

Master thesis International Management

Closing the loop for European multinationals in the FMCG industry

a case study on best practices during circular transitions

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Abstract

The circular economy has gained momentum over the last years. Current researchers highlight several drivers such as resource depletion, stricter legislation, and changing consumer preferences. However, how this is applied within the Fast Moving Consumer Goods industry is an underdeveloped area within research, resulting in a knowledge gap. Especially within this industry a large untapped value can be captured by applying circular practices, because a significant amount of materials is still discarded and never recovered. To bridge this gap, an intensive literature study and case study have been conducted. How are European multinational companies within the FMCG industry moving from our current predominantly linear model towards a circular one over the last ten years? To what extent is the circular economy implemented and achieved within this industry? This study highlights the talk, action, and criticism in the light of the circular transition of five cases: Danone, Unilever, Anheuser-Busch InBev, The Coca-Cola Company, and Heineken. As a result, this study shows that these European FMCG giants are focusing on reduction and recycling. Moreover, it is found that efficiency can play a vital role within the circular transition, because it creates significant cost savings and reduces the negative impact on our planet and society. However, this study clarifies why the role of the circular economy is not to ‘improve the outcomes at the end of the pipe’, but is about ‘going back to the beginning of the pipe’ to build a system that could work in the long-term and foster eco-effectiveness.

KEYWORDS: Circular economy, FMCG, business model innovation, closing the loop, shared value

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Chapter 1: Introduction

“If we could build an economy that would use things rather than use them up, we could build a future that really could work in the long-term”. These are the words of Ellen MacArthur during her TED talk a couple of years ago where she emphasized the importance of a transition towards a regenerative, circular economy in today’s world (MacArthur, 2015).

Nowadays, governmental institutions, business representatives and researchers highlight an increasing pressure on our global resources and planet due to human activities, growing population and competition (Bocken et al., 2016). This depletion increases volatility (Appendix 1) of prices of resources, which calls for a new economic system to ensure prosperity in a world of finite resources (McDonough & Braungart, 2010). The circular economy (CE), which is restorative and regenerative by design, is seen as a condition for sustainability and the suggested solution for issues related to depletion. It is defined as: ‘an economic system which is based on business practices where materials of end-of-lifecycle products are reduced, reused, recycled and recovered. This is done in such a way that on micro, meso and macro level sustainable development is realized’ (Bakker et. al, 2010, Geissdoerfer et. al, 2017). Kirchherr et al. 2017 illustrates the existence of an ongoing circular transition, with the 9R hierarchy model that describes how business practices can shift, from linear strategies towards more circular strategies. Academics tell us that if CE models are executed properly, then they can be beneficial for many stakeholders (Antikainen & Valkokar, 2016).

Meanwhile, several barriers for circular transformation have already been found. Business transformation within a multinational context is complex due to the different origins of inputs, complexity of networks, high transition costs, and global focus of consumption and production (Mckinsey & Company et al., 2015, Pokharel and Mutha, 2009, Preston, 2012). Most barriers are identified as technical, financial, or supply chain issues. However, researchers have mentioned the lack of knowledge as the most significant issue. If firms are not aware of circular opportunities, they are more likely to implement risk-averse strategies, and have products that are not designed for a CE (Hatcher et al., 2011). In that case, technical - and natural cycles can get in conflict, which counteracts this transition (Ritzén and Sandström, 2017).

Innovation of conventional business models is required when moving towards a circular economy and building a more sustainable economy (Bocken et al., 2016). Within this study, sustainable business model innovation is taken into account. This is relevant, because in today's world it becomes crucial to translate better designs with longer-lasting usage into value propositions that can compete with efficient linear models (Ellen MacArthur Foundation, 2015). Moreover, business models are concerned with how firms

define their competitive strategy through the design of products or services and how the firm captures the value (Bocken et al., 2014, 2016). On an industry level, Hockerts & Wüstenhagen (2010) state that transformation can be achieved if large firms, called Greening Goliaths, change their business model and improve their environmental and social performance. And sustainability start-ups, called Emerging Davids, should increase their market share to scale-up disruptive innovation, also called sustainability niche. Thus, both small and large firms play a role and can influence each other.

Previous research has predominantly focused on theoretical recommendations of a circular economy. Hatcher et al. (2011) state the need for case studies within different contexts in order to validate the results of existing researchers, and contribute to their findings about circular business models in a practical manner. According to Antikainen & Valkokari (2016), this practical relevance is crucial because companies should know how to go through this transition. This is also confirmed by the findings of a study commissioned by the European Union. The authors emphasized on the existing gap between the willingness to engage in circular economy practices and actual engagement in the EU (Cerulli-Harms et al., 2018). In order to bridge this knowledge gap, this paper will follow up on aforementioned suggestions to provide more in-depth knowledge about the theoretical concept of CE, and additionally, focus on the practical relevance of this ongoing circular transition. This is done as such, that besides customers, a wide range of other stakeholder interests is taken into account when going circular. Together with a triple bottom line approach, all these interests should be incorporated in the sustainable business models aimed at optimizing and maximizing value in all areas (Bocken et al., 2014, McDonough & Braungart, 2002).

This study provides a comprehensive overview of the current situation and progress of the European Fast Moving Consumer Goods (FMCG) industry in the light of circular economy. This sector is characterized by goods with a relatively short service life and low unit costs. All together, they account for 35% of all materials used, often not recycled, and around 80% of these materials end up in landfills, incinerators or wastewater and are never recovered. Thus, there is a significant need to rethink the way these products are delivered, used, recaptured within the FMCG industry to ensure that valuable materials can return back in a circular economy (MacArthur, 2013, Walker et al., 2015). This need is already identified by academics, however many firms still lack the knowledge and practical evidence to identify how to go through this circular transition successfully and efficiently (Kumar & Putnam, 2008, Antikainen & Valkokari, 2016, Hatcher et al., 2011, Ritzén and Sandström, 2017). The lack of innovative models and awareness of existing models, makes it hard for FMCG firms to shape the future with the ultimate goal of enabling CE transformation (Walker et al., 2015).

The corresponding main research question will be:

How can multinationals in the FMCG industry move towards a circular economy ?

Based on the findings of this in-depth literature review the following two sub-questions will be answered in chapter two:

1. *Which business practices are central to circular -and linear economy?*
2. *How can sustainable business model innovation contribute towards the transformation from linear to circular economy?*

The first two theoretical questions aim to create a better understanding of the ongoing transition towards circular economy and what the role of sustainable business model innovation is. Afterwards, The answers to the following two empirical sub-questions will be derived from the data analysis in chapter four:

3. *How do multinationals in the FMCG industry transform their way of doing business in the direction of a circular economy?*
4. *How do multinationals in the FMCG industry innovate their business models in a way that shared value is created for stakeholders?*

These answers should provide insight into how multinationals within the FMCG industry can go through this circular transition and how this is related to shared value creation. As such, this study aims to create a deeper understanding of the concept of circular economy, best practices, and the required building blocks for successful transformation of business models within the FMCG sector.

Chapter 2: Theoretical Framework

First of all, this literature review takes a closer look at the sustainability challenges and the ongoing transition from linear economy towards a circular economy. Second, it will be investigated what the contribution of sustainable business model innovation can be during this circular transition within the FMCG industry. Third, it will be described how the conceptual framework is constructed.

2.1 From eco-efficiency towards eco-effectiveness

According to Braungart (2007), companies are going in the wrong direction and should rethink how they aim to improve their environmental performances. He states that transformational change is needed to realize the shift from ‘reducing negative impact’ towards ‘optimizing positive impact’. These two fundamentally different strategies for eco-innovation are defined as eco-efficiency and eco-effectiveness (illustrated in appendix 3). Whereas, the eco-efficiency strategy can be described as design rationale where the focus is on minimizing negative impacts. In contrast, the eco-effectiveness strategy is focused on redesigning human made systems to achieve a positive impact (Carrillo-Hermosilla, del Rio & Konnola, 2010).

2.1.1 Environmental and socio-economic challenges are calling for a new system

As mentioned in chapter one, extensive usage of resources for production, and designing products without the purpose of reusing them, has led to environmental problems such as biodiversity loss, water, air, soil pollution, and resource depletion. Nowadays, most business strategies are focused on reducing, reusing, recycling, which is a good starting point to solve sustainability issues. However, this approach only postpones the moment that resources will be exhausted. McDonough (2014) emphasizes, during his speech called ‘Resource Abundance by Design’, the fact that society should move away from this current linear strategy focusing on the so-called take-make-dispose approach and reverse it (World Economic Forum, 2014). This is important because the linear growth model’s inability will create a gap of eight billion tons due to growing demand for natural resources and limited supply in 2030 (Lacy and Rutqvist, 2016). The coming upsurge in consumer demand is characterized as a potential time bomb, therefore experts emphasize on the fact that it is time to act now (Ellen Macarthur, 2014).

In addition to these ecological threats, the linear system will also have economic disadvantages because it jeopardizes the supply of nonrenewable and scarce resources (Geissdoerfer et al., 2017, Potting et al., 2017). Financial and economic instabilities for companies will increase due to fluctuating prices of raw materials, higher supply risks due scarcity of materials, geopolitical interdependence on materials, and increases in material demands. Companies should change their company design primarily focused on

short and single product ownership lifetimes to mitigate these potential threats (Circle Economy et al., 2018, European Commission, 2018, Michelini et al., 2017). According to the Ellen MacArthur Foundation (2013), and Schoolderman et al., (2014). the main drivers for circular business models are:

- Resource depletion, increased price volatility and supply risk;
- Stricter legislation towards circular economy and resource efficiency
- Changing consumer preferences and societal trends towards sharing products, and other forms of collaborative consumption;
- Changing forms of interaction and increased collaboration in the supply chain: more need for cooperation and co-creation.

The aforementioned challenges will increase the threats related to everyone's wellbeing and welfare within the society. Academics stress an urgent need for eco-economic decoupling to enable economic growth and prosperity without corresponding increases in environmental and economic pressure (Wijkman and Skånberg, 2015, Michelini et al., 2017). In order to succeed, companies should move away from linear models and eco-efficiency strategies and move towards a circular economy and eco-effectiveness strategies (Micheal Braungart, 2007). Schoolderman et al., (2014) state that moving towards a circular model will create social, environmental and financial benefits.

2.1.2 Move away from existing linear models and eco-efficiency strategies

The linear approach has dominated the economy so far. A linear economic model (illustrated in figure 1) is defined as “a model that envisions the production of economically-valuable products and services while reducing environmental issues.” (Carrillo-Hermosilla et al., 2010). In addition, this model has an so-called ‘take-make-dispose approach’ which assumes an one-way linear flow, where natural resources are extracted, used for production of input materials, distributed and incinerated or dumped in a landfill after they have been used (Potting et al., 2017, Wijkman and Skånberg, 2015).

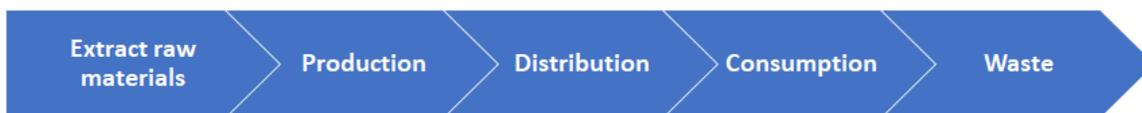


Figure 1: The linear model (created by author)

According to the 9R waste hierarchy framework of Kirchherr et al. (2017), practices that are central to the linear economy are focused on useful application of materials (illustrated at the bottom of figure 2). For example, companies can look for ways to recover energy (R9 in figure 2) or reduce the volume of waste

for which recycling can be an option (R8 in figure 2) (Potting et al., 2017). All strategies central to the linear model are focused on eco-efficiency. This means, the goal is to maximize the value of economic output, while simultaneously decreasing the impact on ecological systems. In other words, reducing negative impacts by creating more products or services with less resource usage, pollution and waste. Thus, this broad concept of eco-efficiency can be understood as to ‘get more from less’ (Braungart et al., 2007, Carrillo-Hermosilla et al., 2010). This linear model has clear limits: resource losses, erosion of ecosystem services and the threat to economic prosperity (Ellen Macarthur Foundation, 2015).

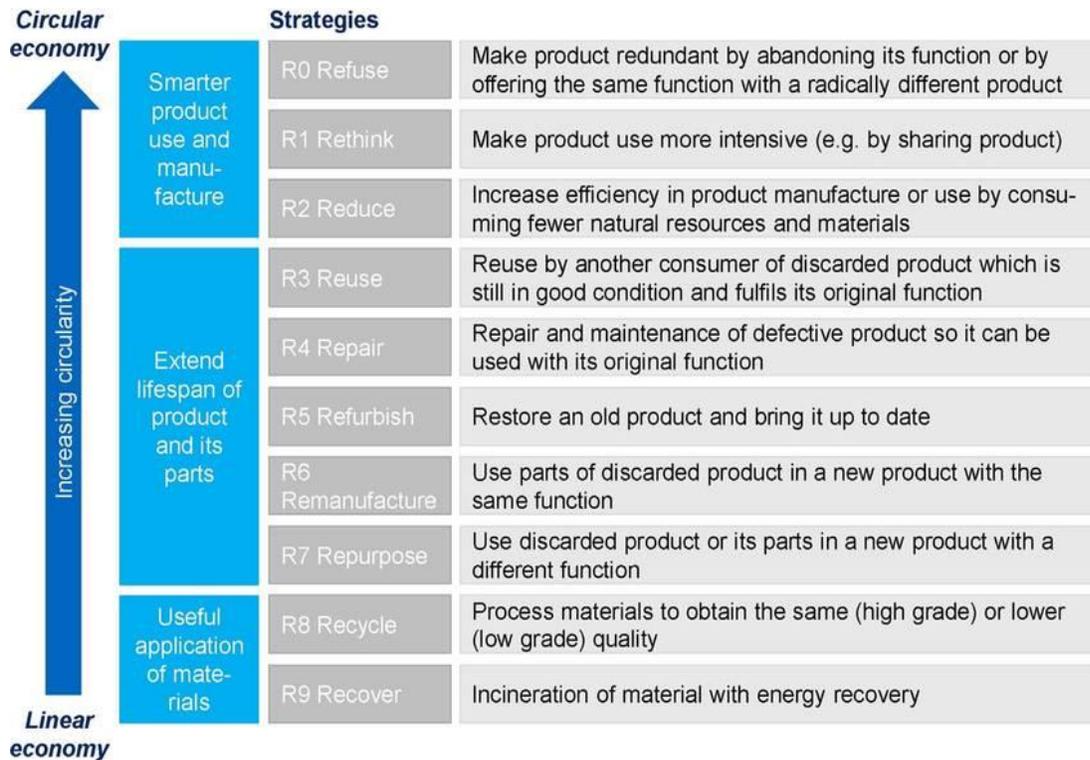


Figure 2: The 9R Framework. (Source: Adapted from Potting et al. (2017, p.5))

The majority of today’s large firms are engaged in incremental innovation or social process innovation, such as the introduction of sustainability management systems, or corporate social responsibility (Hockerts & Wüstenhagen, 2010). These practices define much of the industrial sustainability agenda, however are insufficient to deliver the required changes necessary to achieve long-term environmental and social sustainability, because they refer to socio-efficiency (Braungart et al., 2007, Bocken et al., 2014, Micheal, 2003). Academics state that eco-efficiency only aims to reduce energy usage, stimulate responsible living, and make production more efficient and less harming. This is not matching with the characteristics of a regenerative and circular economy, and will not solve the environmental and socio-economic issues discussed in section 2.1.1. (Braungart et al., 2007).

There is a need for transformational change of current models and strategies, where both small and large firms have to play a role in contributing towards sustainable development, both in a different way (Hockerts & Wüstenhagen, 2010, Charter and Tischner, 2017). Larger companies should think beyond current incremental innovation and look for ways to move towards smarter manufacturing and product use (illustrated at the top of figure 2). Smaller firms also play a role by introducing disruptive innovations, facilitate radical changes, and help large firms to make better use of their broader reach (Carrillo-Hermosilla et al., 2010, Hockerts & Wüstenhagen, 2010, Kirchherr et al., 2017).

2.1.3 Move towards a circular economy and eco-effectiveness strategies

Instead of simply trying to do less harm, companies should aim to do good. This transformational change to go beyond eco-efficiency, mentioned in 2.1.2, can only be realized if companies move towards an approach focusing on eco-effectiveness. This eco-effectiveness is defined as “a concept that proposes the transformation of products and their associated material flows to achieve a positive impact on the ecosystem and society at large” (Micheal braungart, 2007, Carrillo-Hermosilla et al., 2010, Ellen MacArthur, 2012, Murray et al., 2017). The concept of a circular economy goes beyond the linear model and its eco-efficiency approach. The circular economy is restorative and regenerative by design and aims to keep products, components, and materials at their highest utility and value at all times, distinguishing between technical and biological cycles” (Ellen MacArthur, 2012).

The system diagram below (figure 3) is called ‘the Butterfly model’ and illustrates this continuous flow of technical and biological materials through the ‘value circle’. It clearly shows this distinction between two product design strategies: design for a technological cycle (right side) or design for a biological cycle (left side) (Ellen Macarthur Foundation, 2015). These design strategies go beyond product designs optimized for functionality, beauty and quality. They focus on how designs are optimal for disassembling, and how value can be created for nature or as resources for new products (World Economic Forum, 2014). This new way to design, make, and use things, requires that companies shift from linear models with open loop to circular models with closed-loops (Carrillo-Hermosilla et al., 2010). In closed-loop economies, quality of materials is maintained and material flows aim to form a supportive relationship with ecological systems and future economic growth (Braungart et al., 2007).

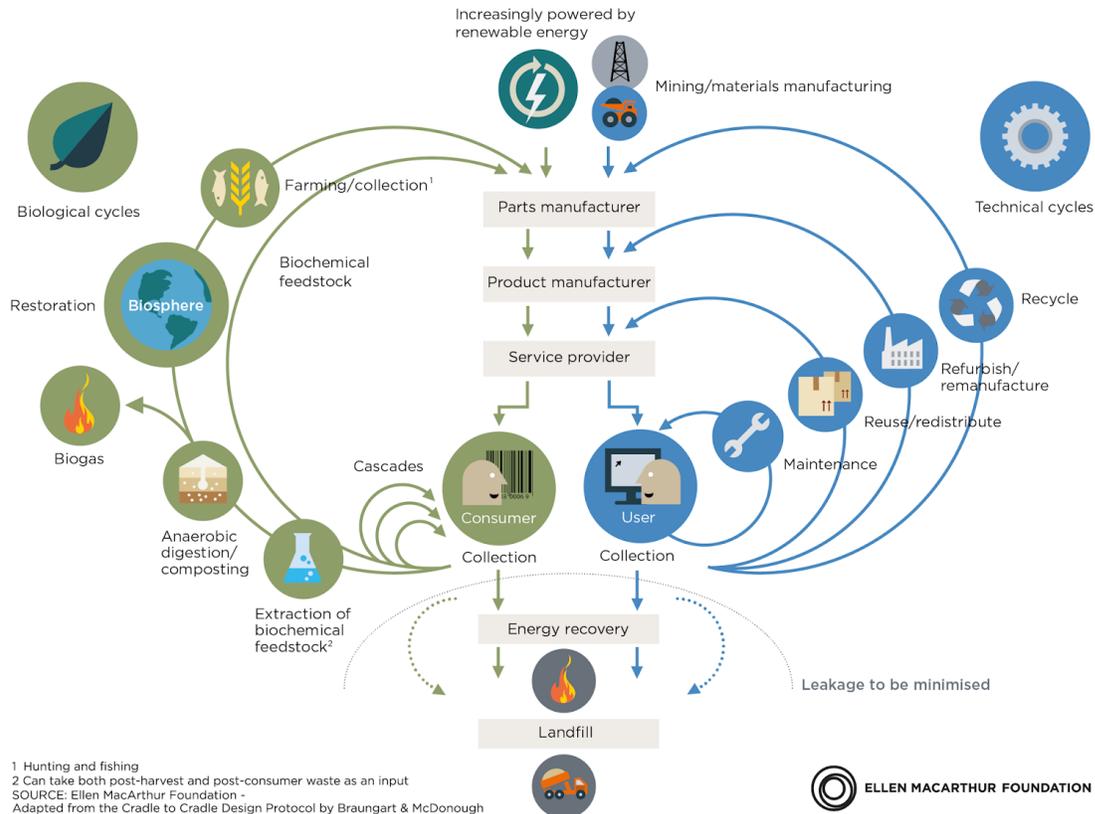


Figure 3: The Butterfly Model

These closed loop systems should be developed as such that nothing is allowed to be wasted or discarded in the environment, and where societal and environmental benefits are maximized, rather than only prioritized by economic benefits (Witjes and Lozano, 2016). According to William McDonough, we have to change our mindsets to view waste as food for ‘something else’ (World Economic Forum, 2014). Then, waste is not seen as liability, but more as asset. The concept turning waste (resources, lifecycles, capability, embedded value) into wealth not only enables companies to grow their business without increasingly using constrained natural resources, but it also makes financial sense (Lacy and Rutqvist, 2016). Achieving a smarter and sustainable system of consumption and production (illustrated at the top of figure 2) is not a matter of reducing footprint, but transforming this footprint into a source of replenishment for systems that depend on it (Micheal Braungart, 2007). In this way, environmental pressure can be decoupled from economic growth (Ghisellini et. al, 2016). If implemented properly, a circular economy has clear benefits: it enables companies to design out waste and pollution, keep products and materials in use, and regenerate natural systems (Carrillo-Hermosilla et al., 2010, Ellen Macarthur, 2015).

2.2 *The contribution of sustainable business model innovation*

According to Kramer and Porter (2011), the way we have realized growth in the last sixty years was not wrong, however the approach we had, is not sustainable in the future anymore. In order to realize sustainable growth and expand the pool of economic and societal value, they have introduced the concept of shared value. This starts from the interdependency between business and society and builds on the idea that businesses must reconnect company success (Kramer and Porter, 2011). Companies should still act in their own interest, but with a new approach of creating economic value by creating societal value (Porter and Kramer, 2019). Creating shared value is not an advanced form of philanthropy, but a new way to achieve economic growth. “Survival of the fittest would still prevail, however market competition would benefit society in ways we have lost” (Porter and Kramer, 2011). Moreover, firms with good ratings on material sustainability issues, significantly outperform firms with poor ratings (Khan et al., 2016).

Within next sections (sustainable) business models are discussed, because they define the way a firm does business, how companies capture financial benefits from going circular, and are seen as the most crucial driver for innovation (Bocken et al., 2016). In addition, if firms do not have a well-developed business model, innovators will fail to create, deliver or capture value from their innovations (Teece, 2010).

2.2.1 *Differences between a business model and a sustainable business model*

The definition of a business model is: “A business model describes the rationale of how an organization creates, delivers, and captures value” (Osterwalder and Pigneur, 2010). When a business model is creating a competitive advantage through superior customer value, while contributing to a sustainable development of the company and society, then it can be identified as a sustainable business model (Lüdeke-Freund, 2010). So, if multiple dimensions of economic, social and environmental values are integrated within the business model and if it has a broader scope in their ambition to eliminate negative societal impact, or even generate positive impact (Stubbs and Cocklin, 2008, Murray et al., 2017).

Whereas conventional business models are mainly focused on economic benefits (Velter et al., 2020). The so-called ‘triple bottom line’ of sustainable business models is a good way to integrate sustainability into the business agenda. The aim of this new design perspective is to enhance the well-being of nature and culture while generating economic value. Several authors argue that building a more sustainable future depends on the investments in innovative sustainable business models, where this triple bottom line approach is incorporated and aligned with a wide range of stakeholder interests (Bocken et al., 2014, Velter et al., 2020).

Business models are based on three elements: (1) value propositions; (2) value creation and delivery networks; and (3) value capture mechanisms (Witjes and Lozano, 2016, Bocken et al., 2014, Osterwalder and Pigneur, 2010). Innovation in business models requires development of these three traditional elements (Velter et al., 2020). The way firms make choices regarding their business model is directly affecting the architecture of the firm and its expansion paths. Previous research found that firms often encounter great difficulty when changing their business models. Moving towards a CE model is seen as a radical change that requires system thinking and fundamentally changing the way of doing business. Usually, both are challenging and require changes within the current business model (Teece, 2010). In the end, business model innovation is recognized as a crucial factor to achieve greater environmental and social sustainability within the industrial system (Bocken et al., 2014). Also, because it should allow better access to products, components and materials during and within the post-usage loops. In other words, innovation of conventional business models is important to mainstreaming the principles of a CE and capturing the potential from circular business models (Ellen Macarthur Foundation, 2014).

| Groupings | Technological | | | Social | | | Organisational | |
|-----------|---|--------------------------------|---|---|--|--|---|---|
| | Maximise material and energy efficiency | Create value from waste | Substitute with renewables and natural processes | Deliver functionality rather than ownership | Adopt a stewardship role | Encourage sufficiency | Repurpose for society/ environment | Develop scale up solutions |
| Examples | Low carbon manufacturing/ solutions | Circular economy, closed loop | Move from non-renewable to renewable energy sources | Product-oriented PSS - maintenance, extended warranty | Biodiversity protection | Consumer Education (models); communication and awareness | Not for profit | Collaborative approaches (sourcing, production, lobbying) |
| | Lean manufacturing | Cradle-2-Cradle | Solar and wind-power based energy innovations | Use oriented PSS- Rental, lease, shared | Consumer care - promote consumer health and well-being | Demand management (including cap & trade) | Hybrid businesses, Social enterprise (for profit) | Incubators and Entrepreneur support models |
| | Additive manufacturing | Industrial symbiosis | Zero emissions initiative | Result-oriented PSS- Pay per use | Ethical trade (fair trade) | Product longevitiy | Alternative ownership: cooperative, mutual, (farmers) collectives | Licensing, Franchising |
| | De-materialisation (of products/ packaging) | Reuse, recycle, re-manufacture | Blue Economy | Private Finance Initiative (PFI) | Choice editing by retailers | Premium branding/ limited availability | Social and biodiversity regeneration initiatives ('net positive') | Open innovation (platforms) |
| | Increased functionality (to reduce total number of products required) | Take back management | Biomimicry | Design, Build, Finance, Operate (DBFO) | Radical transparency about environmental/ societal impacts | Frugal business | Base of pyramid solutions | Crowd sourcing/ funding |
| | Sharing assets (shared ownership and collaborative consumption) | Use excess capacity | The Natural Step | Chemical Management Services (CMS) | Resource stewardship | Responsible product distribution/ promotion | Localisation | "Patient / slow capital" collaborations |
| | Extended producer responsibility | | | | | | Home based, flexible working | |

Figure 4: The sustainable business model archetypes.

Bocken et al.,(2014) introduced sustainable business model archetypes to describe groupings of mechanisms and solutions that could contribute to creating business models for sustainability. The following archetypes (outlined in figure 4) are identified as starting points for sustainable business models in order to go through this circular transition. In the next sections, these four sustainable business models archetypes are discussed more in depth. With the aim of identifying how sustainable business model innovation can contribute towards the transformation from linear to circular economy.

2.2.2 How to align value propositions with a circular economy model

If companies want to transform their way of doing business and contribute more towards our environment and society, then they should start with rethinking their value propositions. In other words, rethinking the bundle of products and services, customer segments, and customer relationships with the aim of creating more economic value in concert with ecological and societal value. This is necessary because the created value is the reason why customers turn to one company over another (Boons and Lüdeke-Freund, 2013, Osterwalder and Pigneur, 2010). A good business model is focused on the creation of distinctive value propositions that are aligned with customer needs, costs and risk structures, and enable significant value capturing by firms (Teece, 2010, Porter and Kramer, 2019). Innovative business models can play a role when translating products designed for reuse into attractive value propositions (Ellen Macarthur Foundation, 2014). The value propositions of the four sustainable business model archetypes (outlined in figure 4) are summarized in figure 5 (Bocken et al., 2016). Such high-potential value propositions can be created via the way a firm configures the value chain, or with its activities when creating, producing, selling, delivering and supporting its products or services (Porter and Kramer, 2019).

| Sustainable Business Model Archetype | Value proposition |
|--|---|
| (i) Maximize material and energy efficiency | Create products and services that, in the end, result in less resource depletion, waste, emissions. With the aim of creating less pollution than alternatives with similar functionalities. |
| (ii) Create value from waste | Waste is eliminated by using existing waste streams as valuable input to other production. Products and consumption systems are created to ensure that everything that is considered as waste is revived for other uses. |
| (iii) Substitute with renewables and natural processes | Lower the impact on the environment by addressing resource constraints and focusing on fully renewable, recyclable or biodegradable resources which can be used in consecutive life cycles. |
| (iv) Deliver functionality instead of ownership | Satisfying users needs by selling services and outcomes, a product can provide, rather than the product itself. This concept is also called: “product as a service”. The focus shifts from manufacturing stuff to maximize consumer use of products. This results in a lower throughput of materials and better alignment of manufacturer and consumer interests. |

Figure 5: Value propositions relevant for CE (Bocken et al., 2016, Lacy and Rutqvist, 2015)

2.2.3 Value creation and delivery within a circular economy

According to Porter and Kramer (2006), “Too often CSR activities start from a tension between business and society, resulting in a hodgepodge of unconnected activities disconnected from business and strategy!”. This disconnection is often identified as immaterial sustainability, which can have a negative effect on value creation and delivery. This so-called immaterial sustainability is defined as: “sustainability

initiatives which are not material to the performance of the business model or focus on areas where the business has the greatest impact on society”. In contrast, material sustainability can be understood as: “initiatives focused on social and environmental issues that are relevant for the company’s business model” (Khan et al., 2016). Compared to CSR, creating shared value is more integral to a company’s competitive position and profitability. Because this new approach is focused on identifying and expanding the connections between societal and economic progress (Porter and Kramer, 2006). It is important that companies rethink their value creation and delivery in the direction of material sustainability (Khan et al., 2016). If companies aim to change their value creation and delivery, this means they have to rethink their central drivers of the business model; key activities, resources, partners and distribution channels (Osterwalder and Pigneur, 2010). How the four sustainable business model archetypes (outlined in figure 4), described in 2.2.1, can create and deliver value while moving towards a CE, is summarized below.

| Sustainable Business Model Archetype | Value creation and delivery |
|--|---|
| (i) Maximize material and energy efficiency | Partnerships and activities established to use fewer resources, generate less waste, emissions and pollution. Or new partnerships aimed at improving efficiency and reducing supply chain emissions via innovation. |
| (ii) Create value from waste | Partnerships and activities established to eliminate waste, close the loop, or recapture wasted value through sharing. Or new partnerships (potentially across industries) aimed at capturing and transferring waste streams. |
| (iii) Substitute with renewables and natural processes | Partnerships and activities established to innovate products and production process design by introducing renewable energy and materials which can be used in consecutive life cycles. Or new partnerships to deliver nature inspired solutions and renewable resource supply and energy systems. |
| (iv) Deliver functionality instead of ownership | Partnerships and activities that enable delivery through service offerings, incentivize redesign for durability, reparability and upgradability. Or new partnerships to create more direct consumer relationships, educate consumers to shift away from ownership, and integrate supply chains. |

Figure 6: Value creation and delivery relevant for CE (Bocken et al., 2016)

A variety of studies focusing on value creation within a circular economy suggest the importance of the concepts called ‘closed material loops’ and ‘the power of circles’ (Geissdoerfer et. al, 2017). The power of circles (appendix 2) explains how value can be created in four different ways: the power of the inner circle, circling longer, cascading use, and pure circles. These sources of value creation result in: lower production costs, improved product longevity, redistribution efficiency, material productivity, triple-line growth and a changed mindset where waste is seen as ‘food’ (Ellen Macarthur Foundation, 2015). In the end, the increasing pressure from sustainability issues, discussed earlier in this study, will drive unprecedented opportunities to create shared value (Porter and Kramer, 2019).

2.2.4 Value capturing within a circular economy

Originally, value capturing within business models explains how revenue is earned from the provision of goods and services via the company’s cost structure and revenue model (Osterwalder and Pigneur, 2010). However, moving towards a CE changes the way businesses are generating revenue: profits are generated from the flow of materials and products over time, instead of selling artifacts (explained in figure 7: iv). In specific, more value is captured by companies through material and energy efficiency, and additional revenues for providing more services and bearing the costs of product ownership. Within a CE, value capturing is about pricing per unit of service (e.g. number of uses, performance), and joint reductions of operating cost and risks for firms and society (Bocken et al., 2016). How the four sustainable business model archetypes (outlined in figure 4) allow value capturing within a CE is summarized in figure 7.

| Sustainable Business Model Archetype | Value capturing |
|--|--|
| (i) Maximize material and energy efficiency | Value for the company is captured through dealing more efficiently with material use, waste and compliance resulting in cost reduction, increased profits and competitive pricing advantages. Moreover, value for the environment and society is captured through a reduced footprint. |
| (ii) Create value from waste | Turning waste into value and reusing materials leads to cost reduction for both the environment and economy. Moreover, value for the environment and society is captured through a reduced footprint and waste, and due the fact that less new materials are needed for production. |
| (iii) Substitute with renewables and natural processes | Value for the company is captured via additional revenues from new products and services. Moreover, value for the environment is captured through reduction of emissions (associated with burning fossil fuels), waste, and use of non-renewable resources. |
| (iv) Deliver functionality instead of ownership | Companies capture value through the received payments for services they provide to their customers. Whereas, in the past value was captured through payments for ownership of products. Now, companies bear these costs of ownership, which can allow consumers to access previously expensive products. This increases societal benefits and market potential of innovations. |

Figure 7: Value capturing relevant for CE (Bocken et al., 2016)

2.2.5 Circular Economy in the FMCG industry

Nowadays, FMCG companies are changing the way of creating value by reconsidering the original drivers of food consumption (taste and quality) and focusing on shared value creation; nutrition as a more fundamental need for consumers (Kramer and Porter, 2011). In addition, academics state the significant need for FMCG companies to refocus the way of delivering, using, and recapturing goods as well aimed at better retainment of valuable resources within a circular economy (Walkter et al. (2015). Not only because it can be beneficial for themselves, but also because societal gains can be even greater than ever, because firms are far more effective than governments and nonprofits at motivating people to embrace new concepts, such as healthier food or environmental friendly products (Kramer and Porter, 2011).

According to Walkter et al. (2015), the concept of a circular economy applied within the FMCG industry is an underdeveloped area within research, resulting in a knowledge gap. This section will create a comprehensive overview, with the existing literature, about the FMCG industry in the light of a CE. The following global developments are expected within the period of 2010-2025: an increase of 1,1 billion people, 1,8 billion middle-class consumers, 57 percent food spending, and 24 percent caloric consumption (appendix 4). This will result in rising input costs, commodity volatility and a dramatic shift towards packaged products (increase of 47 percent packaging) and rapidly increasing amount of waste at end of life (increase of 41 percent end-of-life materials) (MacArthur, 2013, McKinsey & Company et al., 2015). Within the European food sector, 31 percent is wasted along the value chain, therefore food is identified as a major contributor to current waste streams. Yet, there is major untapped potential for recovering materials and bringing them back in the biosphere to rebuild natural resources after being extracted on the reverse loop (MacArthur, 2013, McKinsey & Company et al., 2015, McKinsey Center for Business and Environment, 2016). A wave of technologies and new business models can help to reduce waste, while improving input efficiency by at least twenty or thirty percent. Across the economy as a whole, a circular model would lead to € 600 billion as a result of material cost savings (McKinsey Center for Business and Environment, 2016). Besides these benefits for businesses, the society and environment, we should take high transition costs into account as well, such as R&D and asset investments (McKinsey & Company et al., 2015).

The FMCG covers mainly non-durable and short lifespan products (e.g. food, beverages, household and personal care) and is characterized by high sales volumes and relatively low prices might give the impression that it is more difficult to shift towards a circular economy. However, the opportunities for the FMCG sector are considerable. Every year, academics suggest that 80 % of the materials, with a value of € 2.6 trillion, within the FMCG sector are discarded and never recovered (only 18% is recovered for decomposition, and 2 % for reuse). In the ideal future state, 70% of the FMCG products would be recovered for decomposition, 25 % for reuse, and 5% of the products not recovered (illustrated in appendix 5) (MacArthur, 2013). If companies would recover more materials and make better use of them by applying circular practices, this would lead to higher net results (McKinsey & Company et al., 2016).

Therefore, FMCG companies are advised to move away from technical nutrients towards biologically based loops aimed at making products serve a restorative purpose, instead of an exploitive purpose (MacArthur, 2013). A variety of studies mention that FMCG companies need to think in terms of ‘the butterfly model’ (figure 3) and the ‘four sources of value creation’: the power of circles (appendix 2) during this circular transition. In many ways, these two concepts are playing a significant role during this

transition within the FMCG sector. Finally, providing ‘FMCG products as a service’ and implementing a CE as a way to fulfill customer requirements offers great potential in the future. If companies would only supply what can be consumed, reduce biological and technical waste, keep materials within the technical cycle, and find ways to reintroduce materials safely into the biological cycle, that would allow companies to capture untapped potential and tackle significant issues such as food waste (Walkter et al., 2015).

2.3 Conceptual Framework

2.3.1 Relations and structure of the conceptual framework

In this section, the conceptual framework is described. The basis for this framework is built by four different theories: 9R Framework (figure 2), Sustainable Business Model Archetypes (figure 4), the Butterfly Model (figure 3), and Creating Shared Value, which are all displayed in figure 8 and visualized in figure 9. The conceptual framework is constructed as such, that the transition towards a CE is described at first. Because, the literature review shows the significant need for transformational change towards a circular economy, which is restorative and regenerative by design. The benefits of this circular model are considerable for the FMCG industry, because there is a large untapped potential to recover materials and bring them back in the biosphere, rebuild natural resources and tackle significant issues, such as food waste. When analyzing data, the waste hierarchy model (9R Framework) will be used to classify indicators according to circular economy strategies and in view of the circular transition.

A wide variety of studies share the idea that a circular transition involves sustainable business model innovation. In the literature review, four sustainable business model archetypes are discussed (figure 4,5,6 and 7), because they are seen as starting points for going through a circular transition. These new business models will be included in the conceptual framework, because they create the opportunity to look how firms can redefine their value propositions, creation, delivery, and capturing when going circular. In this model shared value creation is emphasized too, because academics stated that considering a wide range of stakeholder interests and the so-called ‘triple bottom line’ of sustainable business models is a good way to integrate sustainability into the business agenda, and optimize and maximize value in all areas. Moreover, the concept of closing material loops, when moving towards a CE, is shared by academics and businesses across industries. Therefore, the Butterfly Model is included in this framework, because this diagram will help to focus on continuous flows of material, distinguish between technical and biological materials, and stimulate system thinking during the data analysis.

Through this research the links between new business models, closed material loops and shared value creation will become clear, as well as how they contribute towards the central drivers of a CE: designing out waste and pollution, keeping products in use, and regenerating natural systems. Overall, this conceptual framework will be used as a lens to analyze collected data and investigate how FMCG multinationals can transform their way of doing business in the direction of a circular economy. With the ultimate goal to foster system effectiveness and achieve a positive impact.

2.3.2 Overview of theories used in the conceptual framework

| Authors | Theory |
|--|---------------------------------------|
| J Kirchherr, D Reike, M Hekkert (2017) | 9R Framework |
| NMP Bocken, SW Short, P Rana, S Evans (2014) | Sustainable Business Model Archetypes |
| Ellen MacArthur Foundation (2013) | Butterfly Model |
| Porter and Kramer (2011) | Creating Shared Value |

Figure 8: the theoretical basis for the conceptual framework

2.3.3 *Figure of the Conceptual framework*

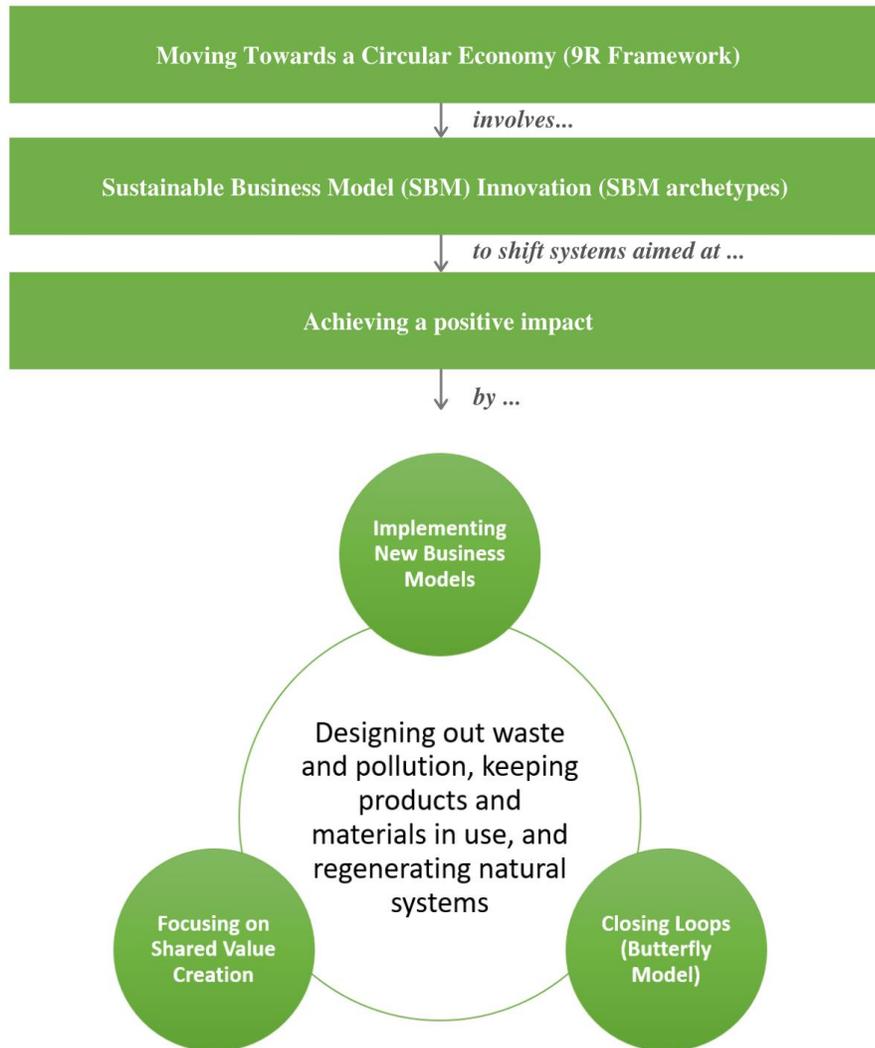


Figure 9: *The conceptual model*

Chapter 3: Methodology

3.1 Comparative case analysis and content analysis

This study aims to create a better understanding of circular business transformation and how FMCG companies can go through this transition in a way shared value is created. To achieve this objective and empirically investigate the associated problem statement, case study research and content analysis will be applied as research methods, because it is a suitable way to discover the why and how of this particular phenomenon (Thomas, 2015). This case study will be interpretive and based on archival documents, mainly annual reports and newspaper articles, to investigate CE transformation in its real life context.

3.2 Sampling

The sample of this study will contain five listed FMCG multinational companies, which are briefly explained in figure 10. Five cases are selected, because multiple case studies are a powerful means to create a theory, as they allow replication and extension among single case studies (Eisenhardt, 1991).

| Company | Short description | Headquarters |
|-----------------------|--|----------------------------|
| Anheuser-Busch InBev | The world's leading brewer with a portfolio of 630 beer brands, operations in 50+ countries, and around 170,000 employees. Core business: Beverages- Beers | Leuven, Belgium |
| Danone | Global FMCG company with products in 120+ countries, and more than 100.000 employees. Core business: Food and Beverages - Dairy, Plant-Based, Early Life Nutrition, Waters and Medical Nutrition. | Paris, France |
| Heineken | Leading developer and marketer of premium beer and cider brands. With a portfolio of 300 products, operations in 70+ countries and more than 80,000 employees. Core Business: Beverages - Beers and ciders | Amsterdam, The Netherlands |
| The Coca Cola Company | A total beverage company with operations in 200+ countries and territories, a portfolio of 500+ brands, and more than 700,000 employees. Core Business: Beverages | Atlanta, USA |
| Unilever | Global FMCG company with operations in 190 countries, a portfolio of 400+ brands, and around 155,000 employees. Core Business: Consumer goods - beauty and personal care, foods and refreshments, home care, and water purifier. | London, United Kingdom. |

Figure 10: Short description of cases according to their official company website

These cases are selected, because these companies are operating in the FMCG sector in Europe (almost all headquarters are located in Europe as well). All five offer their consumers a wide variety of products within their product portfolio, in at least 50 countries, and at least 80,000 employees. But most important, all five multinationals are leading players in the field of CE, as they are part of the CE100 network. This network brings together business innovators, cities, governments, universities and thought leaders within the field of circular economy (Ellen Macarthur Foundation, 2017). These companies can be seen as extreme cases, because they are front runners in the circular economy within the FMCG industry. As mentioned, a circular transition within a multinational context is often complex, however these five multinationals are scaling circular business models, products and materials, which creates opportunities in terms of data collection and best practices to learn from.

3.3 *Data collection*

The company websites in combination with databases, such as GREENfile, Financial Times and Factiva are used for data collection. Per case, the ten most recent annual (sustainability) reports are taken into account, and thirty additional relevant public (corporate) documents (e.g. newspaper articles, panel discussions, whitepapers, interviews, consulting reports) are searched via the following keywords: circular economy, closed-loop supply chain, closing the loop, cradle-to-cradle, circular transition AND business models, business model innovation, sustainable business model, value creation, value delivery, shared value creation, best practices. This study incorporates 200 data sources that were published within the time framework of 2010-2020. In appendix 6-10, all 200 data sources are displayed with the name of the case, case number, name of the source, title, publishing date. With the focus on these five cases, this study has collected secondary data that provides in-depth information about current strategies, business activities and criticism from outsiders. Overall, this qualitative approach is selected, because it facilitates the possibility to make case comparisons, discover important patterns, and understand how context matters for a circular transition. Empirical evidence from real-life practices will be used to make an original contribution to the field of circular economy.

3.4 *Data analysis plan*

Based on the theoretical and the conceptual framework we would expect companies to transform practices and strategy in the direction of the circular economy: moving upwards in the 9R hierarchy framework, closing material loops, focusing on shared value and eco-effectiveness, and implementing new circular business models. This would enable FMCG companies to deal with increasing pressure, tackle various problems and simultaneously capture large untapped shared value over time. However, it is stated in the theoretical framework, that a lot of companies still lack the knowledge and practical evidence to identify

how to go through this circular transition successfully or efficiently and overcome barriers. The conceptual model is used as a 'lens' to analyze the collected data and look to what extent the theoretical concepts from the literature match intentions and deliverables in reality. The conceptual model can be seen as a 'flat' model, in the sense that it is purely descriptive and there is no value judgment behind it. Therefore, I complicated my conceptual model by adding value judgments and making a distinction, when analyzing the data, between talk, action and criticism.

The data analysis is aimed to provide useful findings to answer the research questions. This study used a structured data analysis approach to organize collected data, and empower and speed up analysis. In specific, the Gioia methodology is applied to create a proper basis for building a data structure. First and second-order coding are used to create "aggregate dimensions" (Gioia et al., 2013). Coding is used to assign units of meaning to collected information via exhaustive, valid, and mutually exclusive labels (Maher et al., 2018). This study has not only looked at what can be seen in the data, but also explicitly searched for concepts described above and use theoretical concepts as starting points. These concepts can be seen as deductive codes which are going to be analyzed within the collected data. The following questions are taken into account: which theoretical concepts are (not) encountered within the collected data? Can new codes be identified when analyzing data? In appendix 11, an explanation is given on how all elements of the conceptual framework will be analyzed and which indicators/indications will be taken into account. During all stages of coding, confirmation and contradictory data are analyzed and labelled to prevent results from being affected by confirmation biases.

Data-to-theory connections should be visible for readers, in the form of linkages among quotes in text, which are defined as first order codes. This first-order analysis organized all relevant statements under its appropriate code, 460 in total. Afterwards, the second-order analysis elaborated on all these first order codes by looking at possible patterns and explanations. Categories are identified to seek which themes can provide useful insights to explain or describe the phenomena. When the set of themes and concepts is in hand, the frequencies of all themes are analyzed for all five cases to qualify the data. These 41 second-order themes are distilled towards 5 "aggregated dimensions", based on the categories and themes formed with the collected data. With a full set, this is assumed to be a proper basis for building a data structure (Gioia et al., 2013, Maher et al., 2018). In the end, all aggregated dimensions are analyzed to provide answers to the empirical sub questions and main research question. In Appendix 12, an example is given in which the process from first-order codes up to the aggregated dimension is visualized. In addition, all 41 second-order codes, frequencies and 5 aggregated dimensions are displayed in appendix 13-17.

3.5 *Validity and reliability*

Within this study, coded data is used to analyze all cases, look for patterns, and build a comprehensive picture of the circular transition within the FMCG industry. To ensure the quality of qualitative research, the following criteria are usually taken into account: reliability, internal validity, and external validity (Marshall & Rossman, 2014).

First of all, reliability is important because the data collection techniques and analytic procedures should reproduce consistent findings if repeated by another researcher. To ensure the reliability, this study collects and analyzes all data sources in the same systematic way. During the data collection, the same keywords and databases are used, and the same amount of sources are collected per case. During the data analysis, the conceptual framework (visualized in figure 9) is used as a lens to analyze every source with a similar focus (explained in appendix 11). All data is structured in the same way: from a large amount of first-order codes (quotes), towards a reduced amount of second-order codes (themes), and distilled towards a few aggregated dimensions (overarching themes). In the end, this study aims to use a research process which is verifiable, consistent and clearly documented to ensure dependability of the results.

Second, the internal validity is important to ensure the credibility and believability of findings. Within this study, theoretical and empirical data are compared to prevent that research findings are strongly influenced by the good standing of researchers or by the self-formulated and changing key performance indicators of circularity. In the end, this increases the credibility of the findings and has a positive effect on the internal validity.

Third, the external validity is concerned with the applicability and generalizability of the research findings beyond the specific research context (Marshall & Rossman, 2014). This study has used purposive sampling to select cases that provide the most in-depth information regarding a circular transition. A range of different FMCG multinationals is selected to prevent that the sample is 'too homogenous', which counteracts the generalizability of findings. Therefore, the sample contains five companies that have different products within their portfolio, are headquartered in different countries, differ in terms of company size, and operate in different European countries. The representativeness of this study is enhanced by incorporating at least 200 data sources. Both confirmatory and contradictory data are analyzed and labeled to prevent results being affected by confirmation biases. Finally, for every case, every annual report from the last ten years is incorporated to mitigate the influence of timing or coincidences, look at the development over time, and increase the external validity of the results.

Chapter 4: Results

4.1. Data Analysis

In this section, the findings of this study are reported based upon the theoretical framework and data analysis, which has provided five aggregated dimensions (figure 11). All 460 first order codes (quotes) are organized into 41 second-order codes (themes), which are distilled into 5 aggregated dimensions (overarching themes). During the data analysis also the frequency of the second-order codes in different cases is analyzed. In the end, all dimensions are characterized in the following categories: talk (strategies and commitments), action (real practices and deliverables), or criticism (critical view of outsiders). To illustrate how these so-called aggregated dimensions are created, an example is given about dimension one in appendix 13. Below, all aggregated dimensions are discussed one by one.

| Number | Category | Title |
|-------------------------------|------------------|---|
| <i>Aggregated dimension 1</i> | <i>Talk</i> | <i>Triple-line growth</i> |
| <i>Aggregated dimension 2</i> | <i>Talk</i> | <i>New business models & technologies</i> |
| <i>Aggregated dimension 3</i> | <i>Action</i> | <i>Bottom-up innovation & Coevolution</i> |
| <i>Aggregated dimension 4</i> | <i>Action</i> | <i>Recycling & Reduction</i> |
| <i>Aggregated dimension 5</i> | <i>Criticism</i> | <i>Eco-efficiency</i> |

Figure 11: overview aggregated dimensions

4.1.1 Aggregated dimension 1: Triple-line growth

The aggregated dimension ‘Triple-line growth’ is found as a crucial factor in the circular transition of the five companies in this study: Coca-Cola, Danone, Anheuser-Busch Inbev, Heineken and Unilever. This aggregated dimension elaborates on the desire to change towards a circular model and why this underlying rationale is important. In figure 12, an overview is provided of all the second-order codes and frequencies per case to illustrate how this aggregated dimension is created. Most second-order codes about triple-line growth build upon the literature by stating how this is applied within corporate strategies.

| Coca-Cola Danone Anheuser-Busch Inbev Heineken Unilever | | TALK : 1-20 Action: 21-35 Criticism: 35-41 | | | | | | TALK : 1-2 Action: 2-3 Criticism: 5 |
|---|---|--|--------|----------|----------|----------|---------------------------|---|
| First order codes (460) | Second Order codes (41) | Frequency | | | | | Aggregated dimensions (5) | |
| TALK | | Coca-Cola | Danone | Ab-Inbev | Heineken | Unilever | | |
| | 1. Companies mention commitments about creating shared value | 1 | 6 | 1 | 5 | 7 | 1. Triple-line growth | |
| | 2. Strategies focusing on sustainable growth | 3 | 3 | 1 | 0 | 4 | | |
| | 3. Companies point out the interdependency of topics | 1 | 1 | 0 | 1 | 0 | | |
| | 4. Companies are talking about redesigning the current system | 2 | 2 | 0 | 2 | 2 | | |
| | 5. Communicate about rankings and certifications | 0 | 2 | 1 | 4 | 1 | | |
| | 6. Companies mention the risks of the linear system and how they want to | 5 | 0 | 5 | 4 | 0 | | |
| | 7. Companies talk about the integration of practices throughout the value chain | 1 | 1 | 2 | 8 | 1 | | |
| | 8. Companies communicate in terms of eco-effectiveness | 0 | 5 | 1 | 1 | 2 | | |
| | 9. Companies communicate in terms of eco-efficiency | 3 | 2 | 7 | 6 | 2 | | |

Figure 12: aggregated dimension 1 with all corresponding second-order codes

It is found that shared value is often seen as a strategic concept to enable and capture economic value for the companies itself through delivering social and environmental benefits. The second-order code: creating shared value, is represented among all five companies. However, the frequency of this code in the case of Unilever, Heineken and Danone is higher. This implies that these companies care more about the creation of share value. However, not enough evidence is obtained to make that assumption. Moreover, companies like Unilever and Danone mention an existing relationship between a circular economy and shared value by stating: “the benefits of a circular economy are clear for business, society

and the environment” and “The principles of a circular economy help the company to transform and couple growth with environmental protection, while fostering inclusive solutions to drive social progress” (Ellen MacArthur Foundation, 2017, The Observer, 2020). Companies believe that material topics, such as climate change, do not exist independently and are connected to public and private interests. For example, Danone builds upon this belief by stating the importance of connecting material topics with more specific concepts such as sustainable sourcing or circular economy (Danone, 2019).

The second-order code ‘strategies focusing on sustainable growth’ is represented among all cases, except Heineken. Sustainable growth is highlighted as an important pillar for the transition towards a circular economy and long-term growth. The Former CEO of Unilever mentioned that explicitly during a meeting hub in Davos: “Scaling up initiatives that put sustainable growth first is what we need in moving forward: towards a circular economy.” (Unilever, 2013). On the one hand, all companies, except Ab-Inbev, criticize the way the current food system has evolved and mention the need to redesign the food system. Danone elaborates on this by saying: “we need to change the tide in terms of diversity, the way we work with commodities around the world” (Danone, 2019). Also risks of the linear system are mentioned as a reason to redesign food systems. Within this sample, only the beverage companies point out these linear risks for companies and society. For example Ab-Inbev states: “The risk of water scarcity – a risk which we share with the local community.” (Hochreiter and Ab-Inbev, 2019). On the other hand, Coca-Cola points out that companies should be cautious. If companies do not redesign carefully, they will fail to achieve a circular economy, or even increase the world’s carbon footprint (Loepp, 2020).

Within this sample, it is found that integration of sustainability throughout the value chain is a crucial part of strategy. In particular, Heineken points out the importance of integrating sustainability within all practices. For example, they state: “Our ambition is 'Brewing a Better World' in every one of our activities – from sourcing, producing, marketing and selling our products all the way to how they are consumed, and how we can reuse and recycle waste” (Heineken, 2020). Besides this ‘value chain approach’, the companies in this study mention their ambition to change from an ‘not harm’ approach towards ‘making a positive impact’, which is often associated with circular economy practices. Danone elaborates on this by saying: “We strive to be a game-changer to foster positive solutions for the planet. For example, we commit to sustainable sourcing for all our ingredients and to enhance the circular economy of packaging.” (GlobalNewsWire, 2018). The second-order code ‘companies communicate in terms of eco-effectiveness’ is represented among all companies, except Coca-Cola. The frequency of this code in the case of Danone is relatively high, which implies that the company cares more about the shift towards eco-effectiveness.

However, it is found that the majority of these five companies still communicate more often in terms of eco-efficiency. The second-order code: “companies communicate in terms of eco-efficiency” is represented among all companies, and the frequency of this code is relatively higher compared to the one about eco-effectiveness, especially for the beverage companies. One example of a typical eco-efficiency statement is: “Heineken aims to increase reusing, recycling, and repurposing products and materials in ways that reduce the negative impact on the environment and communities” (Ellen MacArthur, 2019). The following statement of Unilever is another example of a strategy which is still focused on reduction, neutrality or efficiency: “Reducing the impacts of our own manufacturing operations – eco-efficiency – is a long-standing element of our strategy to build a sustainable business (Unilever, 2014).

Concluding, the aggregated dimension ‘triple-line growth’ shows that inclusive and sustainable growth is an important underlying rationale, for all companies within this study, to become circular. The current state of the food system is evaluated, and the desire to change towards a circular model to mitigate the linear risks is mentioned as well. In the end, the long-term focus on a positive impact on people, planet, and profit is often mentioned as priority and linked with shared value within corporate strategies. Meanwhile, most cases still communicate more often in terms of eco-efficiency.

4.1.2 Aggregated dimension 2: New business models & technologies

This dimension demonstrates that new business models and technologies play a key role during the circular transition of these five companies. Below, an overview is provided of all the second-order codes and frequencies per case to illustrate how this aggregated dimensions is created

| Coca-Cola Danone Anheuser-Busch Inbev Heineken Unilever | TALK : 1-20 Action: 21-35 Criticism: 35-41 | | | | | TALK : 1-2 Action: 2-3 Criticism: 5 | |
|---|---|-----------|--------|----------|----------|---|---------------------------------------|
| First order codes (460) | Second Order codes (41) | Frequency | | | | | Aggregated |
| | TALK | Coca-Cola | Danone | Ab-Inbev | Heineken | Unilever | |
| | 10. Companies mention that operating circular involves business model innovation | 4 | 4 | 3 | 3 | 22 | 2. New business models & technologies |
| | 11. Companies announce new collaborations and innovations as a way to move forwards | 4 | 7 | 3 | 5 | 8 | |
| | 12. Strategic pillar: Substitute with Renewables & Natural processes | 0 | 1 | 1 | 0 | 0 | |
| | 13. Strategic pillar: Use waste as Input | 9 | 5 | 4 | 1 | 6 | |
| | 14. Strategic pillar: Close Loops | 4 | 1 | 0 | 5 | 1 | |
| | 15. Strategic pillar: Maximize Material & Energy efficiency | 1 | 0 | 0 | 1 | 0 | |
| | 16. Strategic Pillar: Combine Sustainable Business Model Archetypes | 1 | 2 | 3 | 2 | 1 | |
| | 17. Companies mention starting points: self-assessments, build understanding of the CE, and use frameworks for guidance | 0 | 0 | 2 | 2 | 1 | |
| | 18. Customer engagement is identified as important when going circular | 8 | 0 | 0 | 0 | 1 | |
| | 19. Companies stress out the importance of Venture Capital, circulate capital and long-term investments | 3 | 4 | 3 | 1 | 2 | |
| | 20. Companies mention they redesign once, then test with brands or within markets, rethink, and scale-up afterwards. | 5 | 4 | 3 | 2 | 0 | |

Figure 13: aggregated dimension 2 with all corresponding second-order codes

The second-order code ‘new collaborations and innovations’ is broadly covered by all cases. In specific, a circular economy is seen as a phenomenon, which can not be implemented by one person or organization. This is confirmed by one of the brand directors of Unilever by saying: “To move toward a circular economy, we need the whole consumer goods industry on the journey, which means moving from individual company efforts to joint industry action.” (The Observer, 2020). Besides the importance of collaboration, innovation is also mentioned as an important building block for the circular transition. The

following statement of Coca-Cola outlines a few advantages: “innovation and technology will make the practices of a circular economy better and more easy and efficient” (World Economic Forum, 2019).

It is found that all five cases mention that a circular transition involves business model innovation as well. The frequency of the second-order codes ‘business model innovation’ and ‘new collaborations & innovations’ is relatively high compared to other codes within this dimension. On the one hand, this implies that these two strategic pillars are the most important. On the other hand, we also observe deviating frequencies between the cases, which makes it more difficult to make assumptions. For example, the frequency of second-order code ‘business model innovation’ for Unilever is more than five times the equivalent of the others. However, companies do see circular business models as a catalyst to shift towards circularity. Unilever confirmed this by stating “New business models and innovations, using circular economy principles, are transforming traditional take-make-dispose thinking with incredible speed.” and “Circular business models are useful for translating products and services designed for reuse into attractive value propositions” (Unilever and Forum For the Future, 2018, Unilever, 2020).

Statements about business model innovation are investigated within press releases and annual reports over the last ten years. It is found that strategies can often be classified into one of the four sustainable business model archetypes mentioned within the literature and the conceptual framework. Most strategies are classified as ‘use waste as input’ or ‘a combination of sustainable business model archetypes’. The other business model archetypes are rarely mentioned among these cases. In particular, the business model archetype ‘deliver functionality rather than ownership’ was not mentioned at all. In other words, companies do not mention the shift towards FMCG services in their strategies and commitments so far.

A circular transition requires investments. All companies mention the importance of venture capital, circular capital and long-term investments when moving towards a circular economy. Specifically, Danone and Ab-Inbev do communicate regularly about their corporate venture units or funds as a sufficient way to co-build the circular economy. For example, Ab-Inbev mentions: “The 100+ Accelerator program allows us to co-create solutions that will help us to reach sustainable goals, such as our circular packaging target” (Ab-Inbev, 2018). Meanwhile, companies realize the urgency to provide adequate resources to scale-up circular practices. They also aim to create financial stability and focus more on non-financial outcomes. A very recent article in the Financial Times elaborates on that by stating: “Danone has worked to stabilize farmers’ profit margins. This makes it easier for farmers to plan investments in sustainable agriculture and regenerative farming practices to create healthy soil that retains water and can sequester carbon” (Financial Times, 2019).

Ab-Inbev, Heineken and Unilever mentioned some non-financial goals within their strategies. These companies align their strategies with international frameworks such as Sustainable Development Goals (SDG). SDGs are often seen as starting points for becoming circular, because they provide guidance, key insights and stimulate firms to think beyond their brand or company. Looking at the route-to-market strategy for circular products and initiatives, we clearly see a pattern throughout all strategic concepts: first 'redesign', then 'test' and 'scale-up' afterwards. Most first-order codes are still focused on 'first moving' brands or local initiatives in terms of circularity. In addition, an important role for customers is discovered within the approach of Coca-Cola. The second-order code 'Customer Engagement' was found eight times for Coca-Cola, and rarely for the other cases. The following statement of Coca-Cola demonstrates the willingness to collaborate with customers: "As we move into recycling and innovate, we also have to show consumers the opportunities to change with us." (Waste 360, 2020).

Concluding, companies believe that they should adapt their business models in order to realize the concept of a circular economy. On the one hand, new models such as 'using waste as input' or a combination of elements of sustainable business model archetypes is frequently mentioned as a strategic focus. But on the other hand, other business model archetypes, such as 'deliver functionality rather than ownership' are never mentioned at all. It is found that strategies are not focusing on food services and renewable or natural substitutes yet. Moreover, it is also found that all cases are still at the beginning of this journey and mainly focus on redesigning and testing. In order to accelerate a circular transition, collaboration with stakeholders is seen as a crucial strategic concept. However, relevant stakeholders, such as customers, are not mentioned within the majority of circular strategies.

4.1.3 Aggregated dimension 3: Bottom-up innovation & Coevolution

The last two aggregated dimensions are characterized as ‘talk’ and the next two dimensions as ‘action’. In other words, the next two sections will demonstrate what these cases do or have achieved in the light of a circular economy and how they accelerate this transition. This aggregated dimension suggests that bottom-up innovation and coevolution plays a significant role in the implementation plan. The second-order codes, and corresponding frequencies per case, are displayed below in figure 14.

| First order codes (460) | Second Order codes (41) | Frequency | | | | | Aggregated dimensions (5) |
|-------------------------|--|-----------|--------|----------|----------|----------|---|
| | | Coca-Cola | Danone | Ab-Inbev | Heineken | Unilever | |
| | TALK : 1-20 Action: 21 - 35 Criticism: 35 - 41 | | | | | | TALK : 1-2 Action: 2-3 Criticism: 5 |
| | | | | | | | |
| | | | | | | | |
| | 21. Companies invest in self-assessments and employee training before implementing circular practices. Afterwards they stimulate stakeholders to catalyze the concept of a circular economy. | 1 | 1 | 0 | 2 | 0 | 3. Bottom-up innovation & Coevolution |
| | 22. Co-evolution: innovators, consumers and incumbents work together to scale-up innovations and technologies | 1 | 4 | 2 | 1 | 0 | |
| | 23. Design once, test with one market/product and afterwards scale up. Often brands are used for marketing | 1 | 4 | 2 | 1 | 1 | |
| | 24. Companies aim to prevent short-termism by focusing on non-financials outcomes and creating financial stability | 0 | 1 | 0 | 1 | 0 | |

Figure 14: aggregated dimension 3 with all corresponding second-order codes

This study investigates how large FMCG companies organize the shift towards a circular economy. It is found that the majority of cases believe that circular practices cannot be successfully implemented without a proper understanding of the circular economy. For example, Heineken highlights the launch of their online learning platform and their self-assessment. The following statement of Coca-Cola also states the importance of knowledge during this transition: “Investing in the technical hardware to provide clean water wasn’t enough. Education was key to understanding and through a program of pictorial instructions, Coca-Cola was able to enlighten the communities, they came to help.” (Global Times, 2016).

It is found that the second-order code ‘companies announce new collaborations and innovations’ (talk) is relatively higher than the second order code ‘coevolution: innovators and incumbents work together to

scale-up innovations and technologies'(action). Unilever is a good example, because the frequency of 'talk' is eight and 'action' is zero. This implies that these FMCG companies intend to collaborate, but in reality this real coevolution and transformation of the food industry is not at an advanced stage yet. However, a few innovations and collaborations are implemented on a relatively small scale by the majority of companies. The following example demonstrates that Ab-Inbev works together with start-ups to develop new innovations: "Protes, the food investment of Anheuser-Busch InBev's venture arm, is developing snacks made with protein recycled from grain used in the brewing process (Bloomberg, 2019). The frequency of action in the case of Danone and Ab-Inbev is relatively higher. So, a positive correlation is found between their corporate venture units and coevolution. Meanwhile, these corporate venture units are founded to provide the adequate resources to start-ups, a few companies like Danone and Heineken also mention the need to also focus on non-financials. The following quote of Danone shows how they focus on non-financial objectives: We stabilize prices for our farmers, which is an important step for us to become circular and focus more on non-transactional topics. You cannot manage that if you are only focused on transactional discussions" (ESCP Business School & Soubeiran, E., 2019). However, the frequency of this second-order code is too low to conclude something about this.

If we compare corporate strategies with actions, we see similarities in terms of the implementation of circular practices and products. All five companies focus on designing products and packaging first, then testing the concept on a relatively small scale, and if proved successfully then brands will be used to raise awareness on a larger scale. Unilever confirms this approach by saying: "It is important to design once, and deploy elsewhere and scale up afterwards, design according to the four R's: reduce, reuse, recycle, recover. Our waste was turned in, for example, new bricks, cement, school desks, or recycled into biofuel" (Unilever, 2015).

Concluding, this study finds a clear pattern within the implementation plans of these cases. These companies start with creating a better understanding of the circular economy, and designing the right products and packaging. Afterwards, they test the product on a relatively small scale. If the concept is tested and proved successfully, then they raise awareness via brands, and scale-up the innovation. However, within this study we do see an incongruity between intentions and actions in terms of coevolution and transformation of the industry. Danone and Ab-Inbev have launched corporate venture units which resulted in few projects and innovations, which are implemented on a relatively small scale. Finally, it is mentioned that FMCG firms should focus more on non-financial outcomes and engage more in non-transactional discussions during the circular transition, but this study lacks data to assume that.

4.1.4 Aggregated dimension 4: Recycling & Reduction

In earlier dimensions, all five cases have mentioned the urge to move towards a circular economy, the need to innovate new business models and develop (technical) innovations together. This aggregated dimension is very important for this study, because it investigates the differences between ‘talk’ and ‘action’. It is found that the majority of actions and deliverables can be characterized as recycling or reduction. This section describes which business models and innovations are implemented over the last ten years, what the shared benefits are, and how these companies consolidate progression and measure results. In figure 15, all second-order codes and frequencies are displayed for this dimension.

| Coca-Cola Danone Anheuser-Busch Inbev Heineken Unilever | | TALK : 1-20 Action: 21- 35 Criticism: 35 - 41 | | | | | TALK : 1-2 Action: 2-3 Criticism: 5 |
|---|---|---|--------|----------|----------|----------|---|
| First order codes (460) | Second Order codes (41) | Frequency | | | | | Aggregated dimensions (5) |
| ACTION | | Coca-Cola | Danone | Ab-Inbev | Heineken | Unilever | |
| | 25. Companies focus on non-financial KPIs to measure performance | 0 | 8 | 9 | 3 | 10 | 4. Recycling & Reduction |
| | 26. Working towards a circular economy involves business model innovation. Different elements of SBM archetypes are combined in practice. | 2 | 3 | 3 | 4 | 4 | |
| | 27. Companies substitute with renewables and natural processes | 0 | 2 | 2 | 2 | 1 | |
| | 28. Companies (rarely) mention the shift towards food services | 0 | 0 | 0 | 0 | 1 | |
| | 29. Companies rethink waste in practice | 0 | 1 | 3 | 5 | 2 | |
| | 30. Packaging redesigned for circularity | 10 | 6 | 1 | 1 | 0 | |
| | 31. Reused, Recycled or composted in practice | 3 | 3 | 2 | 4 | 2 | |
| | 32. Companies go back to the source, think throughout the entire value chain and close material loops in practice | 1 | 0 | 1 | 4 | 0 | |
| | 33. Companies aim to maximize material and energy efficiency | 2 | 5 | 2 | 7 | 3 | |
| | 34. Companies aim to rebuild natural capital and engage in eco-effectiveness | 1 | 3 | 0 | 2 | 0 | |
| | 35. Companies often engage in eco-efficiency when creating shared value, achieving triple-line growth or reducing costs | 1 | 1 | 1 | 1 | 8 | |

Figure 15: aggregated dimension 4 with all corresponding second-order codes

First of all, the following statement of Unilever shows that companies mention concrete steps to investigate new business models: “We continue to examine business models in a new light. Just last year, we piloted a new technology to recycle sachets. Now.. sachets can be turned into plastic pellets that can be used in the manufacture of new packaging and channeled back into the supply chain” (Szaky and Terracycle, 2019). Many activities or deliverables can be classified into one of four sustainable business model archetypes, or a combination of elements. The frequency of the second order codes: “maximize material and energy efficiency”, ‘reusing, recycling and composting in practice’, ‘redesign packaging for circularity’ and “use waste as input” is relatively high. In other words, it is found that practices are focused on the use of waste as input, more efficient production, and more efficient use of materials.

In particular, Danone, Ab-Inbev and Unilever focus on dashboards and non-financial KPIs to measure their actions towards a more circular economy. For example, Danone mentions the following key performance indicators to measure their progression: “Our target is to reach 100% recyclable, reusable or compostable packaging, this was 87% in 2018. Our target to reach 50% rPET on average in our water brands by 2025 and 25% by 2020 in underdeveloped countries, this was 12% in 2018” (Danone, 2019). For every case, the non-financial key performance indicators are investigated and classified on the 9R hierarchy framework. These figures are visualized and explained in the appendices 13-17 and one example can be found below in figure 16. Within these figures a distinction is made between talk and actions. For every case, an upward sloping pattern (moving towards a CE) over time was expected. However, a clear pattern is visible among all cases, in which all actions and intentions occupy a position around ‘reduce’ or ‘recycle’. In addition, it is obvious that almost zero actions or intentions can be classified in between these two aforementioned stages (e.g. ‘refurbish’, ‘repair’ or ‘remanufacture’).

Moreover, it is found that many implementation plans focus on the creation of more outputs with less inputs aimed at reducing the environmental footprint and costs, while creating a better reputation and mitigating linear risks. The following statement states the importance of cost savings and efficiency for Unilever: “ In 2019, Unilever sees no landfill waste anymore in its factories and has achieved 234 million USD savings and costs avoided (to reinvest back into the business), and has created 1000 jobs in the wider economy. We did all of this while reducing waste at the source and eliminating overconsumption of inbound materials.” (Szaky and Terracycle, 2019).

Thus, a lot of data has been collected about the intentions (talk) and activities (actions), which has been classified in the light of a circular transition. The outputs, figure 16 and appendices 13-17, demonstrate that most activities are classified as recycling or reduction. According to the 9R framework, these companies are moving towards a circular economy by focusing on reduction. But, they do still operate in a linear way by focusing on recycling. In the end, most activities are aimed at improving the outcomes at the end of the pipe. Therefore, it is found that companies mainly focus on eco-efficiency, resulting in a lower footprint, greater societal impact, and significant cost savings.

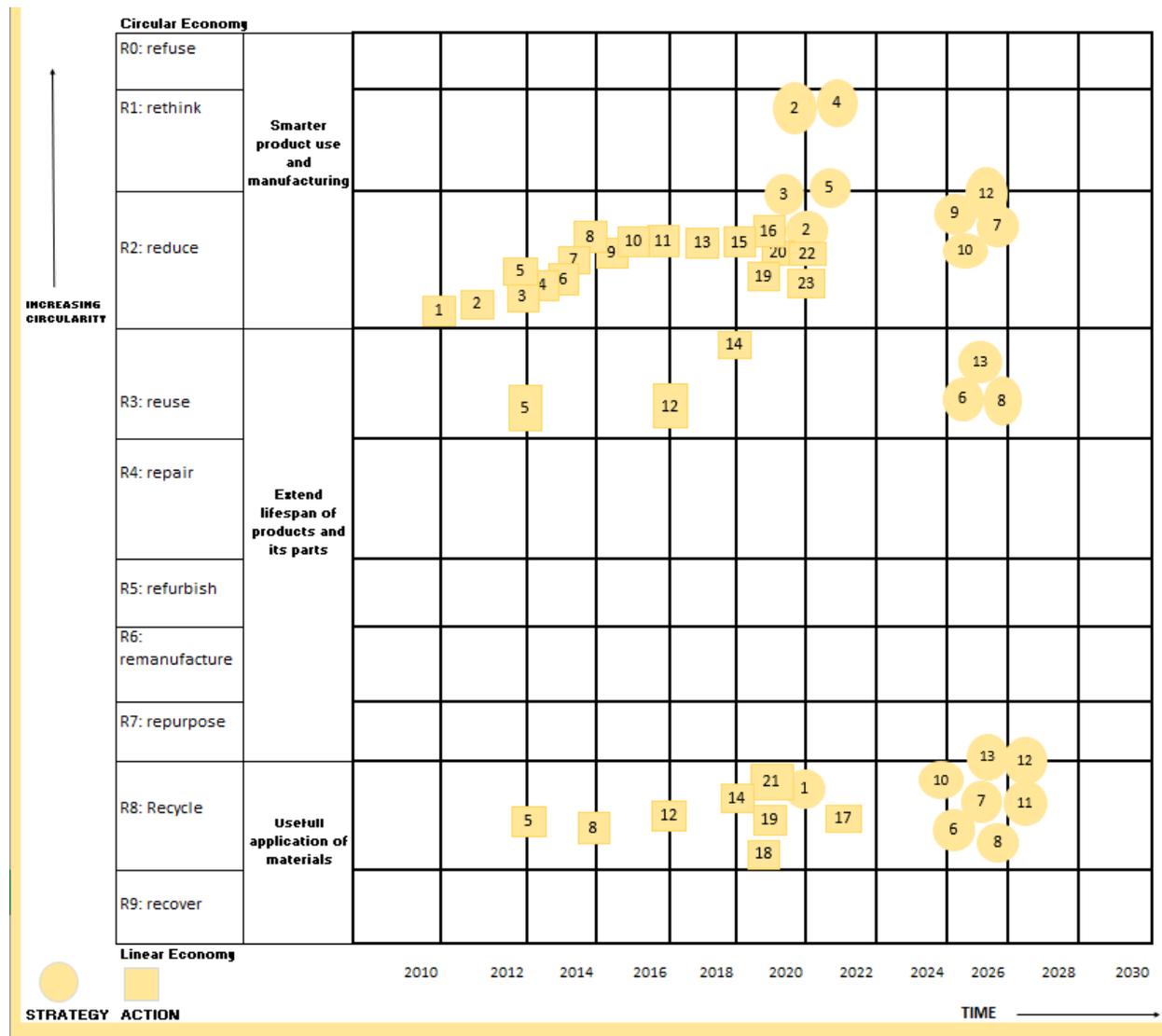


Figure 16: 9R Hierarchy Framework - Unilever (Explained in Appendix 17)

4.1.5 Aggregated dimension 5: Eco-efficiency

The last aggregated dimension highlights the critic's opposition about the aforementioned strategies and actions. This viewpoint is relevant, because it is assumed that outsiders look from an industry perspective and are less intended to frame reality. According to the critics in this study, the companies within this study do focus on eco-efficiency, and are still part of the problem, rather than part of the solution. In figure 17, all corresponding second-order codes and frequencies are displayed.

| Coca-Cola | TALK : 1-20 Action: 21 - 35 Criticism: 35 - 41 | | | | | | TALK : 1-2 Action: 2-3 Criticism: 5 |
|-------------------------|---|-----------|--------|----------|----------|----------|---|
| Danone | | | | | | | |
| Anheuser-Busch Inbev | | | | | | | |
| Heineken | | | | | | | |
| Unilever | | | | | | | |
| First order codes (460) | Second Order codes (41) | Frequency | | | | | Aggregated dimensions (5) |
| | Criticism | Coca-Cola | Danone | Ab-Inbev | Heineken | Unilever | |
| | 36. Critics argue that companies act primarily to enhance profits and improve their reputation and not go deep enough. They risk to be accused for greenwashing | 2 | 0 | 2 | 0 | 1 | 5. Eco-efficiency |
| | 37. Critics argue that recycling strategies are not enough to achieve eco-effectiveness | 3 | 1 | 1 | 0 | 1 | |
| | 38. Critics argue that food companies are not showing concrete actions | 0 | 2 | 0 | 4 | 0 | |
| | 39. Critics argue that companies are not carefully incorporating every element or actor along the value chain | 1 | 0 | 0 | 1 | 2 | |
| | 40. Critics argue that companies that are still the largest polluter should go beyond eco-efficiency | 7 | 0 | 0 | 0 | 0 | |
| | 41. Critics mention issues regarding the alignment of stakeholders | 0 | 2 | 0 | 2 | 0 | |

Figure 17: aggregated dimension 5 with all corresponding second-order codes

In the fourth dimension, it is mentioned that all companies focus on recycling and reducing. For all companies, except Heineken, sources are found in which it is described that business practices focusing on recycling are insufficient to go beyond eco-efficiency and move towards a circular economy. The following statement of the Washington Post clearly criticizes this so-called ‘eco-efficient approach’ of companies aimed at achieving a circular economy of plastics: “Coca-Cola, PepsiCo, Nestlé and Unilever talk about wanting to end plastic pollution, but the solutions they put forward rely on individual behavior change, and they rely on recycling. However, Recycling only delays the inevitable fate of plastic ” (The

Washington Post, 2020). Moreover, critics argue that companies mainly focus on higher profits and an improved reputation, and not redesign their systems and embrace transformation. In 2013, The Ends Report elaborated on that statement by saying: “The complete change in business models and culture needed to bring about a circular economy is going to involve much more forethought at the front-end especially about how products are designed”.

Several critics mention that large companies don't bring their intentions and strategies into practice and highlight the gap between symbolic actions and substantive actions. For example Greenpeace believes that companies should take more action and strongly doubts the credibility of plans by saying: “Coca-Cola, Danone, Mars, Pepsi and Unilever are among the 250+ signatories that have pledged to tackle plastic pollution, though Greenpeace, has urged these corporations to show concrete actions that focus on reduction (Greenpeace International, 2018). In addition, a few outsiders point out that companies should incorporate every step throughout the value chain and align stakeholders also with societal and environmental developments.

The frequency of the second order code ‘not part of the solution yet’ is high for Coca-Cola and zero for the other companies. The majority of codes is about the fact that Coca-Cola is one of the largest polluters in terms of plastic packaging, but is still part of the problem instead of being part of a solution. One example is: “Coca-Cola is one of the biggest producers of plastic waste (roughly 3 million tonnes). However, the firm reportedly said it would stand by its single-use plastic bottle to "accommodate consumers. So, Coca-Cola will not ditch single-use plastic bottles because consumers still want them (they reseal and are lightweight)”(Waste 360, 2020). So, this study shows that environmentalists and critics want big companies, such as Coca-Cola, to lead this journey towards a circular economy by moving towards a circular economy of plastics, and go beyond eco-efficiency.

Concluding, this study shows that critics believe that the companies in this study should move beyond their current eco-efficiency approach and become part of the solution, rather than part of the problem. They also mentioned that companies should focus less on recycling, increasing profits and improving their reputation, and focus more on redesigning products, resilient dynamism, and transforming the use of plastics in order to rebuild natural capital and move towards eco-effectiveness.

4.1.6 New Conceptual Model

Within this chapter, all aggregated dimensions are discussed one by one. All outputs are compared with the conceptual framework to investigate if it should be adapted or not. This study demonstrates that all cases take action to implement new business models, stimulate bottom-up innovation and coevolution, and realize triple-line growth. However, they are not yet focused on closing the loop, designing out waste and pollution, or regenerating natural systems. Currently, all cases focus on recycling and reduction. Therefore, this study suggests that these cases are still focused on eco-efficiency. The ‘new’ conceptual model (figure 18) visualizes the gaps and similarities between theoretical assumptions and actual findings, and highlights the focus on eco-efficiency, recycling, and reduction. Based on the data analysis, the size and color of certain elements are adapted to symbolize the focus on this element and its progression. Specifically, the smaller or orange elements require the most adjustments during the circular transition.

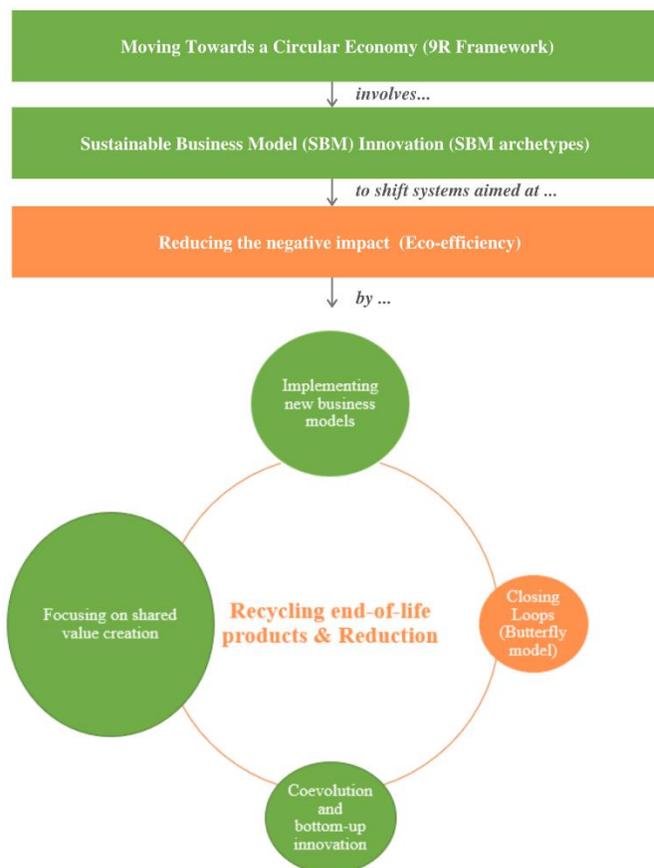


Figure 18: New conceptual model

Chapter 5: Conclusion and discussion

5.1 Conclusion

5.1.1 Conclusion

The problem statement of this study was: How can multinationals in the FMCG industry move towards a circular economy? The results suggest that material topics, such as climate change, cannot exist independently and are connected to people, planet and profit. Material topics are often linked to more specific concepts such as the circular economy. Over the last ten years, the five cases within this study have invested in learning, new collaborations, efficient manufacturing and more efficient use of (post-consumer) materials. This study shows that these firms mainly focus on recycling and reduction activities, as part of their circular implementation plan. Within this study, it is argued that a circular economy is not about recycling and reduction. Although more materials are recycled, most products are still designed for the linear system ultimately and will come to the end of its life, which is called downcycling. This current approach is not the right step forward, because minimization or dematerialization does not go beyond eco-efficiency and material loops are not closed yet. In other words: “Companies are making the wrong things perfect, and by that, they are perfectly wrong” (Braungart, 2012). These FMCG companies can move towards a circular economy by focusing on new designs, keeping products and materials in use, and regenerating natural systems. This can be achieved by implementing circular business models, closing material loops, stimulating coevolution and bottom-up innovation, and focusing on shared value.

5.1.2 Answering theoretical question one

The first sub-question was: Which business practices are central to the circular -and linear economy? Meanwhile, the FMCG covers mainly non-durable and short lifespan products, this study shows that the opportunities are considerable. However, the FMCG industry is still dominated by the linear economy, which means that products are extracted, produced, distributed, consumed, and discarded (also described as take-make-dispose). The theories within this study mention that linearity is characterized by actions, such as ‘recover’ and ‘recycle, which are focused on eco-efficiency and useful application of materials. In contrast, a circular economy is characterized by actions, such as ‘refuse’, ‘rethink’, and ‘reduce’, which are focused on eco-effectiveness and smarter product use and manufacture. All practices ‘in between’ aim to extend the lifespan of products and its parts. Moreover, within the literature circularity is often linked with the two concepts ‘the power of circles’ and ‘closed loops’, which play a significant role during the circular transition within the FMCG sector. It is suggested that FMCG companies should move away from technical nutrients and move towards biologically based loops. In addition, food products should serve a more restorative purpose, rather than an exploitive purpose. Thus, companies should keep materials within the technical cycle and look for new ways to reintroduce materials safely into the

biological cycle, that would contribute to solve the negative effects of the linear economy, reduce food waste and create shared value.

5.1.3 *Answering theoretical question two*

The second sub question was: How can sustainable business model innovation contribute towards the transformation from linear to circular economy? Based on the literature in this study, we know that a well-developed business model is essential to create, deliver or capture value from innovations. In addition, moving towards a circular economy requires changes within the current business model. Academics state that FMCG companies should refocus the way of delivering, using, and recapturing goods in order to retain more valuable resources. Therefore, sustainable business model innovation is considered to be important when companies want to mainstream the principles of a circular economy and capture the potential from circular business models. Based on literature and company's statements, we do see that the so-called triple bottom line of sustainable business models is considered as a good way to integrate sustainability into the agenda of companies. The following archetypes are identified as starting points for sustainable business models in order to go through the circular transition: (i) maximizing material and energy efficiency, (ii) creating value from waste, (iii) substitute with renewables and natural processes, and (iv) deliver functionality instead of ownership. On the one hand, researchers clearly state that sustainable business model innovation is recognized as a crucial factor to achieve greater environmental and social sustainability. On the other hand, very few research papers elaborate on this phenomenon within the FMCG industry yet. However, providing FMCG products as a service can already be considered as a valuable concept for companies within this industry.

5.1.4 *Answering empirical question three*

The third sub-question was: How do multinationals in the FMCG industry transform their way of doing business in the direction of a circular economy? This study investigated five cases: Ab-Inbev, Danone, Coca-Cola, Unilever and Heineken, which are all multinationals within the FMCG industry and part of the CE100 network. Based on this study, these companies are required to adapt their business models, look for new (cross-industry) partnerships, and stimulate coevolution. From a non-financial perspective, international frameworks such as sustainable development goals are considered to be important starting points for a circular strategy. In practice, these companies empower action towards a circular economy through bottom-up innovation and coevolution. Within this study, most cases start their implementation plan with creating a better understanding of the circular economy, collaborating and redesigning products and packaging. For example, Heineken has launched an online learning platform, Coca-Cola initiates projects to educate customers, and Danone and Ab-Inbev have launched corporate venture units to

accelerate the circular transition. However, this study also suggests that these companies are more likely to talk about new collaborations and innovations, than to take action. In the end, these companies are still at the beginning of the circular transition, and should fundamentally rethink their system. If they really want to go beyond eco-efficiency, then they should focus less on recycling or reduction, and focus more on designing out waste and pollution, make product use more intensive, and regenerate natural systems.

5.1.5 *Answering empirical question four*

How do multinationals in the FMCG industry innovate their business models in a way that shared value is created for stakeholders? It is found that triple-line growth is an important underlying rationale for all cases to move towards a circular economy. Companies believe that our food system should be redesigned in order to achieve sustainable growth. The aggregated dimension ‘new business models & technologies’ suggests that business model innovation and (technical) innovation is seen as a key element within the circular strategies of these firms. Since 2010, all cases did not move upwards on the 9R waste hierarchy model and kept their focus on recycling and reduction. This data analysis shows that most cases focus on the following sustainable business models archetypes: using waste as input, maximizing material and energy efficiency, or a combination of elements from archetypes. Many critics argue that these firms will never shift towards eco-effectiveness as long as they keep their focus on recycling and reduction. Because, this current approach does mainly focus on efficiency. As long as these firms do not fundamentally change their conventional business models, they will not foster eco-effectiveness, encourage sufficiency (seek to reduce consumption and production), or become part of the solution. Nevertheless, this study shows that eco-efficient business models can lead to significant cost savings, while reducing the negative effects on our environment and society. However, the shared benefits can be significantly larger if these companies would shift towards eco-effectiveness.

5.2 Discussion

5.2.1 *Comparison between theoretical and empirical findings*

Based on the literature, it was assumed that companies are shifting from linear towards circular models over time. In other words, an upward sloping pattern on the 9R waste hierarchy framework (moving towards a circular economy) was expected for every case. However, the figures in appendices 13-17 and the data analysis show that an upward sloping pattern does not exist, because all five FMCG companies focus (long-term) strategies and current practices on recycling and reduction. In addition, a large gap is found between these two strategies on the hierarchy framework. Literature states that much more of the value of the circular economy lies at the top of the hierarchy framework (e.g. rethink, refuse) and on the inner circles of the butterfly model (e.g. reuse, maintenance, cascading). If we look at the nature of foods

(non-durable and short lifespan) it makes sense that these products are not refurbished, remanufactured or reused. However, companies can redesign the way these FMCG products are consumed, produce or design packaging in a way to get rid of some products altogether, get more out of FMCG products, and stimulate responsible consumption. Moreover, the 9R framework can be criticized, because reduction activities score high in terms of circularity, while recycling activities score low. Looking at the definitions of circularity, this study shows that keywords at the top of this framework, such as reduction, cannot be seen as synonyms for eco-effectiveness. In addition, it is found that incremental actions do not always contribute towards circularity.

The amount of statements that all companies make about sustainable growth and the need to become circular is not in proportion with the amount of deliverables and actions that was found in the content analysis of 200 sources. Thus, this study shows an incongruity between literature, talk and action. According to the theory of Siano et al. (2017), it is stated that this difference between talk and action can increase the likelihood of being accused of greenwashing. In addition, if talk can influence action within these five FMCG companies, this may stimulate deceptive manipulation. Therefore, companies should prevent reputational damage and corporate irresponsibility by aligning talk with action.

Both academics and companies mention the significant role for business model innovation within the circular transition. Several actions and strategies are found in line with (a combination of elements from) sustainable business model archetypes such as ‘using waste as input’, ‘maximize material and energy efficiency’. However, this progress is still very limited, because companies did not manage to close material loops or design out waste, and some sustainable business model archetypes were not mentioned at all. For example, the shift towards FMCG is seen as a valuable opportunity within the literature, but is not mentioned in practice at all. Overall, the circular economy is defined as something which can not be achieved by one individual firm or sector. Both companies and researchers agree on the fact that collaboration is defined as an important pillar to scale-up disruptive innovations and become circular. In particular, cross-industry partnerships and the synergy between large companies and start-ups is often mentioned within the collected data. So, this study builds on Hockerts & Wüstenhagen (2010) by explaining how FMCG companies can stimulate coevolution in practice. In specific, this study emphasizes on implementing accelerator platforms, corporate venturing, and bottom-up innovation.

5.2.2 Practical and theoretical implications

This study builds on existing research about the circular economy and investigates how this circular transition is initiated by five FMCG multinationals and members of the CE100 list. Within the theoretical framework, the following concepts are characterized as important: shared value creation, implementation of new business models, and closing material loops. But how FMCG companies can embrace these concepts during the circular transition was unknown. Therefore, it is investigated how five FMCG companies moved towards a circular economy over the last ten years. The circular transition within the FMCG industry has not been investigated by a lot of researchers so far. So, this study provides new insights and new suggestions for future research. In the end, findings can serve as implications for large European FMCG companies that want to move towards a circular economy.

Throughout this study we do see that most companies mention the following building blocks for a circular transition: redesign and close loops, implement new business models, focus on shared value creation, and stimulate coevolution and bottom-up innovation. Within the figure below (figure 19), ten examples are given to make these building blocks more tangible and these real-life examples might accelerate the circular transition for other FMCG companies as well. However, these companies mention that circular practices cannot be successfully implemented without a proper understanding of the circular economy.

| Unilever | Coca-Cola | Heineken | Danone | Ab-Inbev |
|--|---|---|--|--|
| Unilever explores new business models (e.g. eco-refill formats). | Coca-Cola focuses on redesigning packaging (e.g. 100% plant-based / recyclable bottles). | Heineken stimulate systemic change by implementing strategies 'from barley to bar' and link them with SDGs. | Danone shifts to non-GMO ingredients to improve soil health and biodiversity. | Ab-Inbev has launched a corporate venture unit to co-build the circular economy and sell eco-innovations to large firms. |
| Unilever shifted towards 100% renewable electricity (more than 60% comes from solar, wind and hydro) | The Coca-Cola Company is a water positive business that replenishes 115% of water used in finished beverages. | Heineken implements a zero-waste to landfill strategy (landfill equals only 3%) | Shift towards new price mechanism in order to stabilize prices for farmers and focus on non-transactional discussions. | Ab-Inbev is cascading the brewer's spent grains to other industries as feed supplement. |

Figure 19: Best practices: two examples per case

Concluding, companies should realize that more economic value of this circular economy lies in the inner loops of the butterfly model. Fundamentally different strategies, such as 'refuse' or 'rethink', will enable companies to design out waste and pollution, close material loops, reintroduce biodiversity within agriculture, and rebuild natural capital. So, if these so-called Greening Goliaths want to shift towards a circular economy, they should focus on smarter product use and manufacturing in order to achieve eco-effectiveness. Only, if these FMCG companies go beyond efficiency, then they will find solutions, realize

sustainable growth, create shared benefits, and become more resilient as a company. To speed up this systemic change: companies can switch to fundamentally different business models, move away from linear designs and close material loops, create shared value, and stimulate coevolution and bottom-up innovations. Finally, this study is relevant because it shows that all five firms are still at the beginning of the circular transition, and explains how they can build on existing practices to go beyond eco-efficiency.

5.2.3 Limitations

This study has some limitations. First of all, no interviews were conducted with any of these cases. Therefore, this has led to an absence of more in-depth data information about the way these FMCG make decisions and tackle issues along this journey.

Secondly, the frequency of second-order codes per case is investigated to qualify data. However, not all codes within this study can be identified as mutually exclusive, which affects the reliability of this study because some codes could have been classified in more than one second-order code. If this study had created more criteria for the (second-order) codes, this had led to a more reliable approach of qualifying the data. However, due to a lack of time, I could not create criteria to count in a more structured and reliable way.

Third, the data that is collected for these five cases contains a lot of sources written by the companies themselves or by involved partners, therefore it might be the case that strategies and actions are expressed more optimistic or disappointing results might not be exposed. In addition, this study lacks financial findings about the circular transition. On the one hand, this study clearly elaborates on the benefits of a circular transition for businesses, the society, and our environment. But on the other hand, the high transition costs, such as R&D investments, are rarely mentioned within the literature and the empirical findings.

In the end, the external validity of this research is stated as the most important limitation, because it has the most influence on the conclusions and implications. We can doubt the external validity of this research. Since it is difficult to generalize the findings of these five leading companies to the whole FMCG industry. In all likelihood, other companies in the FMCG industry will lag behind the developments of these companies within this sample. In that case, it is not accurate to simply generalize findings of this study towards those companies outside this research context.

5.2.4 Future Research

This case study was mainly exploratory and included unobtrusive methods, which means that more-in depth research can be done in the future. The following themes are suggested to include within future research: the potential of FMCG services, financial perspectives, stakeholder alignment, and change towards eco-effectiveness. Below these associated research directions are explained in more in detail.

First of all, the relationship between circular practices and financials can be investigated in the future. Future research could investigate the financial aspects of the circular economy more in depth to know what it financially means to become circular. In specific, initial investments, feasibility, willingness to pay, and new revenue models could be taken into account. If these topics can be related to the shift towards a circular economy, then researchers can draw conclusions about profitability of circular FMCG companies as well.

Second, in the literature review it is stated that new business models are developed where companies shift from manufacturing stuff to maximize consumer use of products, resulting in lower throughput of materials and better alignment with stakeholders. The great potential of 'FMCG products as a service' is not found within this study and can be investigated within future research. Moreover, all cases do mention the importance of collaboration, therefore stakeholder alignment can be investigated more in depth. If future research papers can show that stakeholders, such as cities, governments and consumers can play a vital role, that could accelerate the circular transition within the FMCG industry.

Third, it is suggested to collect more in-depth data about cases with obtrusive methods. Therefore, future researchers are advised to conduct interviews with every case within their study to collect more in-depth data and improve the external validity of findings. Academics can ask FMCG companies about the financial aspects, the underlying reasons for strategies, the existing barriers, and the role of stakeholders within the circular transition. Moreover, critical questions can be asked as well, such as: Why is the firm mainly improving at the end of the pipe instead of designing out waste and pollution by intention ? Altogether, this will help future researchers to investigate which findings can be applied to other FMCG companies in Europe, clarify the hurdles of a circular transition, and investigate why systematic change is not realized yet.

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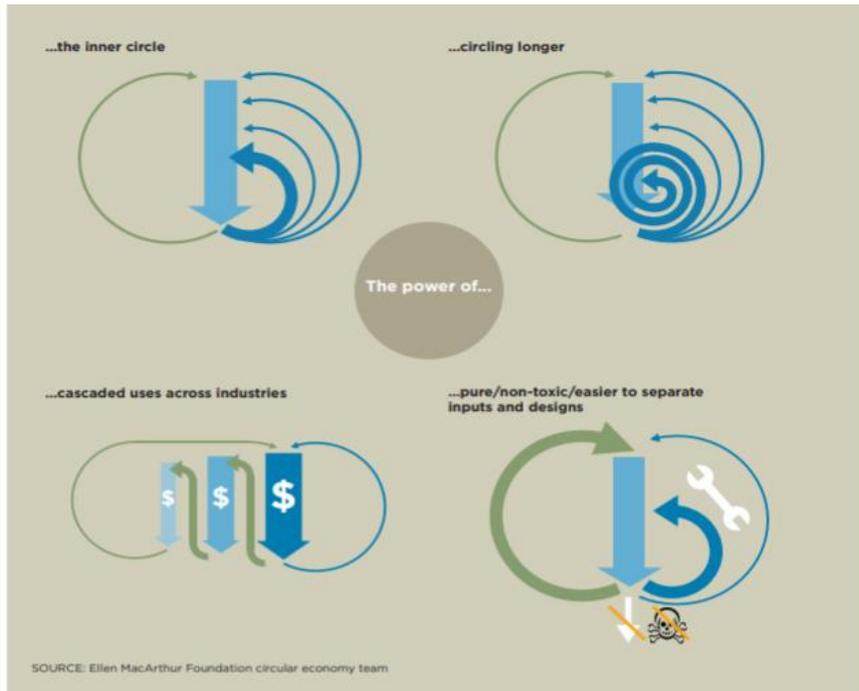
Appendices

Appendix 1: Price volatility has risen above long-term trends in recent decades



Source: Ellen MacArthur Foundation, World Bank (2015)

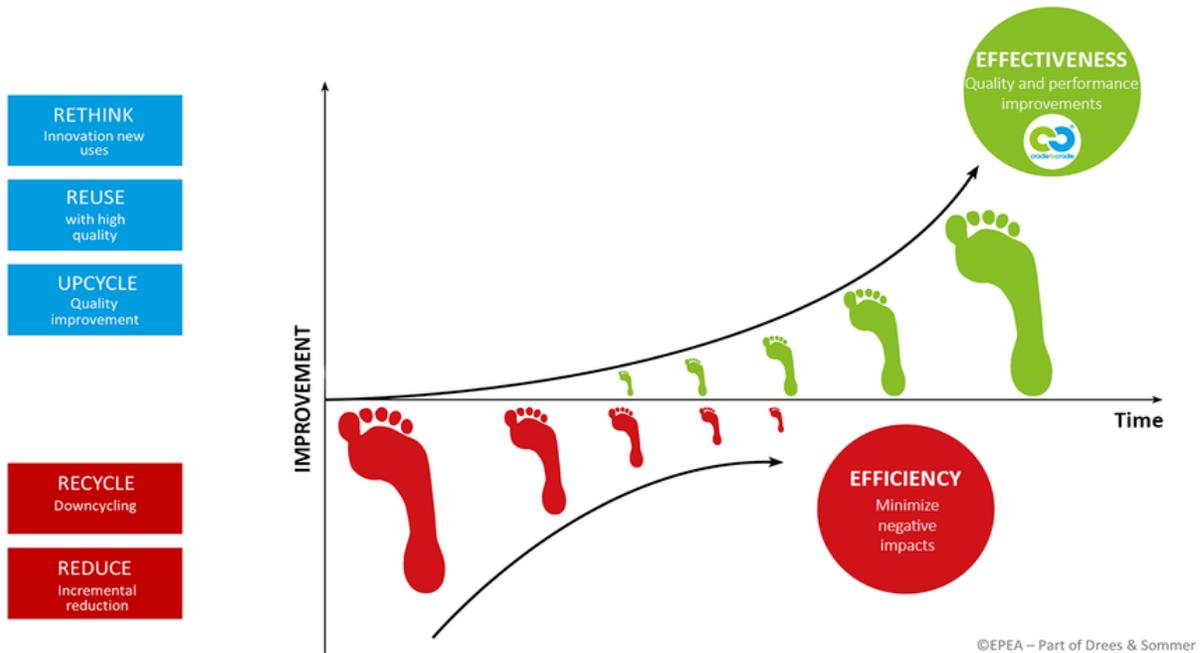
Appendix 2: The power of circles



Source: Ellen MacArthur Foundation, World Bank (2015)

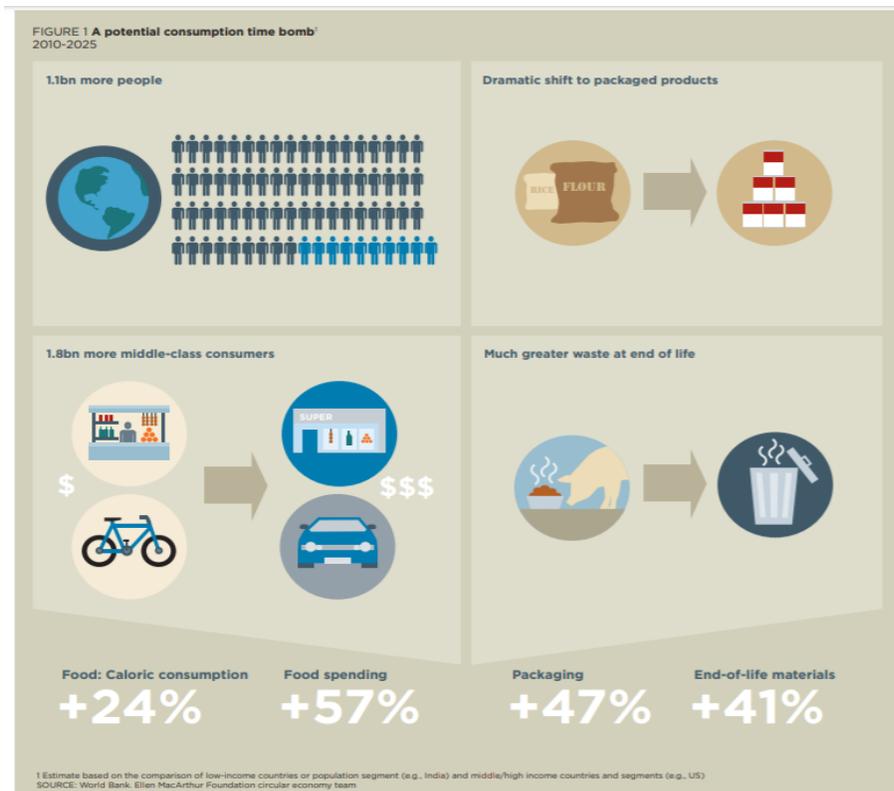
The power of circles explains how value can be created in four different: (1) the power of the inner circles, (2) the power of circling longer, (3) the power of cascading use, (4) the power of pure circles. First of all, the tighter the circle (illustrated in figure 3), the faster it returns to use and the higher the potential savings on the shares of resources and associated externalities. Second, circling longer is about maximizing the number of consecutive cycles and time in each cycle. Third, the power of cascading use is about diversification across the value chain. Fourth, the power of pure circles argues that uncontaminated materials streams boost collection and redistribution efficiency, and therefore also product longevity and material productivity.

Appendix 3: Eco-effectiveness instead of eco-efficiency



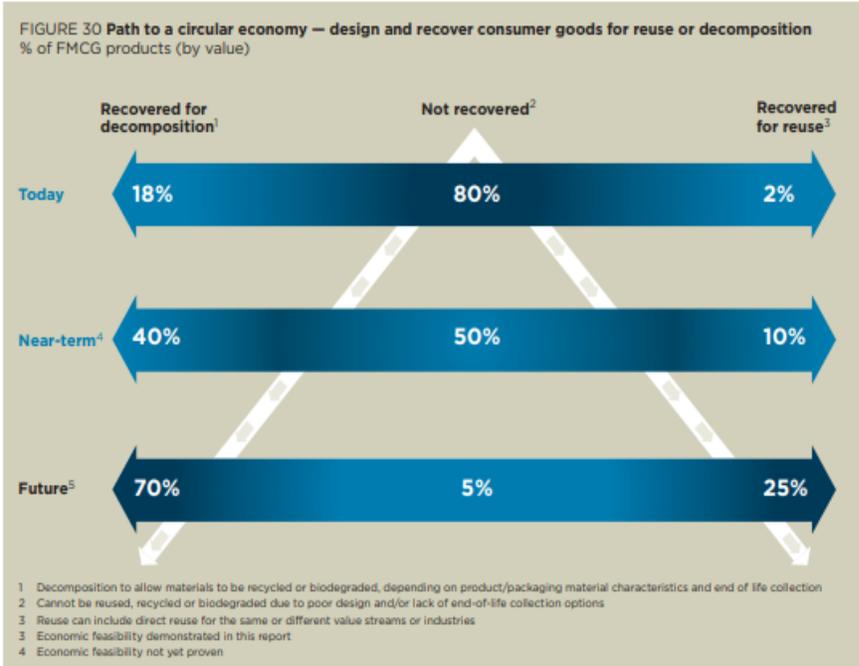
Source: EPEA GmbH

Appendix 4: A potential consumption time bomb



Source: (Ellen MacArthur Foundation, 2013)

Appendix 5: Path to a CE - Euromonitor, Expert interviews



Source: (Ellen MacArthur Foundation, 2013)

Appendix 6: Data Sources Danone

| Case Name | Source nr | Source | Title | Publishing date |
|-----------|-----------|--|--|------------------|
| Danone | 6 | The NASDAQ OMX Group (factiva) | Danone sets 2030 Goals for long-term sustainable value creation, supported by an innovative governance and employee engagement model | 26-4-2018 |
| Danone | 7 | The Economist | Danone rethinks the idea of the firm | 9-8-2018 |
| Danone | 8 | Ellen MacArthur Foundation | Global Partners Ellen MacArthur - Danone | 12 January 2017 |
| Danone | 9 | Danone - Website | Circular Economy of Packaging | 9-7-1905 |
| Danone | 10 | Danone - Website | Integrated Annual Report | 10-7-1905 |
| Danone | 11 | Forbes | For Danone, Business And Environmental Goals Are One And The Same | 4 June 2019 |
| Danone | 12 | GreenBiz | Interview: Danone North America's Merijn Dols on circular food systems | 12 July 2019 |
| Danone | 13 | Springer Nature, Accenture Strategy | the circular advantage - Case study Danone | 29 January 2020 |
| Danone | 14 | Danone - Youtube Channel | CEO Emmanuel Faber on One Planet Business for Biodiversity | 26-9-2019 |
| Danone | 15 | Danone - Website | Companies join forces to help tackle plastic waste with BP's enhanced recycling technology | 19-12-2019 |
| Danone | 16 | ESCP Business School - Graduate Business Conference 2019 | Circular Economy Business Models: The Future of Sustainability? - Panel discussion with executives from Renault, Danone and Le Grand Reservoir | 24-4-2019 |
| Danone | 17 | Greenpeace | Coca-Cola, Nestlé, Danone, Mars, Pepsi and Unilever sign global plastics pledge but still haven't prioritized reduction | 29 October 2018 |
| Danone | 18 | Packaging News online (Factiva) | Danone Waters UKI accelerates sustainability action | 9 March 2020 |
| Danone | 19 | WRBM Global food (Factiva) | Soup-To-Nuts Podcast: Innovative strategies for sustainable packaging by Coca-Cola, Nestle, Danone | 6 March 2020 |
| Danone | 20 | Economics Week (Factiva) | Phenix: Waste Reduction and Circular Economy Gain Ground: Phenix Welcomes Danone Manifesto Ventures as an Investor | 21 February 2020 |
| Danone | 21 | Institutional news(Factive) | Danone accelerates the transition towards a circular economy of packaging | 25 October 2018 |
| Danone | 22 | A/WP original Press Releases | Danone and Veolia Announce Unique Global Alliance to Meet the Challenge of Climate Change | 4-12-2015 |
| Danone | 23 | PR Newswire Europe | Danone Opens New Sustainable Nutricia Plant in the Netherlands to Meet Growing, Global Demand for Specialized Infant Formula | 25 March 2019 |
| Danone | 24 | Danone - Website | Circular Economy - Danone Packaging Policy | 10-7-1905 |
| Danone | 25 | WRBM Global Food | A lighter footprint: going green in manufacturing | 16-8-2019 |
| Danone | 26 | Financial Times | Food production that does not cost the | 25-9-2019 |
| Danone | 27 | Bloomberg | Big Food Rethinks Farming To Fight a Lack of Crop Diversity | 23-9-2019 |
| Danone | 28 | Harvard Business School | Leadership Speaker series - The Role of Business in Society: Creating Shared Value Innovation | 11 March 2014 |
| Danone | 29 | HEC Paris | can help a multinational company reinvent itself | 7 June 2016 |
| Danone | 30 | KPMG | 2016 Global Shared Value Award™ announcement: Danone, major global corporate recipient | 17-11-2016 |
| Danone | 31 | Waste 360 (GreenFILE) | Danone Accelerates Transition Toward Circular Economy | 29 October 2018 |
| Danone | 32 | PricewaterhouseCoopers | The road to circularity: Why a circular economy is becoming the new normal | 11-7-1905 |
| Danone | 33 | CNBC | Danone's Evian vows to use 100% recycled plastic in bottles by 2025 | JAN 18 2018 |
| Danone | 34 | Financial Times | The limits of the pursuit of profit | 23-9-2019 |
| Danone | 35 | McKinsey&Company | The circular economy: Moving from theory to practice - interview CEO Danone | October 2016 |
| Danone | 36 | Danone - Website | Sustainability Report 2009 | 22 April 2010 |
| Danone | 37 | Danone - Website | Sustainability Report 2010 | 28-4-2011 |
| Danone | 38 | Danone - Website | Sustainability Report 2011 | 26-4-2012 |
| Danone | 39 | Danone - Website | Sustainability Report 2012 | 25-4-2013 |
| Danone | 40 | Danone - Website | Sustainability Report 2013 | 29-4-2014 |
| Danone | 41 | Danone - Website | Sustainability Report 2014 | 29-4-2015 |
| Danone | 42 | Danone - Website | Economic and Social Report 2015 | 30 May 2016 |
| Danone | 43 | Danone - Website | Integrated Annual Report 2016 | 26 May 2017 |
| Danone | 44 | Danone - Website | Integrated Annual Report 2017 | 15 May 2018 |
| Danone | 45 | Danone - Website | Integrated Annual Report 2018 | 5-4-2019 |

Appendix 7: Data Sources Heineken

| | | | | |
|----------|----|---|---|------------------|
| Heineken | 46 | Ellen MacArthur Foundation | Six new members join the CE100 network | 24 July 2019 |
| Heineken | 47 | University & Research | Heineken invests in the local circular economy | 21 October 2014 |
| Heineken | 48 | WRBM Global Hospitality | The glass is always greener – how are drink makers embracing sustainability? | 14 February 2020 |
| Heineken | 49 | CE noticias financieras (Factiva) | Business esmens to green trend | 17 January 2020 |
| Heineken | 50 | CE noticias financieras (Factiva) | Heineken introduces new 100% recyclable chillers | 19-11-2019 |
| Heineken | 51 | CE noticias financieras (Factiva) | Heineken to transform glasses of festivals and concerts into furniture | 2-12-2019 |
| Heineken | 52 | Rubber World (Factiva) | The circular economy is here, don't get left behind | 1-11-2018 |
| Heineken | 53 | The Dutch Sustainable Growth Coalition (DSGC) | Circular Economy – DSGC companies on their journey of implementing circular business models | 14-12-2015 |
| Heineken | 54 | Heineken - Website | Our sustainability story | |
| Heineken | 55 | TU Delft | How to become the greenest beer in the World? | 6 July 2017 |
| Heineken | 56 | The Telegraph | Top tips for successful business innovation | 2-11-2017 |
| Heineken | 57 | Forbes | Nurturing Nature Will Be Crucial To The Future Health Of Wine, Beer And Spirits Producers | 25-4-2019 |
| Heineken | 58 | United nations | International Alliance for Responsible Drinking (IARD) | 28 June 2017 |
| Heineken | 59 | Ernst & Young | Heineken Case: 'Circular business is smart business' | |
| Heineken | 60 | Heineken - Website | Message in a Bottle 2018: Our sustainability stories | 10-7-1905 |
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Appendix 11: Which indicators will be taken into account when analyzing data?

Below, the corresponding elements of the conceptual framework are mentioned, with a brief explanation on how they will be analyzed and which indicators/indications will be taken into account when analyzing collected data:

- **The past achievements, current activities, and envisaged position will be classified on the 9R hierarchy model.** In addition, a clear distinction between talk and actions is made to investigate whether companies accomplish what they promise through the years and if they make progression in their way towards a circular economy. Activities such as ‘getting rid of products altogether’, ‘Completely redesign’, ‘getting more out of a product’ and ‘responsible producing and consuming’ can be classified as indicators for circularity. Whereas, activities focusing on ‘the take-make-dispose model’, ‘recycling (clear distinction between downcycling or upcycling)’, or generating heat energy by burning materials’ can be classified as indicators for linearity.
- **Whether the five companies focus on eco-efficiency or eco-effectiveness:** indicators for the eco-efficiency approach are ‘designs focusing on minimization of negative impact’, ‘producing more output with less input’, ‘a purpose characterized by no positive impact on the environment’. In contrast, eco-effectiveness is characterized by ‘redesigned systems aimed at realizing a positive impact’, ‘system shifts from linear to cyclical or from open-loop to closed-loop’, and ‘fostering system effectiveness by designing out negative externalities and simultaneously optimizing positive impact’.
- **To what extent the five cases innovate their conventional business models towards sustainable business models.** Two characteristics of sustainable business models will be analyzed for these five cases: (1) if they have a triple bottom line approach by integrating multiple dimensions (economic, societal, environmental). (2) if they consider a broad scope of stakeholders. In addition, the development of new value propositions, value creation and delivery networks, and value capture mechanisms will be investigated. For example, this study will analyze if companies reconceive products and markets, engage with new stakeholders, change stakeholder relationships, set new company goals, develop new revenue streams/models and capture the (ecological) benefits after product use.
- **To what extent the five cases implement new business models, building on the following Sustainable Business Model Archetypes (described in figure 4,5,6,7):** (i) Maximize material and energy efficiency (ii) create value from waste, (iii) substitute with renewables and natural processes (iv) delivering functionality rather than ownership. The first archetype will be

characterized by ‘new partnerships aimed at eliminating waste and pollution via innovation’, ‘redefining productivity (e.g. logistics, energy use, distribution)’, ‘identifying gaps and deficiencies in logistics, suppliers, distribution channels’ and ‘dematerialization of products, plastics and packaging’. The second archetype will be recognized by indicators such as: ‘design out life-cycle waste’, ‘turning waste into value’, ‘close material loops to use waste as input’, ‘new partnerships to capture and transfer waste streams’. The third archetype will be recognized by indicators such as ‘the shift towards renewable energy sources and recyclable, biodegradable resources’, ‘new zero-emissions initiatives’, and ‘new partnerships focusing on nature inspired solutions, renewable resource supply and energy’. The fourth archetype will be recognized by indicators such as: ‘shift focus from manufacturing stuff to maximize consumer use of products’, ‘product as a service/pay per use’, ‘rental, lease or sharing products’ and ‘educate consumer to shift from ownership, and integrate supply chains’.

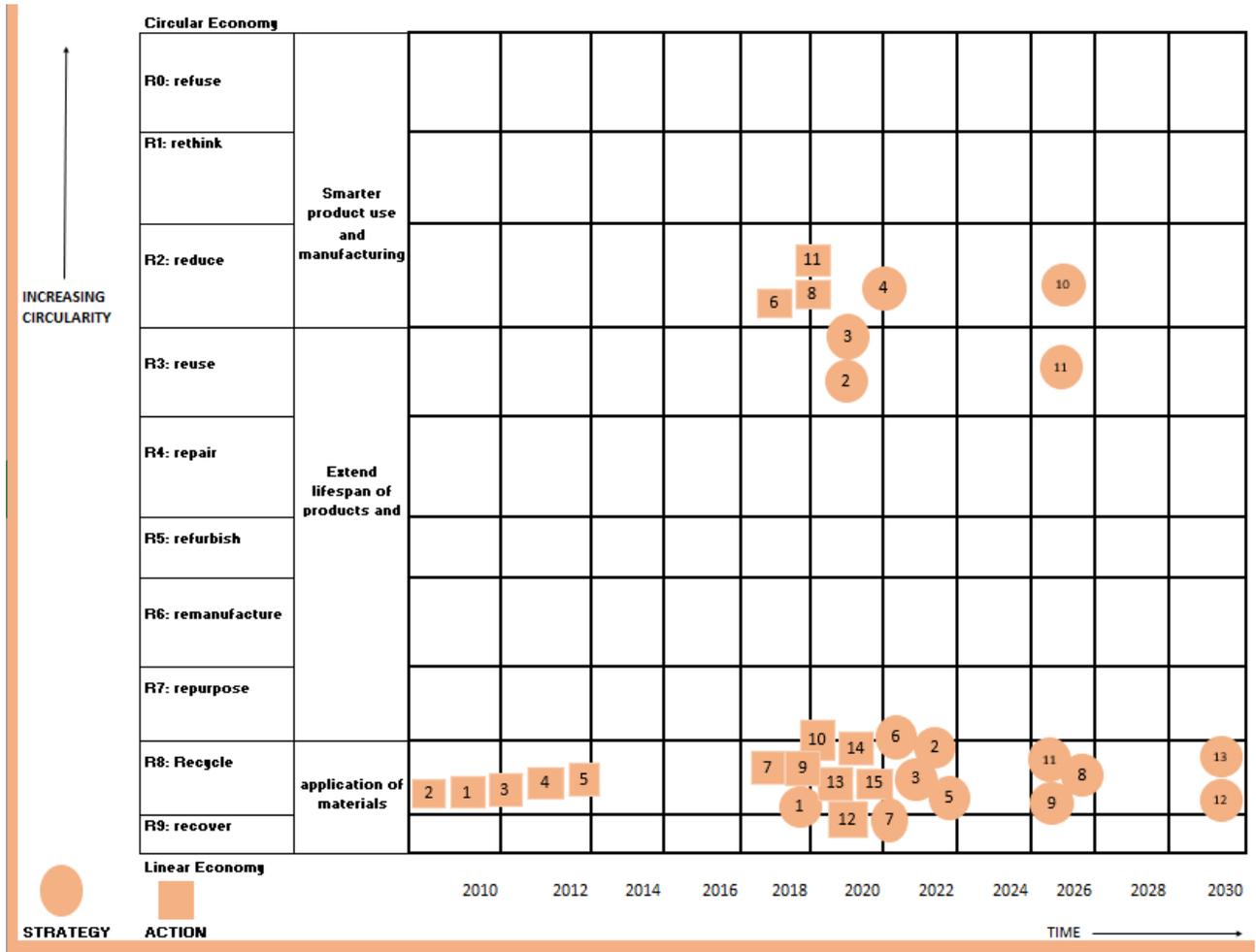
- **Whether the five FMCG companies are trying to shift systems towards closed-loop systems.** The movement in direction of closed-loop systems is indicated by the following characteristics ‘resource yields are optimized by circulating products’, ‘components and materials are kept in use at highest quality and in both technical and natural cycles’, “keep in circulation and the power of circles”, and “systems where the complete set of products is ultimately broken down either into basic components, which are made into new products, or biological ones, which return to the soil and therefore can be characterized as safe for both people and the environment”.
- **Whether these five cases focus on shared value creation:** this study will focus on indicators of shared value creation such as ‘the interdependency between the economy, society and environment and builds on the idea that businesses must reconnect company success’, ‘Sustainability initiatives that focus on selected social and environmental issues relevant to the company’s business model (material sustainability)’, ‘nutrition is a more fundamental need for society’, ‘how companies reorient their view from minimizing harm to maximize benefits’, ‘seeing environmental improvement as opportunity rather than as an issue’.

Appendix 12: Example Coding structure

This figure illustrates how second-order code 1 (out of 41) is created: ‘companies mention commitments about creating shared value’, which is part of the first aggregated dimension called ‘triple-line growth’. In the first column, twenty quotes are listed which can be characterized as ‘commitments about creating shared value’. As you can see in column two, these twenty quotes are distilled towards one second-order code (theme). Moreover, the third column shows the frequency of these codes per case. In the end, the first nine second-order codes (themes) are distilled to one aggregated dimension (overarching theme).

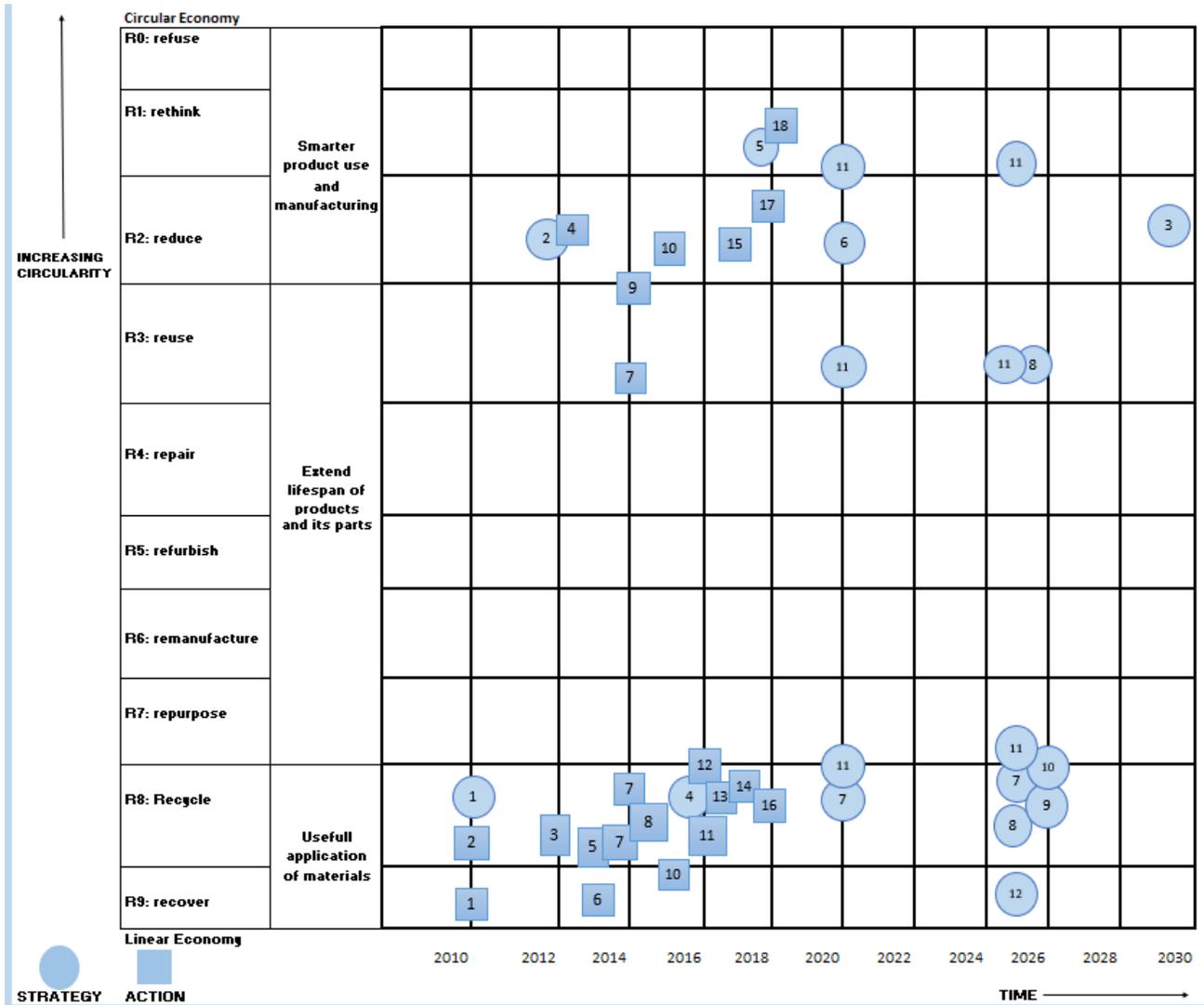
| First order codes (460) | Second Order codes (41) | Frequency | | | | | Aggregated dimensions (5) |
|---|--|-----------|-----------|--------|----------|----------|---------------------------|
| | | Talk | Coca-Cola | Danone | Ab-Inbev | Heineken | |
| Circular economy principles are helping us transform the way we produce, distribute and consume -- allowing us to couple growth with environmental protection, while fostering inclusive solutions to drive social progress | 1. Companies mention commitments about creating shared value | | | | | | |
| Heineken's view is that every green investment should add value -- by reducing costs, for instance, or by mitigating risks, or by creating new commercial opportunities. Business is about added value. All levels of our organization are linked to our sustainability agenda and indicators, that are carefully measured. | | | | | | | |
| For Unilever, a circular economy means that we should design products that need fewer resources, what is used should come from sustainable sources, and making the most use of them for as long as possible and then turn them into something else. Especially there is a big role for plastics, we strive to make all plastics reusable, recyclable, or compostable by 2025. Good for people, our business and our planet. | | | | | | | |
| Heineken shows commitment to reduce its footprint and the rewarding system is likely to increase sales. | | | | | | | |
| The purpose of Danone is not to create shareholder value. Instead it is to get healthy food to as many mouths as possible, benefiting everyone from suppliers to consumers to owners of the company. | | | | | | | |
| Not only does the Unilever sustainable living plan pledge to cut the company's environmental impact in half by 2020, it also vows to improve the health of one billion people and enhance livelihoods for millions, all while doubling sales. Mr. Polman says the sustainable living plan is profitable as well as ethical. | | | | | | | |
| Our business plan is to prove that we can be a force for good -- both as a business and as a corporate citizen -- out there with the rest of the communities that we work with | | | | | | | |
| A successful innovation strategy should focus on driving penetration, but also driving incremental value for you and your customers." Rebecca Haigh, head of innovation Heineken | | | | | | | |
| The benefits of the circular economy are clear for business, society and the environment. More effective use of materials means lower costs, less waste, [and] better risk management of raw materials and supply chain. | | | | | | | |
| This unique alliance between Danone and Veolia is built on a genuinely collaborative approach in which complementary skills contributed by each partner are harnessed to create shared value. | | | 1 | 6 | 1 | 5 | 7 |
| Architect and circular economy leader William McDonough added: "The optimization of packaging and plastics is so timely and important that all the people, communities and companies involved - suppliers, producers, retailers, customers and consumers - can work together now, with common values and purpose, to create and share beneficial value for generations to come." | | | | | | | |
| The purpose in business is to create economic value while creating shared value for society. Shared value will give rise to far broader opportunities for strategy and economic value creation and will drive the next wave of innovation, productivity, and economic growth. | | | | | | | |
| Its aim is to create shared value across all of our stakeholders by focusing on the delivery of concrete commitments in four areas that we can directly impact through our operations: Protecting water resources; Reducing CO2 emissions; Sourcing sustainably; Advocating responsible consumption. | | | | | | | |
| In 2010, Unilever launched the Unilever Sustainable Living plan, which is characterized as the blueprint for achieving the following outcomes by 2020: (1) We will help more than a billion people take action to improve their health and well-being. (2) We will halve the environmental impact of the making and use of our products. (3) We will enhance the livelihoods of thousands of people in our supply chain. | | | | | | | |
| Local sourcing is a priority because of the shared value it creates for the local communities, the country and for HEINEKEN | | | | | | | |
| Polman demonstrated how Unilever's ambitious vision to fully decouple growth from its overall environmental footprint and to increase its positive social impact has not only brought sustainability and positive social impact to the table, but simultaneously created twice the market growth and 300 percent shareholder return to Unilever's bottom line over a 10-year period. | | | | | | | |
| It's clear: When companies use renewable energy sources to power their factories, or slash the use of non-renewable plastics, or find innovative new ways to reduce waste, they're taking advantage of alternatives that are good not only for growth and profits, but also for society and the environment. That's a win for the "triple bottom line." | | | | | | | |
| Unilever embraced change by setting new goals: to double our business whilst reducing our environmental footprint, and increasing our societal impact (Sustainability Living Plan). Three years into our plan, we are proving that there is no contradiction between sustainable and profitable growth (anti-profit beliefs). | | | | | | | |
| "Our water stewardship program is focused on respecting water as a shared resource." Bea Perez (head of sustainability Coca-Cola) | | | | | | | |
| Danone's commitment to enable local cluster development through work with local farmers; and strong management commitment to shared value corporate strategy. | | | | | | | |

Appendix 13: Visualized 9R Waste Hierarchy - The Coca-Cola Company



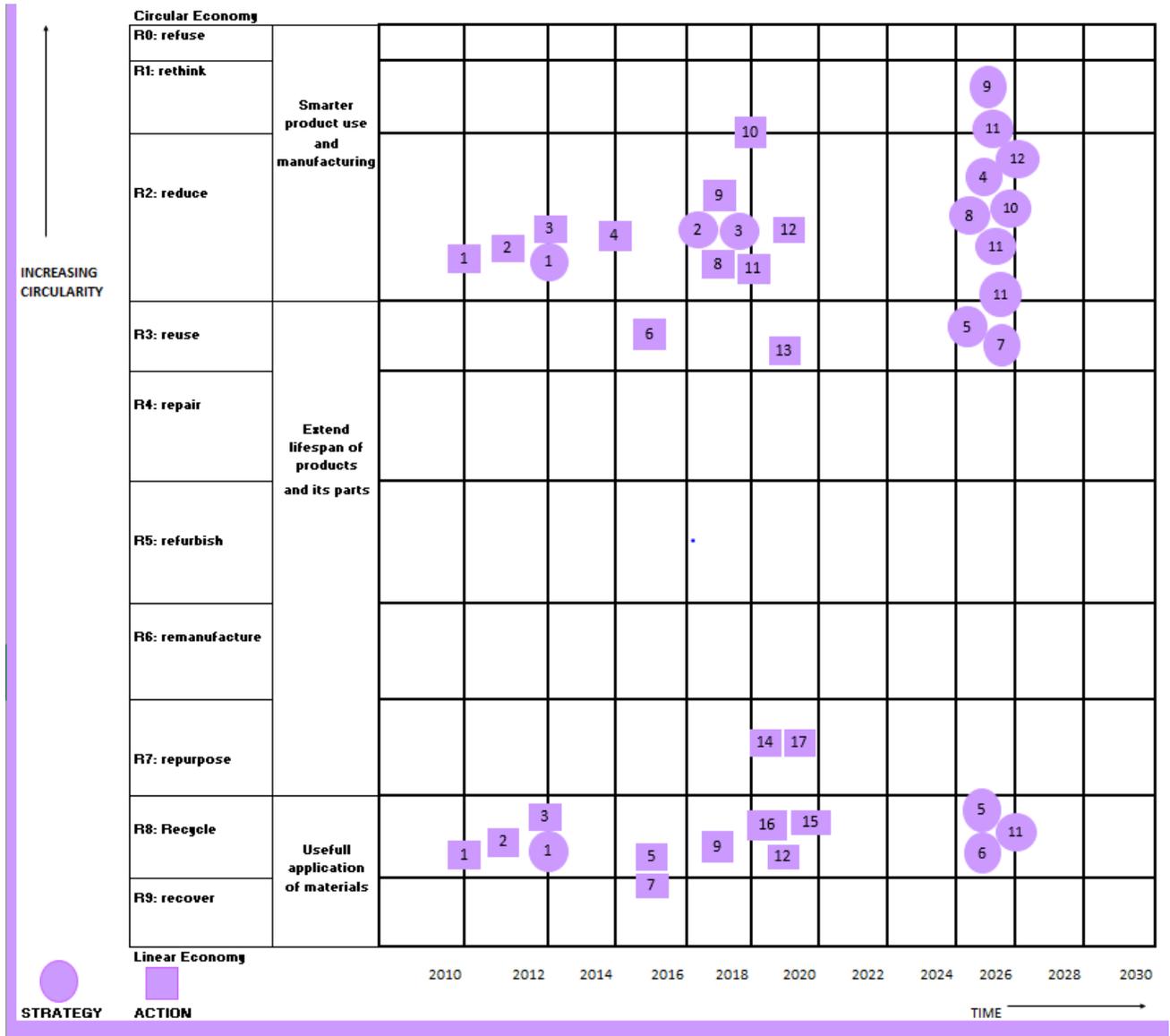
| NR | TALK = circle | NR | ACTION = square |
|----|---|----|--|
| 1 | In <u>2018</u> : the company mentioned a new partnership to develop a technology which allows packages such as colored PET bottles (that may have been excluded from certain recycling streams) to be recycled into food-grade quality packaging. | 1 | During <u>2009</u> , we launched our innovative PlantBottle packaging, a PET bottle made partially from plants. The PlantBottle packaging, like our existing PET bottles, is 100 percent recyclable. |
| 2 | In <u>2019</u> : the company said: We aim to build a strong circular economy for beverage packaging, where plastic can be collected, recycled and reused. | 2 | In <u>2009</u> , Coca-Cola and its bottles offered nonrefillable, recyclable containers in the United States and in various other markets around the world. |
| 3 | In <u>2019</u> the company stated that Deposit Return Schemes and smart packaging are the way forward to turn waste into worth, address packaging pollution and achieve a world without waste in the future. | 3 | By the end of <u>2010</u> , PlantBottle packaging was available in 7 countries. |
| 4 | Last year (2013), Coca-Cola set a target of improving water efficiency by 25% by <u>2020</u> . | 4 | By the end of <u>2011</u> , PlantBottle packaging was available in 20 countries, and nearly 10 billion PlantBottle packages had been shipped |
| 5 | The company mentioned in <u>2020</u> : We are striving to make packaging part of a circular economy, with a focus on 100% collection rates and an increase in recycling | 5 | By the end of <u>2012</u> , we had distributed nearly 13 billion PlantBottle packages in 24 countries. |
| 6 | from <u>2020</u> , all our plastic bottles produced in Sweden will be made from 100% rPET. | 6 | In <u>2017</u> , we reduced the carbon footprint by 45.3% versus 2010 and 87.5% of the electricity that we purchased was from renewable sources |
| 7 | In <u>2020</u> : The coca cola formulated four steps in the circle: (1) make (2) use (3) dispose and (4) recycle and going back to step 1 afterwards. | 7 | In <u>2017</u> , 24.6% of all the plastic used in our bottles came from recycled materials and in 2018 that figure increased to 27.6%. |
| 8 | We aim to make our global packaging 100% recyclable by <u>2025</u> . | 8 | in <u>2018</u> , 100% of the electricity we purchased was from renewable sources. |
| 9 | by <u>2025</u> , at least 50% of the plastic used in our PET bottles across Western Europe comes from recycled sources. | 9 | In <u>2018</u> , 88% of Coca-Cola product packaging was recyclable. |
| 10 | We're aiming to reduce the water we use in our manufacturing operations by 20% and replenish 100% of the water we use in areas of water stress by <u>2025</u> | 10 | In <u>2018</u> , 27.6% of the PET we used to make our PET bottles was rPET and 98% of the packaging we used was recyclable |
| 11 | 100% of our packaging should be recyclable or reusable by <u>2025</u> | 11 | in <u>2018</u> – our water ratio was reduction with 11.25% since 2010 and 141% of the water we used in our drinks, where sourced from areas of water stress, was replenished. |
| 12 | Coca-Cola wants to make bottles with an average of 50 percent recycled material by <u>2030</u> . | 12 | In <u>2019</u> , recycled PET made up 30.5% of the PET in our plastic bottles. |
| 13 | The company aims to collect and recycle the equivalent of every bottle or can the company sells globally by <u>2030</u> . | 13 | In <u>2019</u> , our global recovery rate was 59% In some countries we are using more than 25% recycled materials in our bottles and cans. |
| | | 14 | And in four countries, we developed a plastic bottle made from 100% recycled material, plant-based materials (<u>2019</u>) |
| | | 15 | In <u>2019</u> , In Europe, until now, 10 countries have already implemented deposit return schemes. All of which have achieved significant results. |

Appendix 14: Visualized 9R Waste Hierarchy - Danone



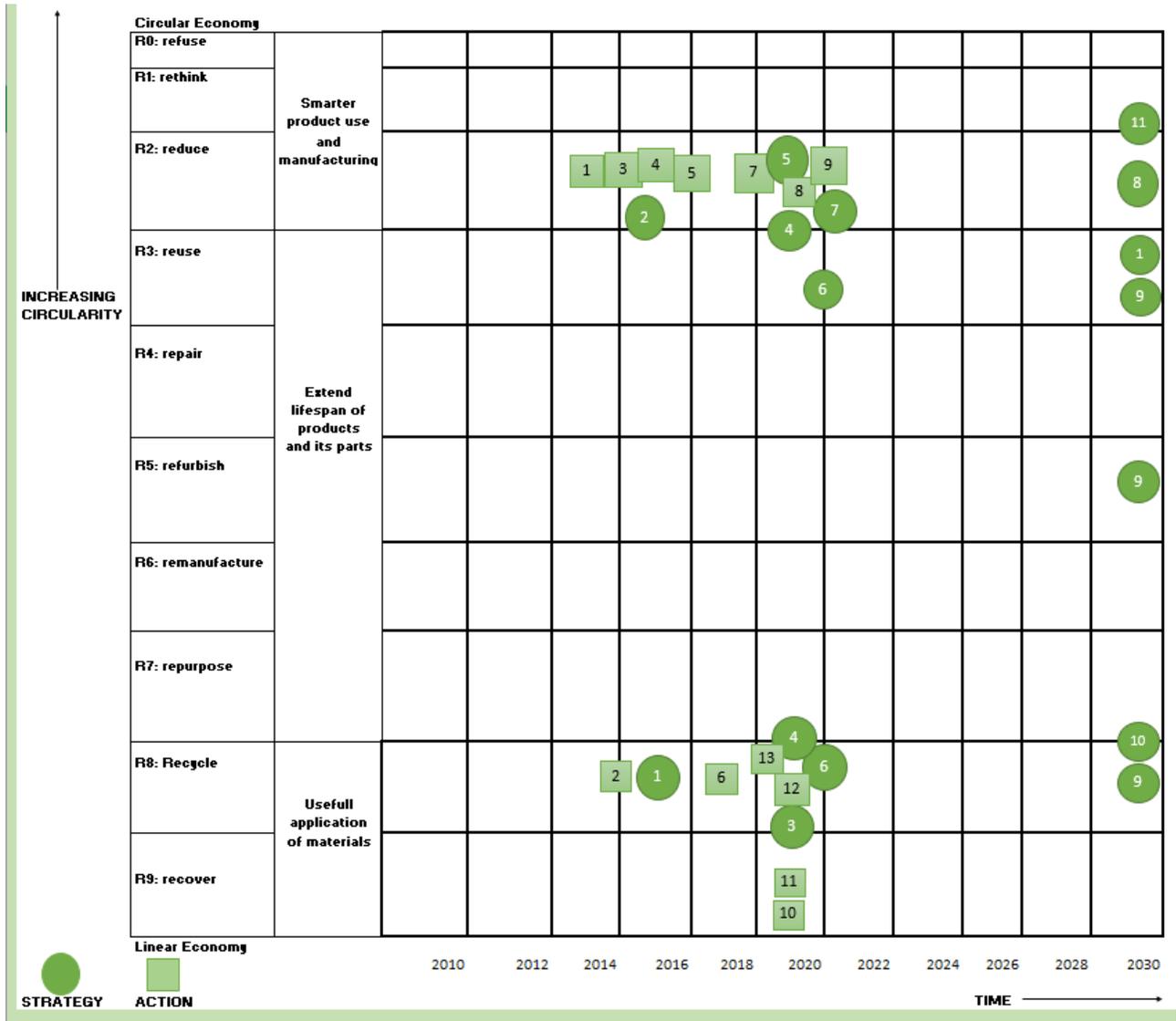
| NR | TALK = circle | NR | ACTION = square |
|----|---|----|---|
| 1 | responsible circular “from the bottle to the bottle” approach , and aims to increase the proportion of recycled PET (rPET) used. | 1 | in 2010, 2% of packaging was based on renewable materials, 40% was recovered at the end of life cycle. |
| 2 | the ambitious goal of reducing the group’s carbon emissions by 30% between 2008 and end-2012 | 2 | In 2010, the average rate of rPET incorporation in the Waters division was 10% worldwide at end 2010 |
| 3 | In 2015, for the 15 years ahead, we’ve committed to reducing the carbon intensity of our emissions by 50%. | 3 | In 2012, 1/3 of packaging is made of recycled materials, the average rPET decreased with 1%. 40% of waste is recovered at the end of lifecycle. |
| 4 | in 2016: “We are increasing the amount of packaging from recycled materials. The endgame could be the creation of a net-positive cycle in partnership with other large companies, which would mean recycling more plastics than we put on the market in the first place”. | 4 | In 2012, Danone reduced its carbon footprint with 35,2%. |
| 5 | In 2018: “ we aim to reach 50% of non-organic fresh milk volumes to non-GMO project verified in the USA to support a regenerative agriculture”. | 5 | In 2013: a quarter of the group’s primary and secondary packaging is made of recycled materials, including 73% of boxes. The average rate of rPET incorporation in the Waters division was 9%. Just like in 2010, around 40% of packaging waste is recovered |
| 6 | Danone’s ultimate goal is to cut emissions by more than 50% by 2020. | 6 | In 2013: the share of renewable thermal energy is rising, representing 4.3% of total thermal energy |
| 7 | Our target is to reach 25% of rPET in Waters by 2020 and 33% by 2025 | 7 | In 2014: the total quantity of production waste increased (+0,9%), of which 84,2% is recovered (+8,5%), and 255.595 metric tons is eliminated (+9,4%) in 2014. Danone monitors the percentage of waste that is recovered through recycling, reuse of waste, composting and waste-to-energy transformation. The ratio of waste generated per metric ton of product decreased by 5,5% |
| 8 | Designing all packaging to be 100% recyclable, reusable or compostable by 2025. | 8 | in 2014, 28% of primary and secondary packaging comes from recycled materials and the average rate of rPET incorporation in waters decreased further to 8%. 40% of packaging waste was recovered |
| 9 | By 2025, Danone will have initiated or supported collection and recycling initiatives in its top 20 markets | 9 | in 2014, and renewable thermal energy represents 4,1% of total thermal energy. Total thermal energy consumption increased by 22% between 2014 and 2013. |
| 10 | Our target to reach 50% rPET on average in Waters by 2025. | 10 | 2008- 2015, carbon footprint decreased 46,4%, energy use and intensity with 48,4 % , 82,1% of waste was recovered and water consumption intensity was reduced with 63% |
| 11 | Our target is to sent 0% of plastics to landfill by 2020 in developed countries and 0% by all in 2025. | 11 | in 2016: 11 % rPET in Waters, 90% of total packaging waste was recycled or incinerated with energy recover. |
| 12 | Our target is to achieve 50% reduction of non-recovered food waste by 2025 | 12 | increased towards 30% in 2016 (+ 3%). Percentage of recycled paper-based was 77% in 2016 (in 2015 and 67% - increased with 10%). Also non-recovered food waste is reduced by 50% |
| | | 13 | In 2017: The project “create a second life for all plastics” is realized in 9 countries. |
| | | 14 | In 2017, 14% rPET in waters was reached, 11,1% of non-recovered food waste was reduced. 9% of post-industrial plastics waste are sent to landfill. |
| | | 15 | 2015-2017: Reduction of energy consumption resulted in 51% lower intensity, renewable energy in Danone factories increased 18,2%. |
| | | 16 | recyclable, reusable, or compostable. 38% of packaging is made of recycled materials. 12% rPET on average in Waters. |
| | | 17 | In 2018, 34% of electricity was renewable, water consumption intensity in operations increased with 2%. |
| | | 18 | In 2018, we reached our target is to reach 50% of non-organic fresh milk volumes to non-GMO project verified in the USA to support a regenerative agriculture. |

Appendix 15: Visualized 9R Waste Hierarchy - Anheuser-Inbev



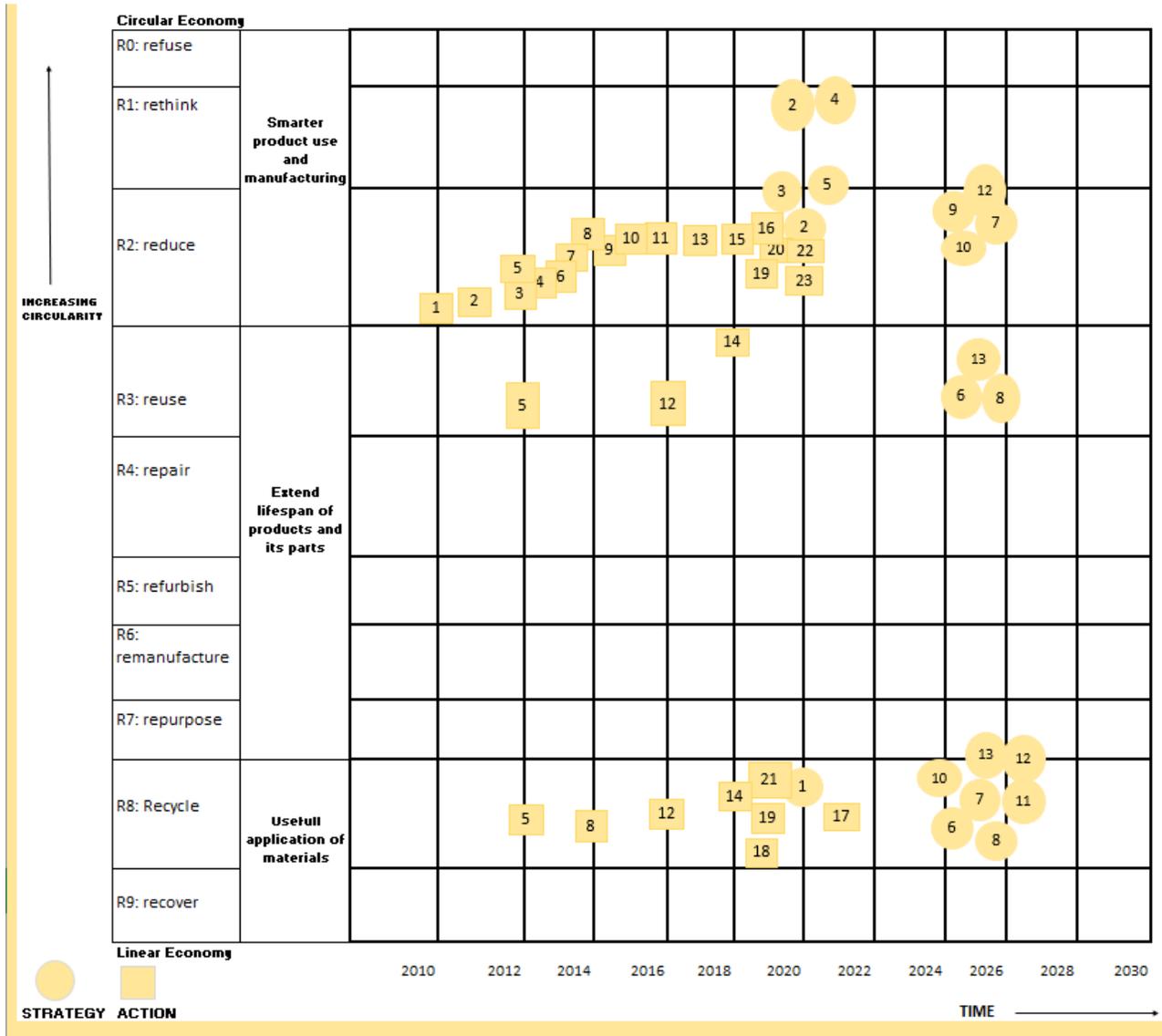
| NR | TALK = circle | NR | ACTION = square |
|----|---|----|---|
| 1 | targets for 2012: 3.5 hl of water used per hl of production; energy and greenhouse gas reductions of 10% and a solid waste recycling rate of 99%. | 1 | By the end of 2010, we were on track to achieve our aggressive environmental targets for 2012: 3.5 hl of water used per hl of production; energy and greenhouse gas reductions of 10% and a solid waste recycling rate of 99%. |
| 2 | In 2013: We have set goals (for 2017) beyond reducing footprint or protecting efforts. For the first time, we have also set a goal to reduce carbon emissions in logistics operations by using alternative fuels, smart driving tools, more efficient trucks, and by collaborating with our supply chain partners. | 2 | In 2011, Water usage per hl was reduced 8.2%, Energy use per hl declined 5.2%, CO2 emissions have been cut by 5.0%. We are now recycling 98.2% of the solid waste produced by our facilities |
| 3 | Global Environmental Goals 2012-2017: Reduce global water usage to a leadingedge 3.2 hl of water per hl, Reduce global greenhouse gas emissions per hl of production 10%, Reduce global energy usage per hl of production 10%, Reduce packaging materials 100 000 tons, Reach a 70% global average of eco-friendly cooler purchases annually. | 3 | In 2012: We reached our goals: water use per hl/hl was 3.5, the energy-use reduction per hl/hl of production was 12%, the reduction in CO2 emissions per hl/hl of production was 15.7%, waste and by-product recycling rate was 99.2% |
| 4 | Ab-inbev shifted towards sourcing all purchased electricity from renewable sources by 2025. | 4 | In 2014: water risk assessment is being incorporated into our systems and processes has led to a reduction in water use at facilities to 3.23 hl/hl in 2014 |
| 5 | packaging that is returnable, or majority recycled by 2025. | 5 | towards 6 713 512 tons materials recycled and composted. |
| 6 | by 2025: Recycle: Increase recycled content in one-way packaging; Increase supply of recycled content. | 6 | Water sharing in 2015: 35 of our breweries around the world are donating effluent water to local communities before it is returned to the watershed. |
| 7 | by 2025: Reuse: Promote and protect returnable packaging | 7 | In the period 2012-2015: The materials used as fuel increased from 10.434 towards 13705 tons, incinerated waste increased from 22 towards 63 tons. The landfill waste increased from 43608 towards 66964 tons and hazardous waste increased from 225 towards 565 tons. |
| 8 | by 2025: Reduce: lower the amount of material we put into the market and carbon footprint | 8 | 3.2 hl per hl, lobal greenhouse gas emissions per hl of production by 10%, global energy usage per hl of production by 10%; packaging materials by 100.000 tons; we reached a 70% global average of eco-friendly cooler purchases annually |
| 9 | by 2025: Rethink: Innovate and scale new materials and products designed for circular economy | 9 | In 2017, we decreased the amount of waste sent to landfill by 43% compared to 2016, and decreased our total waste by 0.9% over the same period. In 2017, we recycled 99.4% of brewery waste |
| 10 | By 2025: climate action - 100% of purchased electricity will come from renewable sources & carbon emissions across our value chain will be reduced by 25%. | 10 | In 2018, Ab-Inbev is sharing eco-innovations with start-ups and selling them to large breweries. |
| 11 | To achieve our circular packaging vision of 2025, we focus on four key areas: Reuse, Reduce, Recycle, and Rethink. | 11 | In 2018:43.5% of our volume was in returnable packaging, down from 46% in 2017, we see an increase in cans from 59% in 2017 to 64.7% in 2018; 41% in glass from a 37% in 2017. PET decreased from 21% to 15.7% |
| 12 | Water stewardship: 100% of our communities in high stress areas.All beers brewed with 100% sourced energy from renewable sources on a global basis by 2025 And Smart agriculture: 100% of direct farmers will be skilled, connected and financially empowered by 2025 | 12 | In 2019 ; total water use reduced to 1.642 billion hl, energy usage per hectoliter of production reduced towards 101,2, 20% of energy is renewable, 40,9% of packaging is returnable, recycled content in primary packaging was: glass 42,3% cans was 59,1%, PET was 22,8 % |
| | | 13 | In 2019, already nearly half of its drinks are sold in returnable glass bottles. |
| | | 14 | In 2019: Ab Inbev has also launched a protein drink made from spent grains from the brewing process, which previously were only resold as animal feed . |
| | | 15 | in 2019: We implemented a reverse logistics solution in Brazil, where we collected 578,000 kg of glass and sent it to our glass operation (recycling). |
| | | 16 | In 2019, we launched the 'Pay with plastic project' where plastic was upcycled and given a second life (rethink) |
| | | 17 | Our colleagues in Sochi, Russia created the Budweiser ReCup Arena, a unique football pitch made of 50,000 recycled plastic cups collected (2019). |

Appendix 16: Visualized 9R Waste Hierarchy - Heineken



| NR | TALK = circle | NR | ACTION = square |
|----|--|----|---|
| 1 | In 2015: "we recycle kegs and glass bottles and reuse brewer's grains as cattle feed across the world as important part of our circular approach". | 1 | In 2013; the average reduction of CO2 emissions has improved from 38% to 40% since 2010. |
| 2 | In 2015: "we renew various initiative to install wind turbines and solar panels at breweries and we reduce water and energy use as important part of our circular approach" | 2 | In 2014: The recycling rate of co-products, packaging and industrial waste was 97%. We sell most of our co-products primarily for use as animal feed or compost. |
| 3 | In 2019: "Heineken is one of the leading global brewers, is already taking steps to close loops. HEINEKEN is working on maximising the recovery, reuse, and recycling of its water, and to treat 100% of its wastewater worldwide". | 3 | In 2014: We reduced the CO2 emissions of our fridges by 45%, increased local sourcing from 46 to 48% since 2010, our overall emissions from distributions increased by 3.6, but our water consumption was decreased to 3.9 hl/hl. |
| 4 | In 2019: "Heineken increasing the re-use and recycling of its packaging and raw materials, repurposing and valuing its waste, and redesigning its products in ways that reduce negative impacts for the environment and communities". | 4 | In 2015: We achieved 25% water reduction, 24% energy reduction since 2008, 115,000+ green fridges purchased in 2015 with 45% average energy saving compared to 2010. |
| 5 | in 2019: "Heineken will go beyond its efforts to reduce the amount of water it uses to make beer, and to improve wastewater treatment, with a commitment to replenish all of the water that it uses in water-stressed areas". | 5 | in 2016: We are using 37% less energy and 28% less water per hectolitre than we did in 2008. Our beverage production sites reduced water consumption by 63%, energy by 63% and 25% of electricity comes from renewable sources. |
| 6 | Our ambition is 'Brewing a Better World' in every one of our activities - from sourcing, producing, marketing and selling our products all the way to how they are consumed, and how we can reuse and recycle waste (2020). | 6 | In 2017: By-products such as spent grains are used for cattle feed, and packaging waste is recycled into new products. We aim for zero waste to landfill and 97 of our production facilities are already there |
| 7 | We aim to reduce the CO2 emissions (of our fridges) by 50% in 2020. We aim to develop an efficient, circular business model, based on cooling as a service. | 7 | In 2018: 32% decreased water consumption, 47% reduction in CO2 emissions since 2008. |
| 8 | We aim to increase our share of renewable energy from 14% in 2017 to 70% by 2030. This would lead to an 80% reduction in our CO2 emissions per hl for our production | 8 | in 2019: Heineken reduced carbon emissions with 49%, water consumption with 33% (since 2008). |
| 9 | In 2030 we aim to achieve a circular approach to the reuse, recycling and refurbishment of our coolers to lower emissions | 9 | In 2019, we have committed to 119 health and water projects since 2007 (10,7 euro million investment), direct 24 million euro contribution to communities |
| 10 | In 2030: Heineken wants to balance the water that is used, maximise reuse, recycling in water stressed areas, and treat 100% of wastewater of all breweries. And achieve 2.8 litre per litre for beers produced in water stressed areas and 3.2 for all breweries worldwide. | 10 | In 2019: Heineken developed a Waste hierarchy table: DISPOSAL: combustion with energy recovery (1%), without heat recovery (0%), landfill (3%). |
| 11 | Heineken is aiming for zero waste in 2030 | 11 | In 2019: Heineken developed a Waste hierarchy table: RECOVERY: compost and soil improvement (5%), energy - biogas (2%) |
| | | 12 | In 2019: Heineken developed a Waste hierarchy table: RECYCLING: reuse (0%), human consumption (1%), animal feed (81%), Materials (7%) |
| | | 13 | In 2019: Heineken transformed glasses of some festivals and concerts into furniture and recycled the old cups of 2018 to make new ones in 2019. |

Appendix 17: Visualized 9R Waste Hierarchy - Unilever



| NR | TALK = circle | NR | ACTION = square |
|----|--|----|---|
| 1 | In 2020, we are creating a circular economy by concentrating on working with consumers in areas such as recycling and collection, | 1 | in 2010: Unilever reduced its water per tonne of production from 2.81 m3 to 2.67 m3, reduced its CO2 From energy per tonne of production from 142,16 to 132,62, and total waste per tonne of production from 6.52 kg towards 6.48kg. |
| 2 | In 2020, we are creating a circular economy by concentrating on rethinking product design to use less, better or no plastic. Collaborate the Unilever sustainable living plan pledge to cut the company's environmental impact in half by 2020, it also vows to improve the health of one billion people and enhance livelihoods for millions, all | 2 | in 2011: Unilever reduced its water per tonne of production from 2.68 m3 to 2.48 m3, reduced its CO2 From energy per tonne of production from 133,59 kg to 117,41 kg and total waste per tonne of productin from 6.48kg to 4.77 kg. |
| 3 | It's not about doing less harm, but about radically rethinking product design, using less or no materials, cradle-to-cradle to make a | 3 | in 2012: Unilever reduced its water per tonne of production from 2.40 m3 to 2.23 m3, reduced its CO2 From energy per tonne of production from 118.31 kg to 99.97 kg and total waste per tonne of productin from 4.96 kg to 3.85 kg |
| 4 | New business models and innovations, using circular economy principles, are transforming traditional take-make-dispose thinking with incredible speed (2020). | 4 | In 2012, Unilever opened factories which have been designed to create 50% less waste compared to factories operating in 2008. |
| 5 | Recycled plastic content in its packaging should be increased with at least 25% and all plastic packaging will be designed to be fully reusable. | 5 | In 2012, reduce, reuse, recycle and recover programmes resulted in 50% of our manufacturing sites sent zero non-hazardous waste to landfill. We sourced 26% of our energy used in manufacturing from renewables, and reduced our CO2 emissions from energy by 838,000 tonnes in the period 2008 to 2012 |
| 6 | We aim to halve the use of virgin plastic in our packaging and to collect and process more plastic packaging than we sell by 2025. | 6 | in 2013: Unilever reduced its water per tonne of production from 2.27 m3 to 2.12 m3, reduced its CO2 From energy per tonne of production from 104,23 kg to 98.85 kg and total waste per tonne of production from 3.94 kg to 2.72 kg. |
| 7 | All plastic packaging is 100% reusable, recyclable or suitable for composting by 2025. | 7 | In 2013, we invested 1.6 billion, including in six new factories, with five additional factories planned in 2014. These factories include eco-efficiency technologies. Moreover, three quarters of our factory network had achieved |
| 8 | Unilever plans to cut this by 100,000 tonnes (17% of plastics) by switching to reusable packs, concentrated refills and alternative materials. It has also set a goal to collect 350,000 tonnes of plastic for | 8 | In 2014, Unilever achieved that in more than 67 countries, more than 240 factories reused, recycled or recovered all of nonhazardous waste and sent nothing to landfill. |
| 9 | Reduce virgin plastics by 20% by weight, redesign plastics to be 100% reusable and recyclable, increase collection, sorting and recycling capacity by > 25% and increase the use of recycled plastics by > 30% in | 9 | In 2014: Unilever reduced its water per tonne of production from 2.12 m3 to 2.01m3, reduced its CO2 From energy per tonne of production from 98.85 kg to 92.02 kg and total waste per tonne of production sent for disposal from 2.96 kg to 1.19 kg |
| 10 | Increase the recycled plastic content in its packaging to at least 25% by 2025. | 10 | in 2015: Unilever reduced water per tonne of production from 2.01 m3 to 1,88 m3, CO2 From energy per tonne of production from 92,14 kg to 88,49 kg and total waste per tonne of production sent for disposal from 1,19 kg to 0,26 kg and 60% of agricultural raw materials is sustainably sourced |
| 11 | Unilever is focused on plastics: using less virgin plastics, doing more post consumer recycling, take out 100.000 tons, and collect more than | 11 | in 2016: Unilever reduced its water per tonne of production from 1,88 m3 to 1,85 m3, reduced its CO2 From energy per tonne of production from 88,49 kg to 83,52 kg and total waste per tonne of production sent for disposal from 0,26 kg to 0,35 kg. And 51% of our agricultural raw materials is sustainably sourced |
| 12 | Unilever aims to collect and process around 600,000 tonnes of plastic annually by 2025 through innovations such as refill, reuse and concentrates, while increasing recycling plastics. | 12 | In 2016, nearly 400 unilever sites, including offices, distribution center and warehouses in 70 countries had achieved zero waste to landfill. |
| 13 | | 13 | in 2017: since 2010 Unilever reduced its water impact per consumer use with 2% (in 2016 this was 7%), reduced its greenhouse gas impact per consumer use with 9% (last year it was 8%) and the waste impact per consumer use increased to 23% (last year it was 28%). And 56% of our agricultural raw materials is sustainably sourced by end of we achieved zero non-hazardous waste to landfill across our global factory network in 2015 and have maintained this every year since. We are more than half way towards meeting our 2020 commitment to reduce waste associated with the disposal of our products. This has reduced by about 31% since 2010-2018. |
| | | 14 | in 2018: since 2010 Unilever reduced its water impact per consumer use with 2% (in 2017 this was 2%), reduced its greenhouse gas impact per consumer use with 6% (last year it was 9%) and the waste impact per consumer use increased to 31% (last year it was 29%). And 56% of our agricultural raw materials is sustainably sourced by end of |
| | | 15 | in 2019: since 2010 Unilever reduced its water impact per consumer use to 1% , reduced its greenhouse gas impact per consumer use to 2% and the waste impact per consumer use increased to 32%. And 62% of our agricultural raw |
| | | 16 | Since 2010, our total waste footprint per consumer use has reduced by 32% - partly through better product design and recycling infrastructure (2019). |
| | | 17 | |
| | | 18 | In 2019, Unilever still uses more than 700,000 tonnes of plastic a year. |
| | | 19 | In 2019, Unilever sees no landfill waste anymore in its factories |
| | | 20 | In 2019, Unilever receives 67% of its total grid electricity consumption from renewables. Reduced annual CO2 emissions by over 250,000 tonnes due solar, hydro power/ biomass/biogass |
| | | 21 | in 2019: At Unilever sites in many countries, waste material is recovered and used as alternative fuels to generate energy. Combustible waste material, which was previously sent to landfill is used as fuel in the cement manufacturing |
| | | 22 | In January 2020, we announced at 100% of our electricity is renewable (more than 60% comes from solar, wind and |
| | | 23 | In 2020, we are still using 30 million tons of water for making our products |