packaging, when asked who should we go to they would ring Carlsberg first because they knew we are working on the Green Fibre Bottle. So for example, the snap pack guy, is a guy who, who worked in a company that does packaging for cans. His boss told him that developing the glue was going to cost a lot of money so he could develop it only if he finds a client for it. So the first person he called was us, because he knew that we had that mindset. And that's how it then started.

So it's a very long answer to say, what the outcomes of the project were. As a company, it placed us as a sustainable player in the world, but it also changed internal beliefs and made us visible to external partners as a point of reference to go to if you have a sustainable solution. In my eyes, that's the hidden benefit of such a launch. And of course, the other side of it are the more monetary aspects. So we spend very little developing the idea and the prototype and we got a huge return of investment on media. I cannot even say the number. And that just continued to be amplified progressively.

When we announced to do the Green Fibre Bottle project, and we said it was going to take a lot of time. As we progressed, that timeline stretched, and whilst we were developing, we found out things like you cannot put alcohol in it, then we discovered that you would need a layer within the bottle, so then the question was how we are going to get to the layer…So it was very intuitive development that basically put us further away from the end goal but we continue to communicate where we were. And that interest on an update of the project has never really gone down nor has it been questioned because we simply have positioned this project as an ambition. And we've been giving updates on where we want to go. I think that approach has also strengthened the credibility that the Carlsberg Group has in that it only says things that the company is actually working on and thereby confirming that it's not just a PR stunt.

We actually communicated the project to the world in order to look for partners and more on the side this has turned out to be a great PR initiative. So we started to think that this could sell. But we've stayed true to that belief of "doing before saying".

Carolin 14:09
So do you think that the one of the main benefits from this project for the Carlsberg Group was adding that credibility to their worlds?

Julian 14:33
I think the main benefits have been, one, opening the eyes to the whole company, that the Green Fibre Bottle project was something that had a real market potential. Two, reaching the world of partners, and establishing that we were a company that was going in that direction, and three, giving us a underlying credibility to consumers around that.

But does every consumer know about it. No. But if consumers did find out it would be a substantiation of what the knows so far. So let's say, today a guy goes to Netto buys a snap pack and wants to read about it, and then he finds out that Carlsberg is also doing the Green Fibre Bottle. So it is something has reached consumer media but the awareness is still the zero percent. However, it has reached much more business and partner media.

So of course, it gives you an underlying credibility on which we can build now. But I wouldn't go as far to say that suddenly consumers who go to a supermarket and see Carlsberg now think that it is the most sustainable beer brand in the world because if snap pack or because of the Green Fibre Bottle project.

Ebba 16:16
I know you've touched upon this before, but could you maybe elaborate a little bit further on how you would say that the green fibre bottle fits with Carlsberg's overall strategy? You talked a little bit about the brand strategy before but not about the overall corporate strategy.

Julian 16:34
Under the Carlsberg brand strategy we have two growth programmes or pillars of activations. One is called "Better Beer Experiences", which is all about making beer and the experiences around it better. The other one is called the "Better tomorrow" pillar, which includes brand building activities that have the added benefit of being good for society on the planet. So it is stuff that we do to sell more beer that also has the added benefit to be good for society and the planet. So it substantiates why we are progressing, why we are a progressive brand and why we are continuously improving the way we brew your beer, the way we package our beer and so on.

But by all means, we are not on a mission to save our living planet like Patagonia is. We are continuously improving what WE do. Our philosophy is: Whilst we improve what we do, which is beer, we share our discoveries with the world and we make them openly accessible to everyone.

In the end, we aim to get consumers aware and build brand salience around what we stand for as a brand. So when you buy a Carlsberg beer, you do so because A, you like the taste, and B it is better than other brands because it does A, B and C. That's the kind of messaging hierarchy that we want to achieve. Of course, we believe that businesses need to

take a stand, need to make an impact, and be a force of growth as well as a force for good. In the end, if there is no world there's no beer. If there are no resources, we won't be able to produce beer. So investing in sustainable ideas and innovations is our way to stay in business.

Ebba 19:02
You mentioned that it's about sharing with the world. Do you think that's a part of the brand or the way you operate?

Julian 19:16
Yes, one of two reasons to believe are positioning is "Always burning for better beer" and the other one is "always sharing". Always sharing means not keeping discoveries for ourselves, making them continuously available. Snap pack is a technology which is available to all. Green & green is a technology that is available to all. Going back into the past, the purification of yeast, the pH scale, the work on enzymes has been openly shared. This is what the brand has been about for over 175 years.

Carolin 20:01
You also talked a bit about like the brand purpose in the very beginning and how it relates to the Green Fibre Bottle project and I would like to dive into that a bit more. So from your perspective, and from your experience with the project, what would you say, was the role of Carlsberg's brand purpose in this innovation project?

Julian 20:40
Yeah, I mean, if you have a good brand purpose, it should inspire action, it should drive motivations and activities and innovation. So you could say the brand purpose is at the core of the Green Fibre Bottle project.

The Carlsberg company brand purpose that we share with the world is "*Brewing for a better today and tomorrow*". The Carlsberg brand purpose that informs our activities and is not share with consumers is "Carlsberg moves us all to better". So through our Group we move everyone towards better and that is our purpose. It's the constant pursuit of better, which pushes us forward by constantly asking ourselves if we can make it better. And the answer is, "probably". So that is how the brand purpose and our whole positioning helps to amplify that.

Carolin 21:45
Yeah, that is really interesting because a lot of management literature has argued for this higher purpose and sustainable innovation, but there's not a lot of research on exactly what role the purpose and the brand play in these kind of innovation projects.

Julian 22:05
It's being called various ways. It's what you do to tell your story and to place your brand in people's mind. If I just plant a logo in the street and put this logo everywhere, but you don't know what that logo is, you'll forget about it. The minute you know what that logo stands for, you start remembering it. So you can call it purpose, positioning or the core idea but ultimately it's about what you strive for, how high you want to reach. So the literature is full of jargon. It's about what does your brand stand for and how do you want to demonstrate that. We at Carlsberg can say that we have been a purposeful company since the foundation. Because our founder was like that, and his son was like that. And yes, over the years, we have swayed to catch trends and to go into different directions, following also what the competition and the world of beer was doing. There was a moment in which we were, more open towards more entertainment-led communication and activations. It was all about being the most distributed beer in the world and to be in the hands of cool people and parties. However, that has become a sea of sameness. Everybody is doing the same thing. So now brands, in this era are looking back to what made them famous in the beginning. It's a bit of what we call the brand archaeology, going back to your roots and understanding what makes you different, what are your brand values and your personality and how do you bring them to life in a differentiated way. So to conclude, a clear compelling purpose, brand meaning and positioning will inspire sustainable innovations in the future. And this is what happened here with the Green Fibre Bottle project.

Carolin 24:24
Cool. Thank you so much for that elaboration. We also want to dive a bit more into the relationship that your branding team has with the innovation team. Could you outline the relationship between the two teams and the different processes that help you to exchange ideas and communicate.

Julian 24:51

Yeah, so again, having a clear brand positioning or purpose makes it also easy for an innovation team, or packaging innovation team, or even liquid innovation team to know what ideas could work well for Carlsberg. So we are their internal clients and we, the branding team then go to market and consumers who are our clients. Having that clear understanding helps. The relationship can be described as either they scan the world and come to us to show us what's available or we brief them specifically on what we believe is a clear need from a packaging innovation or liquid innovation perspective. That's the kind of relationship.

Carolin 25:35
Based on that, if you consider the entire innovation process, would you say that you're more part in the initial idea development stage of the innovation?

Julian 25:44
You meet in very different stages. So sometimes you meet in the very beginning. For example, the Green Fibre Bottle was us talking to innovation: "Guys, this is a line, we want something that disappears. What do you guys see?" And then we got to the Green Fibre Bottle which could be made of x, y, and z. But sometimes you start from there other side, the innovation side, where the innovation team askes us: "Can you show us what's available on the market with this?".

Carolin 26:15
Can you talk to us about a meeting that you had, with innovation team and your branding team, within the scope of the Green Fibre Bottle project. What was the outcome, how did you interact and what kind of information did you share?

Julian 26:40
Well, a successful innovation meeting process-wise is one where you have the right participants in the room, right level of diversity in terms of competences. For example, having packaging expert, liquid experts, sustainability expert, brand manager expert and a facilitator in the room.

Moreover, you need a clearly defined intention of what you want to achieve. You need a clear brand positioning. Then you get these people in the room and let them bring in their knowledge to ideate about what's possible in the future. So that's the sort of innovation-ideation session which produces the best results. Of course, those meetings are then followed up with concrete action plans, which define what the milestones are. Then there's a the classic stage gate innovation process that the Carlsberg company follows where you define what your mission at gate zero do you define what your mission is then you start working through the financials and so forth.

Ebba 28:08
On the other hand, adding to that would you say there were any main challenges during this process and how did you overcome those challenges?

Julian 28:18
I mean on the Green Fibre Bottle project I wasn't there at the stage of the ideation. Of course, like in any project the challenges are timings and financing the project.

Carolin 28:42
And how did Carlsberg manage the financing challenge?

Julian 28:53
We invested heavily into this. So we had the initial development costs together with a partner. And now we have a bunch of bigger partners who have put money into this as well So it's a shared market investment.

Carolin 29:18
Another topic that we would like get your perspective on is the innovation network or ecosystem that Carlsberg has created around the Green Fibre Bottle. In particular we want to touch upon the network character and the role of the Carlsberg brand within this network. So could you tell us about a situation where the Carlsberg brand purpose or vision has been mentioned to external partners of the Green Fibre Bottle project?

Julian 30:23
I don't know. I did not build that partnership. The guy you should be talking to about this is Simon. So he will give you the whole shenanigans because it's him who built it directly. However, what I could say is that there's a

commonality of intent. Partners that come together to develop something that got sustainability betterment all written over it.

Ebba 31:22
So I'm going to ask you a bit more general questions about the Carlsberg brand now. So this is not necessarily in relation to the Green Fibre Bottle project. So, in your view, how would you describe the cost by brand identity?

Julian 32:20
So Carlsberg is a big brand which is perceived by consumers as a global brand that produces beer. Carlsberg is a brand that has done some cool advertising of the years. It has an iconic tag line "probably the best beer in the world". However, if you do an analysis across markets, what the brand stands for diverges by market. What it's meaning and its purpose is, is somewhat not clear and it lacks a bit of energy globally compared to bigger players like Heineken, Budweiser and so forth. We may stand for different things, but overall, they're positive. So, things like humble and trustworthy are two statements that come across very strongly. So you start from a solid point. The plan is to bring to life what defines us as a brand, what our personality is what our values are. At Carlsberg our values are "always burning" and "always sharing". Our personality is curious, witty and unpretentious. So this is the kind of direction that we want to take. And in order to substantiate what we mean by "We are the best beer in the world, probably" we want to show our consumers the things that we do by bringing to life stories and actions about the things that we do.

Ebba 34:57
What do you say that that's your brand vision. Or how would you define your brand's vision?

Julian 35:08
That's the plan.

Ebba 35:15
So you now tapped into core values, core values, the mission, the vision and the purpose of the Carlsberg brand. Would you say that all those elements are related to each other?

Julian 35:25
Yes.

Ebba 35:31
Talking a bit more about the brand purpose. How would you say that you communicate the brand purpose internally and externally? Is this something that is brought up immediately in meetings or is it something that comes along the processes?

Julian 36:00
The brand purpose is the centre of the brand positioning. So we have a tool which is called the brand positioning which is the starting point before we go into any brand experience development. You bring it to life by putting it in every brief and make it the beginning of any creative meeting. So that the purpose and the brand positioning are always visible, so that they will be of at the heart of everything we do. Our brand positioning is composed of human truth, purpose, reason to believe, key benefits and brand personality. And it has the purpose at the centre of the brand positioning.
Then as I said, it's included in every brief. This brand positioning and purpose is then brought to life through creative executions of what we call a creative platform. So it's an idea that stems from a big idea that stems from the brand purpose. So if there is a neat idea we need to bring its proposition to life through the right purpose. So let's create a platform is, is the idea that changes over time is continues to evolve. It's usually three to five years as a platform to should evolve, but that's what we used to bring to life our purpose, it never changes. We need new ideas. Yeah. Right, for sure. And

Ebba 37:33
Do you think that that there are any challenges in fulfilling the brand purpose? I mean, Carlsberg has a very well-defined brand purpose, but there are brands out there that don't really have a brand purpose as such, they might have a vision but they don't have a purpose for existing. For some brands that could be challenging to actually integrate the brand purpose into their services or products. Do you think that is a challenge for Carlsberg?

Julian 38:20

Not for Carlsberg because the purpose has been there all along, but it's not always been written out and maybe not followed so tightly as it is now. When you nail a purpose and can say "Oh, yes, this is why we are here. This is what we do". If you don't have that clarity of intent, it definitely is a challenge for a brand.

Ebba 38:51
Okay, Caro, do you have any other questions you want to ask?

Carolin 38:59
I think we've covered all areas. Is there something that you would like to add Julian?

Julian 39:10
So remind of your title of the thesis.

Carolin 39:19
It's "Managing open innovation in the presence of grand sustainable problems. Identifying capabilities for stakeholder co-creation and exploring the role of brand purpose in managing sustainable open innovation."

Ebba 39:43
And the Green Fibre Bottle has been a particular project in that field. Chesbrough who is a guru within the field of open innovation actually did a case study on the Green Fibre Bottle. He just published a paper in January about this project and how it relates to sustainable open innovation. So this Green Fibre Bottle project is kind of a very sensational process that has not been done previously. So Carlsberg is really a step ahead with regards to open innovation. You know, Carlsberg has inflows and outflows of knowledge in the sense that you're sharing your knowledge with the world. You don't really care about IP rights. You are actually giving the IP rights to Paboco who then can share this paper bottle with other companies. Also within this project you create this kind of community taking Absolut Vodka, L'Oreal, and Coca Cola on-board. That is also a very new thing that companies from different industries come together to do something good.

Julian 40:56
So if you want to codify that, Simon is your guy. I can only add to everything that we said, that the clarity of purpose makes things easier.

Carolin 41:09
But it's interesting because the literature doesn't really investigate how the brand really influences this whole innovation process. And we believe that the brand purpose can be a huge driver for people to do initiate sustainable projects despite them being tricky and taking a long time.

Julian 41:52
Yes, a good brand purpose should drive action. It should be an action statement towards something that is motivating and inspiring. I mean I've worked for dog food, cat food, fruit juice, canned fruits… and you can find purpose in everything. So yes working for Carlsberg is so amazing. But you can also find purpose, for example, in selling dog food. Pedigree's purpose was "We are for dogs - for every dog, for dogs that have homes and for dogs who don't have homes". That inspired making good food. The next question from that was "How can we make the life of dogs easier?", both, for dogs who have a home and for the ones who don't. So even people who sell dog food in a pet store can get really enthusiastic about what they are doing because they are helping sheltered dogs. So a clear, compelling and actionable purpose drives employees.

However, now the narrative is moving on to companies who use their purpose to tell people who they are, how they do stuff, and how they drive change. In particular the focus shifts towards how the brand's actions and communications can drive change. So there's basic awareness building around the fact that he world is collapsing and we agree that we need to do something about it. And Carlsberg does a, b and c to tackle this. Then there is the question around what Carlsberg is supporting and what kind of partnerships the brand is building? And then you have to ask yourself what impact do your actions and communications have on consumer behaviour? That's the next level. You are nudging people into changing their behaviour for the better. That's the hard part and the fun part.

Ebba 44:38
That's true.

Julian 44:39
But can you send me this article around this open innovation?

Ebba 44:43
Yeah, it is in English. Yeah. Simon houses as well, but I will send it to you.

Julian 44:46
Thank you. Very interesting.

Ebba 44:51
So we are done, you you're free to go. Thank you so much.

Julian 45:09
Thank you. Bye.

Interview with Sam Wainwright - Global Brand PR Manager at Carlsberg

Sam 3:37
Ok, I am ready.

Ebba 3:39
Okay, we're going to record this, I hope that is fine with you.

Sam 3:47
Yes that's fine with me.

Ebba 4:27
If there are any questions that you feel like you can't answer that's completely fine, just let us know.

Sam 4:32
Yes, I will.

Ebba 4:36
As you know, we were looking into the Green Fibre Bottle project, in order to learn from this process, identify the success factors and capabilities that were necessary to facilitate this open innovation process. I think you kind of already know what we are doing because I've explained it to you previously. So I will just jump right in.

Sam 4:54
Have you spoken with Simon yet?

Ebba 4:55
Not yet, we're going to have an interview with him on Friday, and we just had an interview with Julian, to get the brand perspective. I also wanted to have an interview with Håkon but he hasn't really responded. He is sick, right?

Sam 5:08
Yes.

Ebba 5:11
Yeah, we will see what happens there. Lydia is also sick. And then we're going to have an interview with Paboco. But they have been a little bit apprehensive about giving us too many interviews. At least we scheduled one now and maybe we can get another one.

Sam 5:30
Yeah, I think, if you get one that's good. I wouldn't stress too much.

Ebba 5:39
And then we're going to have an interview with DTU, with one of the PhD guys to get that perspective. So I think it's all good.

Okay, so let's jump right in. The first question is really hard for you to answer (laughing). For how long have you been employed at Carlsberg and what is your current position?

Sam 6:14
Five years, six years in August. And my current positions brand PR manager. But before that I've been heavily involved in sustainability throughout that time. So it's really a communications role and PR.

Ebba 6:32
So what are your key responsibilities right now?

Sam 6:37
PR and the brands. From a sustainability perspective, I've been responsible for PR, and communication on what we've been doing as a group. So that's been for the last three years and then before that I was in the UK, for two and a half years doing a similar thing.

Ebba 6:56
What is your relationship to the Green Fibre Bottle project? When did you get involved? What has been your role in this project?

Sam 7:11
So when I first started at Carlsberg, August 2014, I had just heard murmurs on it. And at the end of 2014 or 2015 it was announced publicly. So I wasn't involved at that point. When I came across to Copenhagen in April 2017, from that point, we were monitoring when was the right time to give another update. So obviously being in a PR role, it's about telling the outside world about what we're doing and answering questions and that kind of thing. So, we were kind of monitoring it from then. It wasn't until last year, so September/October 2019, where we gave that latest announcement, which is the one you've seen. So I organized the entire communication for that including the planning of timing and events, media relations narrative.

So the latest public announcement for the Green Fibre Bottle, the biggest one we've done so far, was my project.

Ebba 8:20
Who were the main partners you interacted with?

Sam 8:28
So it starts internally. At that point in time, the brand PR role kind of sat in the sustainability and communications team. Simply because Simon was kind of HR-responsible for what I do. So my role before that was sustainability and digital media manager. So I've basically, for the last three years, been responsible for any communication from a global perspective on sustainability and Carlsberg. Before that, obviously "Together towards zero", our sustainability program, was my communication project. So that was why I got rushed over to Denmark initially to do the coms around "Together towards zero". In this case, obviously being a part of that team, it starts internally. So, just to kind of take you through how the process was. We were always planning in 2019 to give an update on the Green Fibre Bottle project, because we hadn't given one since late 2016. That was the kind of last update we had given. The reason we were giving updates as a group initially in 2014 or 2015 was because a small startup had come to Simon, named ecoXpac. And ecoXpac said: "We've got this idea. We want to create this fully biodegradable bottle. We don't know how to do it but if we get Carlsberg you can hopefully help us to track down, everyone we will need in terms of expertise to help us do that". So the reason for communicating back then was to get partners on board. So Flemming Besenbacher, our chairman, said at "The Wold Economic Forum" in Davos that we want to produce this thing that we think could be the future of beer packaging, but we have no idea how to get there. We know we can't do this ourselves so we want partners to come on board, and to bring their expertise to the project, and between us we think we can maybe get there. That was the only reason we went public. And it worked. Lots of partners came on board. On the back of that came the Carlsberg Circular Community, which included lots of different partners with different expertise. Many of them were technical experts. Many of them were branding guys and then we also had universities and researchers.

Again, there was a number of companies who worked together to get it from concept to the initial paper shell. That was the second update that we gave. And then we gave an update on when we had the latest design. And every time we gave an update we did it for nothing other than to get more partners on board. Now, in 2019 the difference was that we knew we had an update. The update was that we now have beer in the bottle. But we kept asking ourselves: Why should we give an update now? Why should we communicate this? What value are we going to add telling people that we were kind of further down the line?

If you think about it, it's pretty rare that you would go out with an innovation before it's done. The innovation was only halfway there. I mean there's innovations going on all over the place. So we knew we had in the locker but we just kept putting it off because we thought we didn't really have a reason to do it. Maybe when we start testing this with consumers but we are not there yet. And then, behind the scenes ecoXpac who owned the IP was the little star from the start. So we've never owned a stake in this. We have various agreements in place to say that we're putting a lot of time and effort and our marketing muscle behind it, but we never owned the IP. The company that does own the IP (ecoXpac) was purchased by two other partners who were part of the circular community BillerudKorsnäs and ALPLA. When they bought the IP, they decided to get more companies on board, which was what was necessary to scale this up. You'll hear more about that when you speak to them as to why they did that. So three other companies were coming on board and there was going to be this big announcement as to the fact that now there is this pioneering community behind the Green Fibre Bottle where more companies are on board to change the packaging industry for the better. In

a sense, the community represents a movement for sustainable change in the industry. And it's great that we literally have the biggest companies on board such as Coca-Cola, Absolut, Pernod Ricard, a huge spirits company and L'Oreal, one of the biggest consumer goods companies in the world. So amazing news. So that's why we decided that it was the right time to communicate about this.

So that's a long winded way of saying, who was involved in this. Initially us internally. Then we heard the news that this community is going to come on board. So we decided that this is the right time for us to give an update. We were getting media requests for the last two to three years. There has been a real interest by media asking us what we can say about the Green Fibre Bottle. I think largely the interest came from the trade media, so packaging trade media, sustainable trade media, not really mainstream media. You know, we kept saying "Look, when we're ready we'll tell you". And we decided that we are ready now since we were going to talk about the community anyway and we did reach a milestone in the fact that we could now hold beer within the packaging.

So internally, the media team, the sustainability team, the packaging experts, and the brand team were involved. The brand team was involved because the Green Fibre Bottle was associated with the Carlsberg brand and all the communications were done through the Carlsberg brand. Also our supply chain team was really important because, we're actually going out with a communication in which we were publicly committing to continue to innovate on a process which was very standardized. If you think about it, we couldn't have gone out with a communication and have our supply chain team find out through our communication video that we were going to potentially radicalize some of our packaging. Our supply chain team is the one who purchases all of our equipment to keep our breweries running. So that would have been a huge surprise to them to hear us essentially committing to something that they're not in on. So there was loads and loads of alignment with the supply-chain guys. And then, from an external perspective, there is obviously Paboco who owns the IPs and to whom we are really tight with. We actually ran an event together. And then there are all of the different companies that are now involved, which we call the pioneers. So we communicate very closely with those. Although we communicate closely, everyone had the ability to give their own announcement, but we agreed to align timings and the core of the message which was basically that all of these other companies are on board.

And then we hired a PR agency, from the Carlsberg side, to making sure that we got this right because it was one of the toughest briefs. As I said previously, it had been trade media, sustainability media generally, packaging trade media, and sustainability trade media that we were trying to sell this story too. Now, we wanted it at this moment in time, because all of these other companies were coming on board. So, it felt was right that we talked about the fact that "we're not there yet, but we're working on it" to a wider audience and especially to consumer business media. Now to do that you want to have a very clear snappy message, because otherwise it becomes too technical, and you potentially lose that clarity. Basically, if you imagine you're a journalist, you are likely to get over 100 press releases in your inbox every day. So if it's a clouded technical message, and you're a consumer journalist on CNN, or any other mainstream media, there's a chance that you're going to lose their attention, if your message is not very clear. So we were working with a PR agency who really wanted to oversimplify the message. On the other side we were balancing that with our big fear (or the big risk) that we were giving a message that was disingenuous. So we didn't want to tell people that were there, because we were not. We didn't want to tell people that it's 100% paper, because it can't be technically. Tt has to have a thin layer of plastic inside. It needs a barrier. All of these different messages we had to be so clear on. So we spent a lot of time with our PR agency, agreeing on what our message was to make sure that we struck the balance between being a story that appeals to media, and that gets picked up by journalists, but is in no way incorrect or misleading. So the PR agency were a big part of that from our side.

Carolin 18:24
Thank you for that elaborate answer. I mean, for me who has never heard this, this is very interesting. I have a few questions. Just jumping into what you already said. You said that all these new partners came on board like Coca-Cola and L'Oreal who joined this community of pioneers. Did these new partners have different goals initially when they entered the community? Was it smooth integrating them? And was there any misalignment?

Sam 19:15
It's a great question. I need to be quite careful with what I say. There's been no issues. But, of course, when you bring four companies together there are always going to be conversations that need to be had. So there was a lot of alignment that went on. So when you say was there misalignment… the answer is no, because we put in a hell of a lot of time and conversations, hosted by Paboco, to make sure that we were fully aligned and there weren't any surprises. And it's still something that's going on now. So, we meet every few months, bear in mind this is really new. We met twice, once in Stockholm and once in Aarhus. The purpose of those meetings was to completely align. From a communication

perspective it's really tough, because we've had something to say earlier to get more partners on board and now there's nothing really to say other than that because the other companies are just getting on board. So the real communication moment will be when they go live. So that alignment is still going on. So we're agreeing on different principles regarding when you communicate, how you communicate and I think the big thing is just making sure there aren't any surprises, or misalignment with that. Obviously, when we first went live, we were in a more advanced stage than anyone else and, frankly Carlsberg did get more exposure but that's because Carlsberg has been talking about this for a few years. So, there were a lot of conversations to make sure that there were no misalignments there, and that there weren't any surprises.

At the minute we still constantly talking in these meetings to make sure that we are aligned. In the last meeting that we went to all we were really looking at is principles as to how do we make sure we are always aligned.

Ebba 21:23
Who was the driver of that alignment?

Sam 21:28
In a sense everyone wants to be aligned so there was a motivation from all sides but Paboco initiated the meetings. And it's going well but there is an interesting dynamic in there because you've got four companies which ultimately have the same goal which is to move to a better source of packaging. So there is lots of conversations and it does get quite complicated. These meetings that I have been to have mostly involved communication people. I haven't been in the meetings that could involve technical people and then when you've got different IPs and that kind of thing it becomes a little bit more complicated.

Ebba 22:09
What would you say is Carlsberg's role in this community right now?

Sam 22:14
That's a good question. I think we have more experience with this project than other partners have. So we have shared our experiences and we have been really open about our experiences. We are actually really keen on letting the other companies know what principles we have, particularly around making sure that we're completely transparent, and not over promising anything. The last thing we want is this getting in the hands of the wrong marketer who has a great idea for how you could generate loads of publicity and coverage for something and then the message or the timing is wrong. So we really wanted to communicate a set of principles that we need to have to make sure we don't mislead anyone. And these companies have basically all been on board with that as well.
We've been really trying to make sure that we get that view across and that's helped to build the basis of the alignment with other good input from Paboco and the other companies. As I said, this is a collaborative field because it's so rare that you have four so very different companies collaborate. So I think to be completely transparent it's not the biggest collaboration right now and that's kind of what we work out as well. Because there's not that much to collaborate on and to talk about right now from a Carlsberg perspective. However, there is definitely an interesting in the situation. This, we've got some good connections and everybody's kind of

Ebba 24:13
What would you say is the status right now?

Sam 24:18
Well, the status right now is that Paboco brought these new companies on board so Paboco is working on individual work streams with each of the different companies to co-develop their paper bottle. So the status of the community is very much, getting to know each other. Potentially, there could be another communication together when we reach another milestone, that is worth talking about. So when Paboco achieves x, y, and z, we can support the sharing of that message. Paboco produced a really nice piece of content, which was aimed at corporate channels to talk about the status, which was obviously the previous announcement. But that's the state to the minute. Going forward, there'll be more collaboration and there will be chances to talk as a community, and then there will also be times to talk as individual companies. That's were we are right now. We are still very early on.

Ebba 25:30

So I guess we're going ti move a little bit more into the project itself and the capabilities and processes. If you feel that these questions are too hard, don't worry, it's fine. But first of all, what was the purpose of the Fibre Bottle Project? Why did Carlsberg initiate this project?

Sam 26:01
There is this philosophy internally that we need to continuously assess our packaging and try to find more sustainable solutions. And that was purely it. As I said, the content was brought to us from ecoXpac, which was something which would potentially diversify our packaging mix and lower the carbon footprint of some of our packaging, which is really important. And obviously, it was something which would enable greater recyclability. There was an opportunity there to reduce our carbon footprint and reduce waste. That were the reasons. Same that happened with 'Snap Pack'.

One thing that is so important for me is that you've got two people that have been at Carlsberg for 12 and 14 years, respectively. So Håkon has been there for 14 years as packaging innovation director and then you've got Simon who's been at Carlsberg for 12 years. And that's the only reason this kind of thing gets to where it gets because it's two guys who really care about this stuff and have been able to see these projects through. And let's be frank, no one is getting a bonus for seeing this project through.

It's almost been defended and defended and defended and they've been doing it because their personal values align with looking towards the future, radical innovation and creating something better. So that's been so key as to how it enabled us to get to this point which where we got four global brands actually on board with it. And it's not just from Carlsberg, there are obviously the guys from ecoXpac and the other partners, which have seen the project through. But I think this long-term view and the stability of long-term employees that really support it with their heart is essential.

Carolin 28:25
When you talk about this community, and Paboco, and these external stakeholders, how would you describe the shared vision and purpose of this project?

Sam 28:45
Obviously, all companies recognize now that they have to innovate. For example, if you look across those companies you can quite quickly identify where some of their packaging isn't sustainable. When I talk about "sustainable" I don't necessarily mean, just in terms of "better for the planet". I mean "sustainable as a business model" with the way the regulations are coming. I don't want to talk on behalf of those companies, but I would imagine if you decide that you're going to sell everything you've got and put all of your focus into one-way plastic bottles or one-way glass bottles or one-way plastic shower bottles for the next 20 years, then there's a chance that you're going to really struggle when regulations come into play and consumers want more sustainable brands. So everybody is there with their own agenda. I think that is really important. We shouldn't overplay this community because we don't know what it is yet. Everybody joined initially with their own internal objectives which are to diversify their packaging mix and to look for more sustainable long-term solutions. Every singly company right now is looking for radically different packaging types for the future. So I think every company is there initially to help develop something that could be better for their company going forward.

Carolin 30:53
Just tapping into the selection of different partners. How did you decide which kind of companies should join your community?

Sam 31:27
Well, that is a question for Simon. Obviously, Paboco is the one who onboarded Cola-Cola and L'Oreal. That had nothing to do with us. But before that I believe it was ecoXpac who did it together with us. I mean initially there were these two companies ecoXpac and Carlsberg. Then you bring on BillerudKorsnäs who are experts wood pulp and paper. So you had a perfect company there to help us to do the mold for the outer paper layer of the bottle. So then we had the paper bottle, but our packaging experts and the guys from BillerudKorsnäs would say that you will need a barrier because otherwise we will not get through food safety laws. You can't just put a carbonated drink into paper shells. So then they went out and found ALPRA who could help us with the barrier and so that's kind of how it works. Now we need to design so we are going to bring on (Christian??). Roughly that's how it evolved. Simon will talk you through this in more detail though.

Carolin 32:50

When you interacted with these other stakeholders at these meetings, did you see any cultural differences? Could you elaborate on these different cultures of the innovation partners?

Sam 33:31
Yes, definitely. It's really important that we don't write about these meetings specifically because they are all kind of confidential meeting. So I think what you could say in answer to that question of cultural differences. Yeah, there are different company cultures in that group. First of all you've got technical people and communication people, so there's always a bridge there that you need to create. Secondly, everybody got a different reason for being there. The community is something that Paboco and Carlsberg created to kind of foster this collaborative approach, because everybody wants to get to the end goal. With the pioneering community we want to change the industry and to lead the movement towards sustainable change. But we're really still trying to find the best way to collaborate in the community and that's where the conversations at the minute are. That's where most of the alignment comes in. We are basically four companies, all going in at the same moment saying that we're all committed to paper bottle technology. We're working to achieve this, and we will work together where we can. And that's where we want to keep going. At the moment, therefore, it's about defining what the community exactly is.

Ebba 36:29
You have kind of tapped into a little bit about the challenges and so on. On the other side, what would you say has worked particularly well with the partners and in the innovation project?

Sam 36:51
It's still early to say. But I think what went well with the partners is that everybody's expertise came to the front, and everybody had the same goal. Early on, it was just about how can we make this happen and it still is about that. So that's where the collaboration is still good, because, as much as I said that everyone's got a slightly different objective, the overall goal is still the same. The goal is to have a paper bottle that works from a commercial perspective as well as from a logistical and practical perspective. We know that the work that we're doing will help the other companies. And we have come to Paboco to help them.

What has worked really well for us, speaking from a communication perspective, is how honest we have been. I mean, the reach we got…we got over 1000 pieces of coverage when we announced the fact that we had these two research prototypes. What was particularly amazing, was that the message was clear, every single piece. The media always said "they are not there yet and it does contain a polymer barrier", which is proof that the messages has come through. The biggest fear we had was that the coverage would say that we're nearly there, or lead consumers to think that it's going to be on the shelf in six months. because it just is not nice at all think it's 100% biodegradable paper is not. And that's what's worked so well for us, being frank.

I think one thing we've really learned and seen is that consumer understanding and interested in sustainability has moved a long way. When I felt came six years ago, I couldn't get the brand team to give me a pair of tickets to do a sustainability initiative because the importance of it wasn't understood. But students now and people around that age demographic are so interested in it. Yeah, it's become a real consumer pull. We were pushing stuff initially saying that this is the reason we need to be more sustainable. Now there's a real pull to say all companies are talking good game, but we actually want to see companies do something. And the fact that we've been doing this stuff for so many years beforehand enables us to go out at a time where they are desperate people stop talking about long-term targets. They want to know what's actually being done, and that's what's been so strong for us. It's enabled us to tell a very honest story. People know what carbon emissions mean, they know polymers mean. They know this stuff which enables us to tell a much more technical story that we would have been able to a few years ago, to try and get a mainstream interest.

Ebba 43:25
Okay, let's move on a little bit towards the branding and innovation relationship. So we're going to talk more about the project in relation to the Carlsberg brand. So, in your opinion, how does the green fiber border project fit with the Carlsberg brand? And what it wants to do strategically?

Sam 43:47
Yeah, the Green Fibre Bottle project fits with what the Carlsberg brands positioning. One half of the positioning talks about creating a better tomorrow. That half comes from Carlsberg's heritage. It's come from the research lab …

Ebba 44:41

The connection is getting a bit bad now.

[connection broke off]

Ebba 46:00
Hello again.

Sam 46:05
Sorry, I just lost signal.

Ebba 46:23
The question was, in your view, how the Green Fibre Bottle project fits with the Carlsberg brand and what it wants to do statistically, and also in relation to that you can, yeah, I guess you will have to define what you believe this across brand identity.

Sam 46:39
Yeah, so the Green Fibre Bottle is in line with Carlsberg's "constant pursuit for better" and for a better tomorrow as it's really about creating better packaging with less environmental impact.
And then I think the shared element is huge as well. So that's why that collaboration angle really worked for us as well, because like many other innovations from Carlsberg, it started in the research lab and was then shared with the rest of the world for the greater good, really. So I think for me it just fits perfectly because obviously Carlsberg is the name above the door when we look at the company. That is quite rare. We've got over 150 brands, but the natural fit for this project is the Carlsberg brand for two reasons. One, as I said, it fits with the philosophy of everything that's been done before. Two, it's got a global reach as well. It's one of our two biggest brands globally.

Thinking back, for Simon, four or five years ago, the objective was to get other companies involved in this project to move it forward. If done on a small brand in a niche market it wouldn't have had the same traction as Carlsberg because people listen when Carlsberg speaks, particularly in some markets. So I think to get it where it is now, it was essential that it was Carlsberg and not a smaller brand. And going forward, I know that the Green Fibre Bottle project is something that Julian (Global Brand Director) is keen to embrace, because it's what makes the brand amazing. If you think about it, Carlsberg has been instrumental in getting this paper bottle project to where it is today, now having other companies come on board and taking it even further. But it kind of fits with everything Carlsberg has been done previously, all of those hours of expertise that have been poured into this. The marketing muscle that has been pushed to make it what it is now. It's really on people's radars and there is a little hype around it which has led to these other companies get on board as well because they've heard about, because Carlsberg is speaking about it. So I think it's been really strong in the development so far and then I think going forward it fits the Carlsberg brand because of the reasons I said.

Ebba 49:21
Talking a little bit about the purpose. Have you ever talked about Carlsberg brand purpose with external or the internal innovation team, if so when and why?

Simon 49:43
Yes, absolutely. I think if you look at the press releases, we mentioned the long history of innovation
because it's an essential part of story so. So, I can only speak in terms of what we've communicated to the general public and through media outlets and yeah absolutely it's been essential to talk about our brand purpose in communicating this project.

Ebba 50:17
In your words, how would you define Carlsberg's Brand Purpose?
There's no right or wrong answer to this. It's just your view as an employee.

Sam 50:30
And this is where it gets murky. The battle that I am constantly having is to define what's company and what's brand. Because it's so murky and in reality, what's happened in recent years is that the Carlsberg positioning, since Julian updated it a couple of years ago, has been much more aligned to what the company purpose is. The Carlsberg brand now represents all of that good stuff that we have been doing as a company, what we have historically done.

Let me give you an example. In Denmark and to a degree also in Sweden, Carlsberg and the foundation are very well known and the Danes are extremely proud of what Carlsberg represents. In Germany, or UK, no one has a clue about all of that stuff. And actually, what they know Carlsberg for in the UK is clever, funny advertisement back in the 90s in the 2000s which was always being witty and funny but no substance to why Carlsberg is probably the best beer in the world. So what we've actually done is to move the positioning much closer to enable us to talk about what the brand really means and what the Danes see. Essentially, that's why this is the perfect project. Because it's so difficult to just talk about it. You can't get that message across just from talking about it. As much as it seems easy to run an ad that says: "Did you know our research lab has been around for 108 years?". It doesn't work. You can't deliver that in a 32 second TV series. All you need to do is deliver them through actions, and hopefully the media can help us to slowly build that brand equity for all the good stuff that Carlsberg has done. And this (the Green Fibre Bottle project) is the perfect way to do that, because as I said, it's an action. It gets people to picture that glass bowl that they've been having in their hand for decades, and they see this paper bottle and think: "Hey, that's a bit different". And that then enables you to start to tell a story about how this isn't a one-off project. It's something that the Carlsberg brand stood for, for many years. So it makes sense. So I think this project means more than just the brand. It means everything the company has been doing. It means that 30% of the company's dividends go to a foundation which donates to good causes. And then, it means research and pushing the boundaries of things through beer, basically. Because that's what the company has always done. It has taken profit from beer and reinvested those profits to push the boundaries of science. For instance, pH scale didn't just happen. It was funded. Yet we still got some of the best scientists in the world in a research lab being wholly funded by sales of beer. It's that kind of continuous will to push things towards better through beer.

Ebba 53:58
Could you give us an example of when the brand purpose and vision was mentioned to the external innovation partners? Has that happened at all?

Sam 54:07
I don't know because I haven't been involved. I would ask Simon for that.

Ebba 54:11
So the last question. How would you describe the outcome of this product so far? What benefits did the project generate for Carlsberg?

Sam 54:45
From my side, purely from a branding and communication perspective, I think one of the things is that it enabled us to tell the story to a modern-day audience of what the company stands for and what it has always stood for in the past. I think that's a huge one for me.

Other than that, as I said, it of course helps to build brand equity and drives brand awareness.
I think that's going to be it for me, because we still haven't delivered anything yet. We still got research prototypes and it's in the works. But I think the fact that we were able, through a 1000 pieces of consumer facing PR, in the last year or two, to actually show examples of the brand positioning and tell a little bit of a story about what the brand means, that's the biggest thing for me and I am really, really grateful for that. But it comes with a caveat that, now that we've told the world we're going to do it, there's a big expectation for us to actually do it and there's still a long way to go. I think that's the answer now. In five years' time that answer will always be slightly different because by then we actually got it on the shelves.

One thing that I would like to add is that it's enabled us to have so much coverage and to kind of preempt some of the questions that we're going to get from consumers, because they've been talking about it on social media so we can track it. And then we get questions like "Well what about the Amazon? We need trees to offset carbon emissions. What is Carlsberg gonne do about that?" will you deliver that. You know some of these questions may sound stupid, but they are not. We're surrounded by technical people in the industry who know what they're talking about. Usually you don't get a chance to get consumer reaction from millions of people all over the world for free, before you actually launch it. Obviously, you do a bit of consumer testing, you do focus groups, but you launch it, and then you answer, and you put out fires afterwards. And you realize the questions that consumers have afterwards. And we've got the ability to kind of preempt all of those questions, because we're actually doing an exercise now where we're going to track all of the responses to the CNN articles and Twitter and all this stuff, especially all of the negative questions. And we got to make sure that we're really ready. The day we do launch this we need to go on the front proactively answer those questions to make sure there are no misunderstandings.

Ebba 57:45
That's really cool. Yeah. Actually, can you talk a little bit about the Green Fibre Bottle you placed in the podium and what effect it had internally?

Sam 58:01
Obviously, the media was very interested in the Green Fibre Bottle and we got tons and tons of media coverage. I think around a thousand pieces in a week all over the world. So everyone internally has kind of read about it and seen it on pictures. So that's why we put it on a podium in the atrium of our office for about a month because people were so interested and kept asking us about it but had never seen it. So obviously it raised awareness internally. But I think the vast majority new about the project already. Because it was a big deal in the media and people were proud to see it in the media. But I would say, displaying it in the atrium brought it to life internally. The interest was massive. Literally everybody stopped, touched it, felt it because it's something so different. You are so used to glass. So when you see the paper bottle you just want to kind of feel it and imagine what it would be like to drink out of it. And then every guest we had would always come and look at it and touch it and feel it.

In terms of the effects it had internally, I believe, putting it in the atrium made Carlsberg's sustainability purpose "Better today and tomorrow" feel more real. And it made people proud and motivated. That's the biggest thing. People are proud to work for a company that is sustainable or at least really strives to be. I think it took it from being an abstract idea that people had heard about for years but never actually seen it, to something that was much more tangible for them. People felt much closer to the innovation. And I also think that it influenced other departments to a degree. Everyone wants to get involved with sustainability. I think it inspires people and other departments to involve sustainability in their processes as well. They are proud and pleased that it is a point of difference that we have. I mean we have been working on these things for a long time.

And I think it definitely influenced our reputation among different stakeholder groups: customers, consumers, government, media, employees. Every year we conduct an annual reputation survey and across the board the scores have been increasing across all stakeholder groups but particularly internally. We saw the scores on environmental responsibility among employees increase quite a lot. I am not saying this is all due to the Green Fibre Bottle, but it definitely played a major role. The Green Fibre Bottle and also Snap Pack were big part of that.

Ebba 58:03
Thank you so much, Sam. I think we are running out of time.

Sam 58:04
Cool. You're welcome. I am going to have a much less interesting call now (laughing). Bye.

Interview with Michael Michelsen – Business Development Manager at Paboco

Carolin 4:24
Maybe you can introduce yourself, name your title and elaborate on what your role is within Paboco and your what your key responsibilities are?

Michael Michelsen 4:44
My name is Michael Michelsen. I am the business development manager of Paboco, which is actually an abbreviation of the full company name - The Paper Bottle Company. I've been with Paboco since it started, which was back in April 2019. But I've actually been with the company that became Paboco for quite a while longer. I have been there now for five and a half years. I was part of the initial founding team, the initial project team of the green fibre bottle project, that we started together with Carlsberg. This is also why I jumped on this opportunity to do the interview with you. It made perfect sense, in my eyes. My role has been a bit developing over the years, starting as Project Manager for technology and publicly funded initiatives. Then it developed into more of a general holistic business management role of the green fibre bottle potential. But today I'm within our commercial development branch, which means that I handle all of our pioneer projects. These are for each of the pioneers that we work with today. One you know quite well, the Carlsberg Group, and of course there is Coca-Cola, The Absolut Company, and L'Oréal. It also means that I am one of the driving agents behind our pioneer community. I also handle our full sustainability profile, on both, company and product level.

Carolin 6:05
Well, you said you were basically part of this project in the beginning. What would you say were the different stages of this project so far?

Michael Michelsen 6:30
I usually divide the green fibre bottle project it into three stages. At the initial offset there was the idea of the company. Then working with Carlsberg for the green fibre bottle you may have heard the name ecoXpac come up. That was a technology incubator to start with. It was a company that had one visionary idea, one visionary founder, and had to find a way to get that idea into reality, starting with a very base concept and trying to build the technology around it. After Carlsberg and other parties joined the project it became more of a technology growth chamber, what we like to call technology implementer. At that point ecoXpac was not really targeted as necessarily the commercializing entity of the green fibre bottle or the paper bottle. I'll be using those terms interchangeably. And then there is a third stage, which is Paboco itself, which is quite the transition in the company's history. We are now what I like to call THE Paper Bottle company. We handle everything from technology operations, implementations, commercialization, of course through our four pioneer channels. So you can think of us as those three stages. Early upstart technology incubator. The technology implementer growing our platform. And now, today we're scaling up the company. Still coming out of our small to medium sized enterprise phase but moving into a larger one for sure.

Carolin 7:47
Yeah, cool. How would you define the roles within this network that you've created around this project? So considering Carlsberg, you, and the other partners that are now involved?

Michael Michelsen 8:02
There's the easy one first. Paboco is the one who makes the paper bottle. Pure and simple, that's the backbone of everything. You need this bounded in reality and that's what Paboco is there for. We're also the more visionary driving force within the consortium in the sense that we push for change, not just at the paper bottle, but in what we call supplementary technologies which might be new way to approach decoration and labelling or just a key concept of having sustainability in every part of our development process. Of course, Paboco doesn't have quite the reach that the pioneer community has. We are very, I would say not co-dependent necessarily, but very collaborative in nature with our pioneers. They are our connection to the world around us. Equally, we're their connection to the world of paper bottle and new types of packaging innovation. And there's a third branch, that's often overlooked but equally important. These are the co-developers that Paboco surrounds itself with. There's the commercial co-development, we see through Carlsberg. Of course, they have been with the project for many years now. I think it's four and a half if not five years. New pioneers are also coming on board. But the other branch of co-developers are partially our ownership structure and also other innovative technology companies that supply part of this expert knowledge in creating the best paper bottle possible.

Carolin 9:24

Can you outline the partners that you have mostly interacted with as a company over the years and why you interact with them? And how did each of them created value for this project?

Michael Michelsen 9:45
Let's start with the obvious one which is Carlsberg. Carlsberg was an early buy-in on the idea of a paper bottle, which had been proven at a concept stage, but not at a commercial level at that point when they bought in. By adding both, the Carlsberg name and the Carlsberg brand to the bottle, we of course had a flagship product that could signify also that this could be a real-world challenge to be implemented. At that point we also signified what type of category we're targeting: Something carbonated, something with the food sector, and something that needs to be produced at volume. So by joining that project, Carlsberg signified all of that. They also, of course, brought a lot of attention to the project, both, in terms of public finance and in terms of future partners.

If we look then at the development of Paboco itself, equally important partners have been BillerudKorsnäs and Alpla. BillerudKorsnäs was actually the first one to join. I'll come back to the year on that one. But they was the first one to join in, not only with their knowledge on what paper is and could become, but also of course with their investment in helping to grow Paboco, (back then ecoXpac) into a large organisation. Then, with the joint venture of BillerudKorsnäs and Alpla, those become the primary driving partners in the commercialization effort. So they were actually one of the founding members in setting up this network of pioneers. So an attention, originally created by Carlsberg, was then captured in essence and brought into Paboco through this ownership structure.

Ebba 11:40
You mentioned Carlsberg as being part of the community, of course. Did they at any point communicate their vision, strategy or purpose during this project and did that help you to move forward at any point?

Michael Michelsen 12:06
I think that was actually a very interesting early phase because we undertook a technology development program together, rather than a commercial one. By doing that, we were actually able to set a very clear vision, together with Carlsberg. So they presented us with what would be their initial stages of their 'Together Towards Zero' strategy, although it wasn't called that back then. Key aspects of that revolved around what their targets were, what the ambition level was, and also what their criteria for entering into such an early-stage project was. And those matched very well with ecoXpac back then. Of course, there were some unknowns because it was still innovation, but Carlsberg was very upfront, very transparent. And equally ecoXpac was very transparent, saying what it could help Carlsberg fulfil within those fields of their strategy. Obviously, we couldn't fulfil all, but we could target at least central aspects of their future growth strategy that we could supplement together.

Carolin 13:04
Why do you think, were ecoXpac and Carlsberg such a good match? Where did you align, maybe on a personal level, and also on a purpose level and on a vision level or a goal level?

Michael Michelsen 13:49
Sure. I think I will break that down into three separate branches again. The first one was the vision of a bio-based future. Back then we talk very openly saying, "Look, there is a path until we reach it, but we are all in agreement here that the final goal is something that is just completely bio-based. It has to be. It has to be what we target. It has to be why we undertake this journey together or there is no reasoning for actually stepping into it".

Then there was another important aspect then ecoXpac. We never entered into this saying we're here to replace all types packaging, you know. We're not starting a war against existing suppliers because we know that existing types of packaging have their own very great function. They have their own great aspects to it. Paboco is simply an alternative for a bio-based or more sustainable future. But we're never going to be a full replacement option. This, I think, is also where we're quite well aligned. Carlsberg, of course, having a great existing supplier network that they can't really go to war with, necessarily.

And then lastly, there's the very human aspect of it. And I think that's equally important and very easy sometimes to forget in these big corporate collaborations. We had a visionary founder, a great driving force, we had a very young and passionate staff, myself included. Back then, at least (laughing). Meeting with people of truly visionary sustainable goals, such as Simon. People who could think of what the future of packaging might look like, but not necessarily implement it within a one- to two-year structure, such as Håkon. Having those types of project champions, both within Paboco, and within Carlsberg, really created this close-knit group that could foster this project internally and motivate

everyone involved. That's actually something we've seen translate quite well into the entirety of the pioneer network. We work with major organisations, but we work with the project champions of those organisations, with people who think like-minded.

Carolin 15:59
Maybe one more question to that. Having said how you aligned and that it worked really well, where there at any things that you didn't align on? And how did you work towards alignment? Maybe not only with Carlsberg but also with the other partners?

Michael Michelsen 16:32
Looking at innovation that holds true more than anywhere else. Everyone has a grand idea at first but will always be met with a certain level of reality that you need to account for. Of course, there is also the question of time when working with these grand ideas.

Time war perceived differently within the different organisations. So back then as a small innovation company, people from ecoXpac were thinking in months. On the other hand, Carlsberg would have been thinking of it in years. That just creates different expectations for the project. Now, this has transitioned into a different ownership structure, where Paboco also thinks in terms of decades and many of our pioneers do the same. So, coming back to your other part of that question. Are there any sort of misalignment then between the different pioneers? And here there's an interesting aspect that Carlsberg has 'Together Towards Zero', and Coca-Cola has a 'World Without Waste'. Everyone also has their own initiative and needs to not only fit the paper bottle into that but fit those initiatives into a joint structure. Of course, it adds strength to the project that you have this level of pre-thought and pre-emphasis on sustainability that the organisations have built into their vision statements and also into the paper bottle project.

Ebba 17:51
Speaking of this alignment, are there any specific routines or structures that you've established with all the innovation partners in order to share and enable knowledge-sharing between all of you?

Michael Michelsen 18:03
Yes, but with the Asterix here that the collaboration is still young. I mean the collaboration has maybe been going on for about 14 months. This is not a figure that you need to hang me up on because that will fluctuate, depending on who you ask. But for organisations of this size, that is of course a young collaboration. So in terms of formalized project groups, we have some. We have some that are dedicated to tech and are very focused on key information sharing that can't be shared in this interview, without breaching levels of confidentiality. And we have a more higher, I would say not a steering committee, but a visionary board that we call our community meetings, which are dedicated to solving exactly these issues of alignment. Of course, Paboco being the driving force here and telling what the paper bottle is, what it will become in the future, and what is the sort of generational story that we present.

Ebba 19:08
In your own opinion were they any specific success factors during this collaboration, in regard to the green fibre bottle, that made the project move forward?

Michael Michelsen 19:25
Yes, I can point to one. I mean, it's a broad question but let me pinpoint one specific. Carlsberg went out big and they went out public very early. Don't disregard that. I mean, for ecoXpac, back then that was something that of course we were very interested in getting this attention to let the world know what we were doing. But Carlsberg went out to world and told them that they would be a part of this, before we even knew necessarily what the end-product would look like.

Ebba 19:54
So you think that that's transparency kind of enabled you to move forward?

Michael Michelsen 19:58
I think that transparency, not just enables to move forward. I think it puts an onus on all project participants that this was now something available to the public eye. So it forced us to move forward, in the best possible terms, but also with a bit of a raised pulse in a couple of weeks after that.

Ebba 20:20

On the other hand, then were there any main challenges in this project? That were hard to overcome and could you give us an example of a particular situation?

Michael Michelsen 20:33
There's always a challenge when you have a small technology incubator that needs a lot of funding, that needs a lot of investment upfront. And you have one commercial partner, you know, presenting a lot to the world around us. One of the early success points was the co-investment of BillerudKorsnäs early. Followed by the investment of BillerudKorsnäs and ALPLA, building two technologies merging together into a joint venture for the future of the paper bottle. But a hurdle for sure is always you know the time to market versus the level of investment needed at that time.

Carolin: 21:00 Can you elaborate on the main challenges in collaboration with the partners, in terms of working together? It would be very great if you could for example name a concrete meeting or situation where you talked out your differences.

Michael Michelsen 21:14
Yes. If I reflect to when this was a technology-centric project the expectation from Carlsberg was the focus on creation of the product itself, the paper bottle. Here (then) ecoXpac had a much higher interest in advancing the technology principles of its manufacturing technology. This led to misalignment where Carlsberg would experience little product development, while ecoXpac undertook high-risk and uncertain process technology developments.
Now, this was some time ago – but, it culminated in a meeting where ecoXpac had to detail its expectations on technology development results (lower production cycle time, leading to energy savings, leading to cost savings) to smooth over the difference between a commercial entity (Carlsberg) and a technology developer (ecoXpac). The way we overcame this, was to actually set measurable KPIs for the technology developments of something called Impulse Drying Technology. The meeting was held at Carlsberg, with Simon and Håkon (plus his superior) present. It also included the then CEO and Founder of our company, as high-level alignment requires high-level attendance.

Carolin 21:14
Coming back to the collaboration and the processes that you used to share the knowledge. Can you give concrete examples of how you planned these meetings? What were the structures of the meetings and what were they usually about? Maybe you can give an example of a very good or bad meeting and what the topics were in those?

Michael Michelsen 22:00
I can't comment on the specifics as they are kind of in the confidentiality area. So I'll touch on it but not dig into the details. So let's say for the technical versions. The technical sort of meeting are held at a progressive ad hoc basis. So when there are key learnings or key results from testing to share, we have a group, a predefined group that then calls into the same teams call. We keep it small. We keep it a couple of participants from each partner, and select them according to whether it's relevant for them specifically. Let's say, it might be an update on carbonation testing, really not something of interest to L'Oréal, I can guarantee you that. They don't work with carbonated lotions (laughing) so there is no point for them to call in. So that's one approach to it. The other approach is then related to the joint community sessions. Here we have the project champions, for example, Simon being one of them, and Håkon being another, who then meet at pre-decided dates at the site of one of the pioneers. So they actually all fly out to discuss one topic, in particular. And here we enter into the an area where I can't go into detail much more because of confidentiality, but it's not something on "how do we make one aspect of the paper bottle work", it is more of a broad missionary statement saying we need to discuss the future of the project.

Ebba 23:26
You mentioned that Simon and Håkon are champions. Do you see Carlsberg as having a different role than the other companies at this stage within the community?

Michael Michelsen 23:44
No, here (at Paboco) we view them very similar. Of course, Carlsberg has a lot more history in the project which means that they have a very deep understanding of both, what paper bottle is, and what their intention with the paper bottle is. I mean basically they had four years more to prepare. But for the roles of the community, those are created equally.

Carolin 24:11

So you said that you were talking a lot to Simon, who is from a PR perspective and sustainability perspective, and you talked to Håkon, who comes from a packaging innovation perspective. Did you have any other contact with for example the branding team of Carlsberg and if so, what did you discuss?

Michael Michelsen 24:33
That I will put into the category of is to come. In the coming months actually. What we usually do, or have done in the past, just to give you that insight, is we've stuck within the innovation departments, because here you have more flexible dialog to work with people who are used to the concept of innovation and used to an innovative approach. But, of course, as the project transitions into operations and the commercial side, we need to have talks with the branding, supply-chain guys.

Carolin 25:09
Interesting. Do you see that the brand is going to play a role more in regard to making the paper bottle a tangible product?

Michael Michelsen 25:24
I think the organisation behind the brand is actually what pushes the paper bottle to become a tangible thing. It is also the brands part to raise their hand to say we are the ones who would like to take this on first. So I would counter argue your point there, but saying it's actually not necessary the brand pushing but the organisation behind the brand.

Ebba 25:43
How would you describe the outcome of this project so far, of the green fibre bottle, are there certain benefits that have been generated?

Michael Michelsen 25:55
Over the last five years, yes, a couple (laughing). I mean, the growth of ecoXpac into Paboco is quite a landmark in itself. But also the flagship icon of the paper bottle as part of Carlsberg's 'Together Towards Zero' strategy is a cool achievement. It's not the only aspect, that I of course know, but if we look towards, what have Carlsberg has done in the past and what they are doing now, then the paper bottle is sort of a light in the dark regarding what they will be doing in the future.

Carolin 26:45
You work together with these different partners - what would you say you differ culturally? I mean you say you work and use innovation teams because you work kind of similarly, but have you experienced a situation where you feel they that they work very different from us? Not in a bad sense but just working very differently.

Michael Michelsen 27:16
Absolutely. Within this community of pioneers, we have four organisations, with completely different corporate cultures and completely different national cultures as well. So you have a really a great lot of alignment that needs to take place, just before you get into the heart of the project. So the first step of this innovation project, or this collaboration project in particular, is understanding, not only the whole organisation that's behind it, but specifically the people that you have within your network. In particular you need to understand those people that are fighting to make this a reality and their motivations. They need to coalesce into something more than just representatives of their organisation.

Carolin 27:57
Would you say that it took you some time to reach that stage of understanding each other? Did it co-evolve towards something where you feel like you have established routines?

Michael Michelsen 28:35
Yes, trying to put in into layman's terms, I usually refer to it as shifting sand. you have this big lump of unknowable that you start with. You have to co-align individual projects, timelines, visions, ambitions and internal strategies. But essentially, we are all here to change the industry. So as more aspects drift away as non-essential aspects of the collaboration, what you're left with are these tiny nuggets which then become our focal points. These are what we are here to collaborate on.

Carolin 29:01
What role does the higher purpose of the project play in your eyes? And who established the higher purpose?

Michael Michelsen 29:30
I would say that you need one organisation that presents a higher purpose. ecoXpac and Carlsberg produced this together in the past. Now with such an extensive collaboration network Paboco is actually a driving force behind presenting the higher purpose of the paper bottle. And then we align that within the community. You need it. It is a driving force, but you also need to have it occur from one central point, you cannot have it grow organically within collaboration.

Ebba 29:54
Very interesting.

Michael Michelsen 30:01
Maybe to add on to that, is that you use your collaborative network to file off the rough edges of that purpose. Any target ambition is always going to be bound into price, launch deadlines, sustainable impact categories. But when you work with such a diverse crew, you also need to consider that you need to file off some very hard figures, you need to put it into a category where diverse people could agree to it. And that category is the purpose. I would say, that comes out of having this collaboration.

Carolin 30:20
What would you say is the higher purpose of the paper bottle project in your own words?

Michael Michelsen 30:25
The higher purpose of the paper bottle project is to create a lasting, sustainable alternative to the packaging we know from today. It is a co-development effort to show how partnership can enable new global leadership and co-creation.

Please consider that in this definition of the purpose the word "sustainable" takes on both of its intended interpretations: It must be a betterment on what we see today from a packaging perspective. It must also be a concept that can sustain itself for years to come, allowing it to grow in the market of packaging offerings.

Ebba 30:34
I guess since there are so many different companies involved within this community, it must include a lot of trust that needs to be established. I'm just wondering how did you manage to establish that kind of trust, to enable sharing knowledge between all of the firms?

Michael Michelsen 30:56
That is a very good question. One thing, if you look at the pioneer network, what you might not initially see you, but if you look closer, you'll see that none of the organisations are in direct competition with each other. You could argue about Coca-Cola and Carlsberg, but we've been very careful about that. Actually, in Denmark they have quite a close relationship because they are co-fellers. That's step one, make sure that there is no direct competition. It seems like such an obvious thing, but it needs to take place. If you have someone that could potentially infringe on each other's gains from participating in the project you will have a lot of road to cover to take that first step. And second, break down the initial barriers. Be clear that people need to share the base-line information based on their own individual projects. Because Paboco, as a central leading entity, knows where each party but the other partners might not have this knowledge about each other. And here, I think, Carlsberg has done an excellent job presenting, on their previous learnings, on what they did right, and on what they did wrong. Here, I actually have a memory of Simon standing up in one of our community meetings and presenting specifically what he might have done differently, had he had the knowledge that he brought into the project today. For the community, this is a massive help that he was ready to present, not just on behalf of himself but on behalf of Carlsberg that "yes, we could have done things, not necessarily better, but differently. And you can certainly only gain from these learnings.

Ebba 32:33
Do you think that the other partners within the network will follow the same philosophy as you just described Carlsberg has? Sharing the same sort of mindset and approach?

Michael Michelsen 33:14
To an extent, yes. But I think it also then comes back to an earlier question which I you, Carolin, had, regarding what the difference in working with organisations from such diverse backgrounds is. You need to account for corporate culture, and for nationality as well. Speaking from a perspective of a Dane in Denmark, we have an approach of owning

our mistakes usually. And Carlsberg has embodied that to a very beautiful degree, also in their corporate organisations. I think, by working with people in innovation and in sustainability this translates well. This would maybe be my final takeaway. So you don't need it for the entire organisational culture of your partners, but you definitely need it within your project team.

Carolin 34:03
One question on how you how you select the partners? As you said, ecoXpac and Carlsberg were looking for new innovation partners to join the project in the early stage. How did you identify these and were there any requirements set up in order for them to join? You mentioned the criteria of no competition among the members. Can you maybe elaborate on the other ones as well? Were they explicitly written down or just discussed in an open conversation?

Michael Michelsen 34:43
Not to temper with confidentiality here, but I think I can say the following. So, one thing we learned from our collaboration with Carlsberg is, that alignment on CSR is pretty key for a project like this. You need to have the same vision and sustainability-mindset. So of course, this was a predetermined factor in scouting the marketplace for who else might be of interest. The actual process itself is given via the ownership with BillerudKorsnäs and Alpla. They already have a vast network of clients, and those that have expressed an interest in future sustainability initiatives were the first ones to be contacted. So you can say, that that was actually the shortlist.

Michael Michelsen 35:23
Very unprofessional, but you will have to excuse myself for a minute. I have a puppy that's trying to eat my shoes.

Ebba 35:36
(Laughing). No worries at all.

[Michael Michelsen left the conversation for a few minutes]

Michael Michelsen 35:59
Ok. Back again.

Carolin 36:43
Going back to Carlsberg's collaboration and the fibre bottle project. Was there ever a time when you looked at other projects they had done, for instance, or looked at their purpose to inspire what you're going to do moving forward?

Michael Michelsen 37:16
I think definitely back then the target ambition, what we set as the criteria for success, were heavily influenced by Carlsberg. Now speaking on behalf of ecoXpac back then, we had our own ambition statements and strategy. But being more of a technology incubator, we relied heavily on understanding the needs for commercialisation through the Carlsberg brand. So let say Carlsberg had expressed to us that there was an interest for biodegradability or bio-based solutions in the market. We relied to them to tell us what could be a sellable product and what the demand for sustainability from a customer perspective looks like.

Ebba
Considering that the Carlsberg Group has a lot of other brands under their corporate umbrella, do you think that this kind of innovation would have been as successful with any of the other brands?

Michael Michelsen 37:59
That's the hard estimation to say and it would require a lot of market analysis. But I will say this though, by attaching THE flagship brand to this project Carlsberg attached a certain level of corporate belief into it as well. Would this have been equally as successful with let's say Kronenbourg? Most likely not. It would have been more localized. The fact that it was the Carlsberg organisation and the Carlsberg brand itself, that carried weight. How much difference, you would need Carlsberg's marketing department to tell you that.

Ebba 38:41
You being part of this green fibre bottle project, I would like to ask you on a more personal level what are the certain aspects of this project that motivated specifically and made you move forward? It's more a personal question for you, if that's ok?

Michael Michelsen 39:07
That's absolutely okay. I'll give you a bit of personal background. I actually wrote my thesis within ecoXpac back then. As an engineer with a background in marketing, I wanted to understand how you would start a project with something that you didn't have a defined market for. I thought that was quite interesting. That awoke in me such an interest for the paper bottle and the green fibre bottle that I actually called up the founder and visited him at his home saying "I will work for you, for half a year for free, to get this project rolling if I can just stay with the project". That didn't happen, of course. We found a way of working together. But to me, the paper bottle represents the best, up to this date, what corporations can do when they join together. You can take a simple idea transition it into real world engineering processes and describe a vision so thoroughly and through such a level of interest, that you actually manage to gather four global corporations to try and solve this together. So for me the paper bottle is definitely my personal ambition to see that become a worldwide success.

Ebba 42:45
That's really cool. Any questions left, Carolin?

Carolin 42:50
Yes, actually I have. It seems like you have managed to create a good relationship throughout this project and having the stamina to do this over a long time regardless of what it takes. And also not just doing it for one year and stop if it's not working out.

Michael Michelsen 43:22
Maybe that leads me back to a previous question that you, Ebba, asked: "Which were some of the cornerstones or success factors in this project?". I think if you map it in a timeline, the successes must also be tied to the flexibility of the partners what have worked with this project. I mean, of course the project doesn't resemble what it looked like five years ago when Carlsberg joined in. It has grown, it has taken its punches, but it has always kept forward moving momentum. So that driving force that goes behind that is really what you can attribute this to. Having people that truly believe that this is a path for the future on a personal and organisational level.

Carolin 43:43
We noticed in the previous interviews with Carlsberg that they mentioned they had a better relationship with ecoXpac than with DTU. Also they seemed to have more interaction with ecoXpac than with DTU. Do you perhaps know, from you understanding, why this was the case?

Michael Michelsen 43:47
I think especially when everything is going good in the project and it's gaining momentum, new partners are joining and you got a new investment background, then the flaws of the past become less apparent. I will reflect on Carlsberg's point and say that back then ecoXpac might have had a better relationship with DTU, in some aspects of it. But there is a definite branch in the machinery when you have two corporate entities, one large and one small, and then you add a university into the mix. Because here you don't have timelines or goals necessarily that align quite well. Keep in mind that if you are a corporate identity your vision will always be the ability in doing better, but you will of course need to build a sustainable business. I mean you need to have financial stability and real world sustainability. If you are a university you don't have that driving point. You have other deliverables to focus on publications and generation of knowledge. Although not necessary the implementation of knowledge and here there is a major differentiator between organisations and universities.

Carolin 47:59
Are you thinking of like setting up a platform or an online system for your knowledge sharing? As of now it seems like the knowledge sharing has been very physical in forms of meetings? Is this something that has been on your agenda maybe?

Michael Michelsen 48:39
If you have information put into a platform it is more easily accessible. That is good in terms of product development. It can also be good in terms of sustainability goals. The one thing that I would mention here is that as a soon as you access it with this approach you become also very observant inn terms of confidentiality, in terms of what can you share between these organisations. Not from a willingness perspective, because people are actually quite willingly to open up when they are working with innovation, but just from a legal perspective. What do you need to account for? What do you need to govern? Who needs to govern the structures as well? Paboco is a company focused on creating the most sustainable paper bottle. Do we dedicate 20% of our staff capacity to manage this digital portal? No, we just

don't because that is not our main emphasis. And then some member of the community has to take up that challenge, and it is a challenge for sure. So to answer it more simply, it is on our agenda, it is something that we think the product development team would benefit from. But from an efficiency perspective it doesn't make sense right now at least.

Ebba 49:38
Yeah, I think that's it from our side. But thank you again for participating in this and it was super valuable.

Michael Michelsen 50:05
Of course. Could you please send me the transcript so I can go through it. And let me know if you have any additional questions.

Carolin 50:20
Yes, we will. And thank you, that is very kind. Bye.

Interview with Mattia Didone - former PhD student at DTU

Ebba
Could you tell us for how long you've been at DTU and your role and relationship with the Green Fibre bottle?

Mattia Didone
I've been involved in the Green Fibre bottle during my PhD, so that lasted for three years. I've also worked as a R&D manager at the company that was producing and is still producing the paper bottle, which was then called ecoXpac and that is now called Paboco – the paper bottle company. I worked at ecoXpac for six months, so overall I was involved in the project for three and a half years.

Ebba
But you're not involved anymore in the project?

Mattia Didone
No I'm not involved anymore in the project. I'm done with my PhD.

Ebba
Who were the main partners you interacted with during this time?

Mattia Didone
During my PhD obviously interacted a lot with my main supervisor and in the beginning with my co-supervisor. These were the main people I interacted with on the DTU side. On the ecoXpac side I was mainly interacting with Christian Carlsen who is the Technical Director and Michael Michelsen who is the Business Development Manager. I was running experiments at their facilities so I was in close contact with the people at ecoXpac . I was only in contact with Simon Hoffmeyer, who was the main person responsible from the Carlsberg side. With Carlsberg we only had follow up meetings on the development. We only had a few meetings along the way - in total I think we had three meetings during three and a half years.

Ebba 0:24
Could you just tell us a little bit maybe from your point of view about the background, so why did you get involved in this project?

Mattia Didone 0:32
The project started with ecoXpac that was prototyping the paper bottle. They later on wanted to produce the paper bottle, including scaling up and optimize the process of the production. This meant that they needed to find clients that were interested in buying this product. So they applied for funding and did this through the Innovation Fund, Denmark. Later on DTU and Carlsberg got involved and entered the project. I don't know exactly how they managed to invoke Carlsberg. The main point is that Carlsberg was, looking into sustainable ways to improve their production or to propose more sustainable solutions to the customers. Therefore they became very interested in this project and got onboard. In the meantime ecoXpac was looking for funding

Ebba 1:45
And what would you say was, the DTU's specific role in this? Was it for the technical side of it or were there other reasons?

Mattia Didone 1:55
Yes so I'm a mechanical engineer, and in the project I looked into specific ways to improve and optimize the manufacturing process of the paper bottle. So yes, I was on the technical side of the project.

Ebba 2:13
Okay. And from your point of view, what would you say were the purpose with this Green Fibre bottle project?

Mattia Didone 2:22
The purpose of the project was to propose a new and innovative sustainable paper bottle. That was different from, for instance Tetra Pak. The paper bottle needs to be moulded, that is to say rigid, in order to eventually contain beer. This due to that beer develops pressure within the container. Therefore Tetra Pak would not work because it doesn't have rigid sides.

On the side, the purpose of the project was to develop and scale up the production of this paper bottle. But of course, there are many challenges. The main one is that paper itself cannot conduct liquid, obviously, so there is the need for another coating barrier that eventually would also be sustainable, or bio based or recyclable. This is the main challenge the project is now facing.

Carolin 3:44
Why do you think in general that the university DTU was involved? Why do you think that you got involved into this project and what were the motivations from your side to join?

Mattia Didone 4:11
DTU was involved in the project because usually when you apply for fund it is valuable to have a institution behind it. Another reason is that it was a in progress development project, meaning that they needed a lot of research to be done to improve the technology.

My motivation to join this project was that I wanted to do a PhD and I wanted to give my contribution to this sustainable project, which I found very interesting. I really liked the idea of a paper bottle.

Ebba 4:47
You mentioned earlier that you had around three meetings with Simon. During these meetings did Carlsberg at any point communicating their vision, strategy or purpose to you, and if they did how did they do so?

Mattia Didone 5:10
Good question, if I remember correctly that happened one of the very first meetings. I remember the first meeting was about to get to know the LCA approach and what circular economy means.

This was held at the very beginning of the project, in 2015. I cannot really remember exactly how the meeting went. Although it was of course important for Carlsberg to emphasis the sustainability aspects within the development of the project. In other words, It's not only about having a sustainable product, but it's also about having a sustainable production.

Ebba 5:58
Could you maybe elaborate a little bit further, in your capacity, what kind of role the Carlsberg brand had in in driving this innovation?

Mattia Didone 6:09
I think that the main role Carlsberg had, and still have, is about marketing. Meaning to market the idea around the Green Fibre Bottle. I know that the Green Fibre bottle project appeared in many magazines and many articles. This happened because of the Carlsberg brand behind the project. From my understanding it seems to be a well-known brand that had the possibility to easily spread the idea and tell the world about the paper bottle.

Carolin 6:43
And how did that affect you? Did DTU also get publicity? Did it have positive consequences for you as well?

Mattia Didone 6:55
Yes I was interviewed for a couple of occasions. One was for a business case with a business school - Berkeley Haas. So I was interviewed by them and then also for another online scientific magazine.

Carolin 7:36
And what do you think like in terms of the collaboration between the different partners, what were the main challenges? Taking into account the university, a tech start-up and a large corporation? What were the main challenges in this in this collaboration?

Mattia Didone 8:11
From my perspective, it was not easy to combine these actors. When you do a PhD you have to provide some scientific results and publish scientific articles. This was not a priority for the ecoXpac or Carlsberg. They were rather interested in the technology development. Meaning not so much on the scientific advancement of this field. I would say that Carlsberg's and ecoXpac's main concern was how and when we could scale up the production. It was a little bit tricky

to combine all the different tactics to different stakeholders. For me the main thing was to do my PhD, i.e. to provide with scientific evidence and report the results in scientific journals.

Carolin 9:11
What made you overcome this? What made you align eventually?

Mattia Didone 9:25
I had to do different types of work. When I was working as an R&D manager at ecoXpac I was mainly focused on doing experiments, to provide with results that could then help build up the pilot plan that we had. Also to scale up the production to a mass production scenario. While I was at DTU, I actually used the experimental results that I had instead of to trying to find the scientific results.

Ebba 10:04
You mentioned that you had only three meetings with Carlsberg. Did you find it hard to collaborate with them? How come there were only three meetings?

Mattia Didone 10:17
I don't know why it was only three meetings. I would not say it was hard to collaborate with Carlsberg. When you are a university, you have different priorities and perspective than when you're a large company. They were really pushing on when we could advance the technology and how we could do better.

Ebba 10:50
On the other hand, what would you say were the success factors for collaborating with these partners?

Mattia Didone 10:59
Can you define a little bit better?

Ebba 11:01
What made it easier for you to collaborate with for instance Carlsberg and ecoXpac ? Were there any specific factors that made it easy to collaborate with them? Such as, transparency, was it trust, was it that you had a common shared vision or regular meetings?

Mattia Didone 11:28
From my point of view, i.e. DTU side – there was not a real collaboration with Carlsberg.

We were just to report the results and what we had done. Although with with ecoXpac we had a continuous collaboration. We built a good trust. It was very easy to go there and run the experiments, since they allowed us to use their facilities. They also provided us with new equipment if that was needed. It was a very ongoing collaboration. Without them I could not have done any experiments, because DTU doesn't have any facilities to produce paper. The collaboration with ecoXpac was essential to the success of my PhD, but also to the success of the company and the project.

Ebba 12:39
During this collaborative process, where there certain routines, structures or ways for sharing knowledge such as specific tools or platforms?

Mattia Didone 12:58
That's a good question, but actually regarding the methodology there was another girl involved in the project from the DTU management. Her name is Ellen. She was basically responsible for the LCA, but also to define a methodology on how to carry out the project. If you're asking about what methods that was used to advance this project. I think she's the one to ask.

Carolin 14:07
What do you think are the main differences in terms of the culture and the structures in how you operate? You said you had different interests, like you wanted to really contribute to the scientific side, whereas they just wanted to advance the technology. Were there any differences in working that made it hard collaborate? Such as different structures or ways of working?

Mattia Didone 14:38
Different stakeholders have different priorities and objectives in mind. Therefore it is kind of difficult to align. While I was mainly looking into finding new scientific evidence or providing new scientific results, ecoXpac was not interested in this. I was looking into, scientific knowledge that you could extrapolate out of the experiments. They were only interested in the production capacity and reducing the cycle time - that was the main objective. At the beginning, it took around two minutes to produce one paper bottle and two minutes is not a production cycle that you can scale up to a mass production. Therefore they were mainly interested in finding ways to reduce this cycle time. Eventually at the end of the project this was successfully achieved. It took around 10 to 15 seconds to produce one paper bottle.

Ebba 16:11
Did you in any of the instances when collaborating with all of these different partners experience any divergent goals or visions? You mentioned a little bit now about the cycle time, but did you experience different purposes for instance?

Mattia Didone 16:37
I would say that all the stakeholders, ecoXpac and Carlsberg were very on board with the vision of proposing a more sustainable bottle - everybody was aligned on that.

Ebba
How did that alignment work, where there any meetings focused on the alignment, or when, when was this settled?

Mattia Didone 17:05
This will settle at the very beginning of the project. I would say that there was an ongoing motivation for everybody to work on this project.

Ebba 17:13
How would you describe the outcome of the Green Fibre bottle so far?

Mattia Didone 17:23
Successful to some extent. As I mentioned in the beginning, the maintenance now is to find the coating - a barrier that could be used together with the paper shell. This in order to contain beer. This is a very critical challenge. This was not addressed specifically when I was on the project. However, this is something that they're working on right now. The cycle time is fine so that could be scaled up.

Ebba 18:28
You kind of touched on this a little bit previously, but what would you say on a more personal level that this project meant for you? And what made you motivated to move forward in this project? I can guess it was quite a complex project, since it was involving a lot of stakeholders, with various views.

Mattia Didone 18:46
Motivations for me were first of all to successfully complete my PhD. I wanted to find ways to align and to work together with all the different stakeholders while advancing in my PhD. So that was the main motivation. And the second motivation was of course that I was very interested in this project. Sustainability is something that I care about on a daily basis and also to have a brand such as Carlsberg behind the project makes it even more important. I mean it gives more importance to the project itself. These three were my main motivations to carry on my work.

Ebba 19:38
Speaking of the brand, would you say that, Carlsberg was a good fit? And do you think that was an important factor for this project to have that kind of a brand behind it? Or could it be any brand?

Mattia Didone 19:52
I'm sure that there are several great brands that would be a good fit for this project. As of now, Coca Cola, Absolut Vodka and L'Oréal are also involved. I believe there are different brands that could be a good fit for this project. However being in Denmark I think Carlsberg is really a spot on brand to collaborate with. Everybody knows the brand and they're making sustainability one of their core business and priorities.

Ebba 20:42

This kind of this project could be considered as an open innovation project. Have you been a part of these kind of projects previously or this is the first one?

Mattia Didone 20:54
This was the first one.

Ebba 20:58
In your capacity, what would you say, was the key success factors that made it a good open innovation process?

Mattia Didone 21:51
The openness of the project is essential. Especially when dealing with such challenging problems. Although I would have liked more involvement with other companies as well. It's something, as mentioned, they are doing now with the paper bottle community.

Carolin 23:31
Maybe just to summarise, what do you think each partner brought to the table? What did the ecoXpac bring? Were there difference between ecoXpac and DTU? What kind of value was brought into the project?

Mattia Didone 23:54
Good question. The value that was brought in from the university partner was the methodology and the scientific knowledge and the way to do research and develop projects. All this knowledge was fundamental for the innovation part. EcoXpac brought in all the equipment, all the manufacturing capabilities, all the workers and the technicians. Also provided with raw materials and the facilities. As I mentioned before we had only three meetings with Carlsberg and those were more in regards to showcase the marketing and product division.

Ebba 25:00
Do you think it would have helped if Carlsberg were even more involved in the project during your time? In that case what would you have wished for more?

Mattia Didone 25:14
Good question. I think that Carlsberg was only partly involved at the beginning of the project. Because it was a very early stage project so we didn't have any good results to showcase to our broader community. Also, the project was defined to last for three years and that was settled with the innovation fund. In other words, Carlsberg could not do more at that time. However, I think they are now doing more in the sense that have brought in other companies. That's the way to proceed and to go forward. To answer your question I would have liked to work with all the companies that are now involved in the project. Before, during my time with the project, this was not possible due to the early stage

Appendix 6: Overview of SAIL'22 ambitions and priorities

The SAIL'22 comprises of three separate ambitions; the *Successful* ambition by delivering sustainable organic top-and bottom-line growth; the *Professional* ambition by being the preferred supplier among customers and the *Attractive* ambition by delivering value to shareholders, employees and society. To fulfil the said ambitions SAIL'22 focuses on key strategic choices in order to deliver value; "Strengthen the core", "Position for growth" and "Create a winning culture" (Carlsberg Group, 2020d).