

**Cradle to Cradle**  
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**An analysis of the market  
potential in the German outdoor  
apparel industry**

**BACHELOR THESIS**

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# Table of Contents

List of Figures/Tables .....	III
List of Abbreviations .....	IV
Abstract .....	V
1 Introduction .....	1
2 The Cradle to Grave Model.....	3
2.1 Relevance of a Sustainable Design .....	3
2.2 The Current Industrial Design and Waste Management.....	4
2.3 Eco-efficiency versus Eco-effectiveness .....	5
3 The Cradle to Cradle Design Concept .....	7
3.1 Three Main Principles of the Concept .....	7
3.2 Nutrient Cycles .....	9
3.3 Cradle to Cradle Certification .....	12
3.4 Economic Relevance of the Concept .....	15
4 The Outdoor Apparel Industry.....	17
4.1 Relevance of Sustainability within the Industry .....	17
4.2 Definition of Outdoor Apparel .....	18
4.3 Consumers of Outdoor Products .....	19
5 Market Analysis .....	20
5.1 Methodology.....	20
5.2 Market Size and Developments .....	22
5.3 Market Potential .....	25
6 Competitive Analysis.....	29
6.1 Industry Structure .....	29
6.2 Distribution Channels of the Outdoor Industry.....	31
6.3 Outdoor Apparel Brands with a Focus on Sustainability.....	33
6.4 Positioning Strategy for Cradle to Cradle Outdoor Apparel .....	40
7 Conclusion .....	43
Appendix .....	45
References .....	54
Statutory Declaration .....	69

## List of Figures/Tables

Figure 1: Research subject: Market potential of C2C outdoor apparel .....	2
Figure 2: Global population and fossil-fuel CO2 emissions .....	3
Figure 3: Biological cycle for products of consumption.....	9
Figure 4: Cascade utilisation on the example of wood .....	10
Figure 5: Technical cycle for products of service.....	11
Figure 6: Example of a scorecard BRONZE.....	14
Figure 7: Outdoor activities regularly practiced in Germany in 2012 .....	18
Figure 8: Market share of outdoor sporting goods in Europe in 2014.....	20
Figure 9: Sales distribution of the German sporting goods market in 2014 .....	21
Figure 10: Total sales of sporting goods, outdoor products and outdoor apparel in Germany from 2010 to 2014.....	23
Figure 11: Total sales of outdoor apparel in Germany from 2010 to 2020 .....	24
Figure 12: Purchase frequency of outdoor apparel/functional wear .....	26
Figure 13: Average price of selected outdoor apparel.....	27
Figure 14: Market potential of the German outdoor apparel industry .....	28
Figure 15: Outdoor industry structure based on Porter's five forces.....	29
Figure 16: Distributions channels in the German outdoor market.....	32
Figure 17: Competitive analysis of three selected outdoor brands .....	35
Figure 18: VAUDE's open loop system – Green Shape .....	37
Figure 19: PYUA's closed loop recycling.....	38
Table 1: C2C energy sources.....	8
Table 2: <i>Cradle to Cradle Certified</i> product standard categories.....	13
Table 3: Market potential of outdoor apparel in Germany .....	28

## List of Abbreviations

BVL	Bundesamt für Verbraucherschutz und Lebensmittelsicherheit
CO <sub>2</sub>	Carbon dioxide
C2C	Cradle to Cradle
C2CPII	Cradle to Cradle Products Innovation Institute
EPA	U.S. Environmental Protection Agency
FC	Fluorocarbon
FWF	Fair Wear Foundation
MBDC	McDonough Braungart Design Chemistry, LLC
PAH	Polycyclic aromatic hydrocarbons

## **Abstract**

The purpose of this study is to investigate the market potential in the German outdoor apparel industry by focusing on sustainable production in terms of environmental and human health. A literature study of the Cradle to Cradle (C2C) design concept is provided, as it represents a solution for pollution, waste and environmental destruction caused by the current industrial design and waste management. The data for the subsequent market- and competitive analysis of the German outdoor apparel industry was collected through secondary research in order to identify several key market indicators for the assessment of the market potential. The outcome of this research is the identification of a positioning strategy for outdoor apparel according to the C2C design concept. The results show stagnant growth rates in recent years in the German outdoor apparel market and strong rivalry among the competitors. However, a significant market potential was calculated and beneficial trends for sustainable outdoor brands were recognised. These findings reveal the existence of a market potential for an outdoor apparel brand according to the C2C design concept. By following a positioning strategy of transparency and full commitment to a sustainable production, the company might be able to gain market shares from its competitors, as future predictions indicate slow growth rates in the market. The results of this analysis can be of great interest for entrepreneurs that plan to enter the German outdoor apparel industry.

# 1 Introduction

The importance of using the earth's resources in a more sustainable way is without any question recognisable. Deforestation, loss of biodiversity, increasing carbon dioxide (CO<sub>2</sub>) concentration and pollution are the major environmental issues resulting from the current industrial model. To meet the demand of a growing population combined with an increase in wealth, natural resources are exploited, habitats are destroyed and excessive amounts of toxic chemicals are used. Additionally, producers seldom consider what happens to their product after its time of usage. As a result, 90 per cent of the material used for production ends up as waste.<sup>1</sup>

Many concepts for a more sustainable world focus on reducing, recycling and re-using in order to decrease the negative impact of the industry. However, by keeping the fundamental design of industrial production, these actions solely slow down the ecological destruction.<sup>2</sup> As quoted in the book "Cradle to Cradle, Remaking the way we make things", Albert Einstein once said: "The world will not evolve past its current state of crisis by using the same thinking that created the situation."<sup>3</sup>

As a result, the C2C concept, developed by architect William McDonough and chemist Dr. Michael Braungart, aims towards global reindustrialisation by taking an important step towards the transition from a linear to a closed-cycle system. The results are healthy and environmentally friendly products with a design that is based on the laws of nature.<sup>4</sup> In contrast to most other sustainability concepts, C2C does not stay in a conflict with economic growth and profitability, as the products aim to have a "positive footprint".<sup>5</sup>

The alternative design concept C2C is the subject of this thesis, due to environmental problems that arise as a result of the design and consumption of products. It can be applied to every product, although for some of them it is necessary to undertake complex research for the invention of alternative materials. As a result, the following market analysis focuses on outdoor apparel, as both the technical and the biological cycles are feasible with the current state of research. Furthermore, some studies show that consumers of outdoor apparel are more likely to care about environmental issues, because an intact nature is fundamental for their activities.<sup>6</sup>

An application of the C2C design concept on outdoor apparel is the first approach in the current research. Furthermore, a broad analysis of the German outdoor apparel market is not yet publicly available and free of charge. As a result, this thesis closes a gap in the current research by providing a comprehensive market analysis combined with a competitive analysis that focuses on the actions of selected outdoor manufacturers for a more sustainable production according to the C2C design concept.

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<sup>1</sup> McDonough, W. (2002), p. 255

<sup>2</sup> McDonough, W. (2002), pp. 255–256

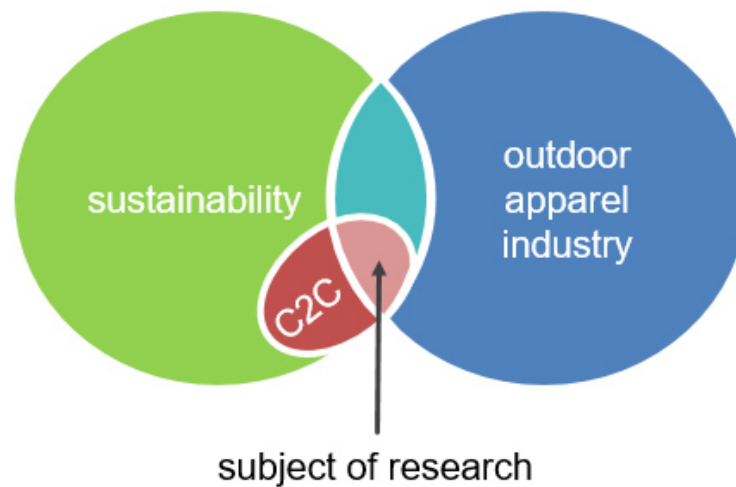
<sup>3</sup> Albert Einstein: found in McDonough, W. J. & Braungart, M. (2002), p. 10

<sup>4</sup> Cradle to Cradle Products Innovation Institute (2014b), pp. 13–14

<sup>5</sup> Cradle to Cradle Products Innovation Institute (2014b), p. 16

<sup>6</sup> Butow, J. (2014), pp. 11–12

The aim of this study is to determine the market potential of outdoor apparel designed according to the C2C concept, as illustrated in figure 1. An exploratory research approach was chosen and information gathered by secondary research.



**Figure 1: Research subject: Market potential of C2C outdoor apparel<sup>7</sup>**

Chapter 2 introduces the topic of this thesis by a review of the environmental problems humans are facing today and by an investigation in the causes for these issues, such as the current industrial design and waste management. After comparing different sustainability approaches, a literature review of the C2C concept is provided in chapter 3.

As the fashion industry has become the second most polluting industry in the world,<sup>8</sup> the relevance of sustainability within the industry is clearly recognisable. Attention will be given specifically to the practical implementation of the C2C concept in the outdoor apparel industry, which is limited in this paper to the German market. After an introduction of the outdoor industry and its customer base in chapter 4, the following chapter describes the results of the outdoor market analysis, with a focus on outdoor apparel. The market size as well as market developments are examined to support the arithmetic approach for the identification of the market potential in the outdoor apparel industry.

Chapter 6 describes the industry structure, based on Porter's (1998) five forces model to determine the intensity of competition in the outdoor industry. For a more comprehensive overview of the different market players, the distribution channels for outdoor apparel are analysed. As many manufacturers of outdoor apparel have recognised the trend towards environmentally friendly products in their customer base,<sup>9</sup> the activities for a sustainable production of three selected outdoor manufacturers are examined in detail. The analysis is based on the five C2C criteria: material health, material reutilization, renewable energy and carbon management, water stewardship, and social responsibility. At the end of the competitive analysis a positioning strategy for C2C outdoor apparel is provided.

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<sup>7</sup> Own illustration

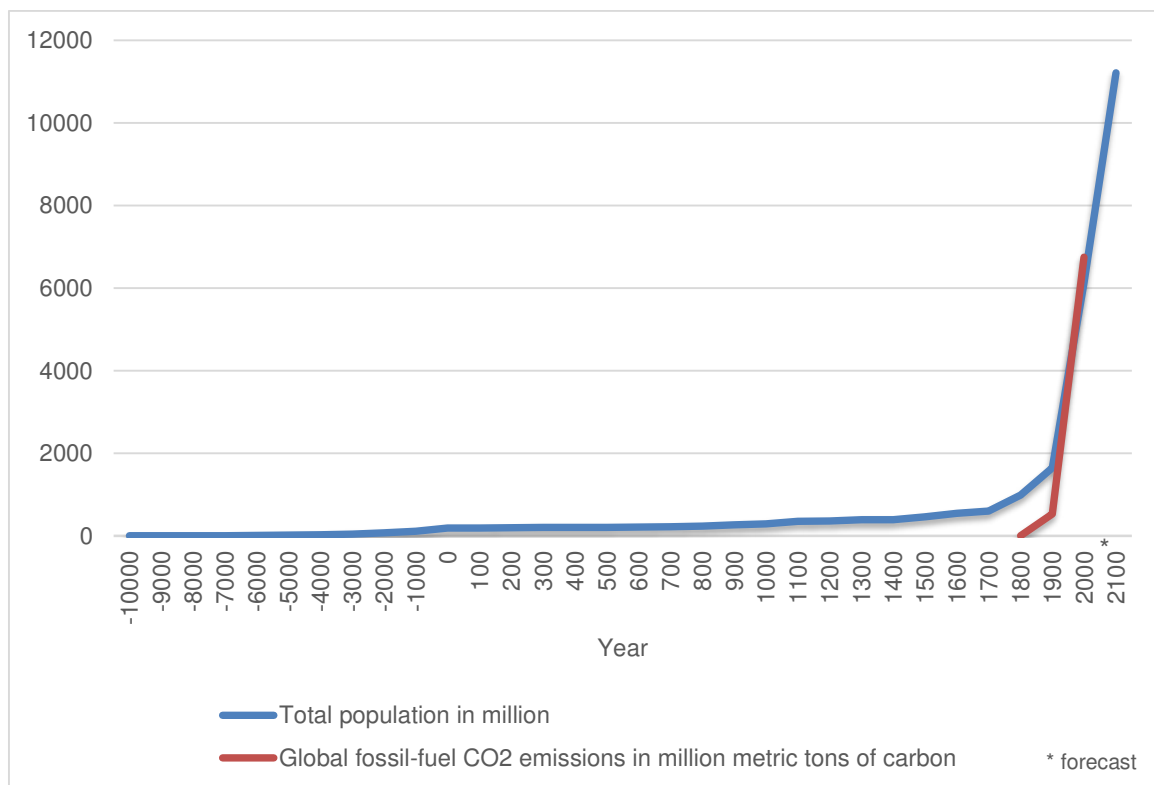
<sup>8</sup> Perkins, L. (2016)

<sup>9</sup> Kim, H.-S. & Hall, M. L. (2015), pp. 31–32

## 2 The Cradle to Grave Model

### 2.1 Relevance of a Sustainable Design

By 2050 there will be almost certainly over nine billion people on earth.<sup>10</sup> As a result, the demand for food and arable land will be at least twice as much of today.<sup>11</sup> Particularly alarming is the fact that not only the demand for food is accelerating at a much faster rate than population growth, but also water consumption is rising twice the rate.<sup>12</sup> The main cause is an increase in wealth, which is creating demand for a more varied diet, requiring more resources from different parts of the world.<sup>13</sup> The consequences of a growing population and a higher level of consumption per person are massive waste generation, rising demand for land, which is leading to deforestation, and an increase in production and transportation. As a result, more energy is needed, which in turn accelerates greenhouse gas emissions (cf. figure 2). Those phenomena are leading to climate change, which is further increasing the pressure on water, food and land.<sup>14</sup>



**Figure 2: Global population and fossil-fuel CO2 emissions<sup>15</sup>**

In only 20 years, global carbon emissions from fossil fuels have risen by about 60 per cent.<sup>16</sup> Furthermore, habitat loss and degradation, due to land use, pollution and climate change, are causing a rapid loss of species. These human

<sup>10</sup> United Nations (2015)

<sup>11</sup> Emmott, S. J. (2013), p. 46

<sup>12</sup> Emmott, S. J. (2013), pp. 62–63, 71

<sup>13</sup> Government Office for Science (2011), p. 9

<sup>14</sup> Emmott, S. J. (2013), pp. 39–40

<sup>15</sup> Own illustration based on US Carbon Dioxide Information Analysis Center (2016); United Nations (2015); OurWorldInData (2016)

<sup>16</sup> US Carbon Dioxide Information Analysis Center (2016)



causes have increased the rate of extinction to be now one thousand times higher than the natural extinction rate.<sup>17</sup> In fact, 87 per cent of global fish stocks are now either overexploited or fully exploited, meaning there is no potential for an increase in fish stock.<sup>18</sup>

Each year 2.12 billion tons of waste is dumped into the ocean. By placing this amount of waste into trucks, they would go around the world 24 times.<sup>19</sup> With this in mind, Emmott (2013) argues that it is necessary to decrease the current level of consumption, for instance by consuming less food, energy, clothing, cars and laptops, to minimise the negative impact on the environment.<sup>20</sup> However, by following this approach, environmental health and economic growth would stay in a mutual conflict.

## **2.2 The Current Industrial Design and Waste Management**

El-Haggar (2007) identifies the scientific and technological developments of the last century as the main causes for the environmental and economic problems humans are facing today and in the future. Due to these technological advances, humans are able to extract larger quantities of natural resources and also to process and to use them. However, most resources are “consumed” instead of being “used” for a certain period of time, as there is no solution provided for how to collect and reuse them or how to return these resources to their environmental origin. In fact, the majority of resources either emits CO<sub>2</sub>, therefore leading to global warming, or ends up as waste.<sup>21</sup> The current industrial design and production that leads to pollution, gigantic garbage dumps, ecological destruction and global warming is called “cradle to grave” model, as most resources, figuratively speaking, end up in a “grave”.<sup>22</sup>

Some countries have already realised that producers have to be made responsible for the extended end-of-life phase of their products. As a result, the motivation of the producers to facilitate other members of the supply chain and the users to contribute to recycling and disposal processing is likely to increase.<sup>23</sup> However, most strategies to increase recyclability and to extend the product lifespan do not deal with the roots of the problem. They rather postpone the point in time when the resources acquire the status of waste. When reprocessing materials that have been used before, they are no longer used for the same application, which is due to a reduction in quality. They are either used for lower value applications, which later end up in a landfill, or as an energy source, emitting CO<sub>2</sub>. These recycling strategies correspond rather to “down-cycling”, as the status of these materials as “resources” has not been maintained.<sup>24</sup>

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<sup>17</sup> Emmott, S. J. (2013), pp. 51–52

<sup>18</sup> Food and Agriculture Organization of the United Nations (2012), pp. 29–30

<sup>19</sup> World Counts (2016)

<sup>20</sup> Emmott, S. J. (2013), p. 184

<sup>21</sup> El-Haggar, S. M. (2007), xiii

<sup>22</sup> El-Haggar, S. M. (2007), xiii; McDonough, W. (2002), p. 255

<sup>23</sup> Kumar, S. & Putnam, V. (2008), pp. 306–307

<sup>24</sup> Braungart, M., McDonough, W., & Bollinger, A. (2007), p. 1338

For instance, in Germany more than 90 per cent of plastic waste is collected, but only 43 per cent is recycled for further usage. The biggest part of the plastic waste is incinerated for power and heat generation. From an economic point of view, it is more profitable to incinerate plastic waste than to recycle it. In fact, Germany is importing vast amounts of waste from other countries to improve the capacity utilisation of the waste incineration plants.<sup>25</sup>

Another key point is that many products or packaging contain mixed types of materials, which are difficult to separate in the recycling process. Juice boxes are an example of a packaging that is composed of different materials, such as aluminium, plastics and raw paper. Pure aluminium can be recycled endlessly without loss of quality, if it is not mixed with other materials. However, as the aluminium in a juice box is mixed with raw paper and plastic, its quality is weakened and none of the materials can be easily recycled. In fact, the unnecessary waste of precious raw materials is a result of the product's design.<sup>26</sup>

One further problem of the materials that products are composed of is the uncertainty of possible long-term effects on human health and environmental aspects.<sup>27</sup> A drastic increase in different types of allergies in Europe over the last decades has been proven by several statistics. In fact, the rising use of certain chemicals in consumer goods that do not have a well-defined toxicological and eco-toxicological profile is very doubtful.<sup>28</sup> According to a study from the Bundesamt für Verbraucherschutz und Lebensmittelsicherheit (BVL), 274 of the 331 shoes that have been examined, contained chemicals named polycyclic aromatic hydrocarbons (PAHs) of which many are causing cancer. Those substances are easily absorbed through the skin and one third of the shoes exceeded the limit recommended by the U.S. Environmental Protection Agency (EPA). Ironically, for car tyres the amount of PAH is regulated, but not for apparel and toys.<sup>29</sup>

## 2.3 Eco-efficiency versus Eco-effectiveness

Within the context of a system of cradle to grave material flows, business leaders have tried to produce more goods while using less resources, toxicity and producing less waste and pollution.<sup>30</sup> This reactionary approach is named *eco-efficiency*.<sup>31</sup> Within an industry that is assumed to be 100 per cent bad, eco-efficiency aims to be less bad. The ultimate target of this strategy is to achieve zero emission, more precisely: zero waste, zero resource use and zero toxicity.<sup>32</sup> Despite the doubts that the goal of zero emission is possibly reachable, it is criticised that neither being less bad nor being “no bad” is equal to being good.<sup>33</sup> In other words, any attempt to reduce unsustainability will not lead to

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<sup>25</sup> Siewert, L. & Müller, V. (2014)

<sup>26</sup> McDonough, W., Braungart, M., & Clinton, B. (2013), pp. 14–15

<sup>27</sup> Alston, K. (2008), p. 135

<sup>28</sup> Braungart, M. et al. (2007), p. 1341

<sup>29</sup> Rögner, W. (2010)

<sup>30</sup> McDonough, W. (2002), pp. 255–256

<sup>31</sup> Braungart, M. et al. (2007), p. 1337

<sup>32</sup> Braungart, M. et al. (2007), p. 1340

<sup>33</sup> Braungart, M. et al. (2007), pp. 1338–1339

sustainability.<sup>34</sup> Nevertheless, eco-efficiency is an important step for the identification of problems.<sup>35</sup> Following this strategy might decelerate ecological destruction and delay the complete depletion of natural resources, but it does not address the source of the problem.<sup>36</sup> Even the savings potential of voluntary restriction of consumption, named *eco-sufficiency*, would remain relatively small and is unlikely to be applicable to the broad mass of people.<sup>37</sup> Both approaches, eco-efficiency and eco-sufficiency, are addressing the quantity of consumption, whereas the third approach, named *eco-effectiveness* or *consistency*, addresses the quality of products.<sup>38</sup>

The approach of eco-effectiveness changes the fundamental design of industrial material flows, with the vision of an industry that is 100 per cent good, in terms of dealing with environmental and social aspects.<sup>39</sup> Within this system, products and processes are so intelligently designed that they create positive effects, instead of reducing negative effects.<sup>40</sup> The goal of eco-effectiveness is to maintain or upgrade the quality of resources and productivity through intelligent design that allows many cycles of use. Interestingly, even short product lifespans are possible, as long as the materials keep their status as productive resources, for instance as nutrients for ecological systems.<sup>41</sup> By following the model of nature, the output from one process becomes the input for another and the result is a perfectly effective system that does not produce any waste.<sup>42</sup>

Braungart et al. (2007) argue that the concept of eco-efficiency stays in a conflict with long-term economic growth and profitability,<sup>43</sup> as contamination control or treatment as well as environmental protection procedures are seen as very costly and an obstacle for further industrial growth.<sup>44</sup> In contrast, within the concept of eco-effectiveness, the quantity of emission is not considered the problem, instead the quality is being addressed by creating healthy emissions.<sup>45</sup> As a result, both nature and trade can prosper and grow.<sup>46</sup> Furthermore, eco-effectiveness addresses the issue of toxicity, due to a safe and high-quality product design.<sup>47</sup> In fact, it incorporates social, economic and environmental benefit at the same time, by replacing the cradle to grave model with a model that is based on the rules of nature, thus appropriately named cradle to cradle.<sup>48</sup>

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<sup>34</sup> Bakker, C. A., Wever, R., Teoh, C., & Clercq, S. de (2010), p. 3

<sup>35</sup> McDonough, W. (2002), pp. 251–252

<sup>36</sup> El-Haggar, S. M. (2007), xiii

<sup>37</sup> Huber, J. (1999), p. 12

<sup>38</sup> Huber, J. (1999), p. 4

<sup>39</sup> Braungart, M. et al. (2007), pp. 1342–1343

<sup>40</sup> McDonough, W. (2002), p. 252

<sup>41</sup> Braungart, M. et al. (2007), p. 1338

<sup>42</sup> Braungart, M. et al. (2007), p. 1342

<sup>43</sup> Braungart, M. et al. (2007), pp. 1339–1340

<sup>44</sup> El-Haggar, S. M. (2007), xiv

<sup>45</sup> Braungart, M. et al. (2007), p. 1342

<sup>46</sup> McDonough, W. (2002), p. 251

<sup>47</sup> Braungart, M. et al. (2007), p. 1347; McDonough, W. (2002), p. 252

<sup>48</sup> Braungart, M. et al. (2007), p. 1337

## 3 The Cradle to Cradle Design Concept

### 3.1 Three Main Principles of the Concept

In 2002, McDonough and Braungart published the book “Cradle to Cradle, Remaking the way we make things”, in which they describe the C2C concept in detail. According to this, the framework consists of three qualitative principles that provide a basis for the transition from eco-efficiency to eco-effectiveness by aiming to achieve closed cycles. In particular, the C2C design principles are based on nature’s C2C cycles, such as everlasting flows of energy and nutrients that support the variability of species on earth.<sup>49</sup> Consequently, the three main principles of the C2C design paradigm are:

- “waste equals food”, in other words the elimination of the concept of waste,
- the use of energy from the current solar income and
- the celebration of diversity.<sup>50</sup>

Waste does not exist in nature. Waste equals food, as one organism’s waste becomes food for another and therefore is part of the biological cycle.<sup>51</sup> It is leading to positive growth, which is resulting in healthier and more resilient ecosystems with high biodiversity.<sup>52</sup> By applying the concept of C2C, products, packaging and systems are designed in a way that they virtually do not produce any waste. The components are either inherently biodegradable or are kept in a closed technical cycle and are therefore a valuable nutrient for the industry that can be used endlessly.<sup>53</sup> In fact, by designing closed systems, the end of life of a product does not become a burden for producer, consumer and the environment, it rather provides nourishment for nature or valuable resources for the production of new products.<sup>54</sup>

In nature, sun provides living organisms with light and heat, which are a necessity for growth. In the same way trees and plants use solar energy to produce food, man-made products can be manufactured with solar radiation as an energy source. By designing systems powered by renewable energy, the current solar income can be used to guarantee growth, without negatively impacting the environment.<sup>55</sup> The aim of the second C2C principle is to integrate renewable energy in the manufacturing and recycling process. The ultimate goal is to design a system that generates more renewable energy than it uses.<sup>56</sup> However, the C2C design concept is relying on renewable energy sources that are abundantly available without practical limitations.<sup>57</sup> Mulhall and Braungart (2010) categorise the renewable energy sources of the C2C design paradigm into primary and secondary solar income uses as well as gravitational income (cf. table 1).<sup>58</sup>

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<sup>49</sup> McDonough, W. (2002), p. 256

<sup>50</sup> Bakker, C. A. et al. (2010), p. 3

<sup>51</sup> McDonough, W. (2002), p. 256

<sup>52</sup> Braungart, M., McDonough, W., & Schuler, K. (2011), p. 123

<sup>53</sup> Braungart, M. et al. (2011), p. 136

<sup>54</sup> McDonough, W. (2002), p. 256

<sup>55</sup> Dijk, S. van, Tenpierik, M., & van den Dobbelsteen, A. (2014), p. 23

<sup>56</sup> Mulhall, D. & Braungart, M. (2010), p. 9

<sup>57</sup> Toxopeus, M. E., Koeijer, B. de, & Meij, A. (2015), p. 385

<sup>58</sup> Mulhall, D. & Braungart, M. (2010), pp. 18–19

Category	Energy sources
Primary solar income	Conversion and storage include natural light, solar thermal, photovoltaic, photosynthesis, photo-chemical, wave and wind energy, thermal mass storage, and heat exchange
Secondary solar income	Respiration, currently renewable biomass-derived energy from composting, biodigestion, thermolysis, hydrothermolysis, pyrolosis, gasification, and fuel cells
Gravitational income	Kinetic energy from inertial or weight, e.g. descending waterways

**Table 1: C2C energy sources<sup>59</sup>**

Important to note is that not only the source of energy is defined in the C2C design concept, but also the materials necessary for the generation, conversion and usage of energy have to be part of either a biological or a technical cycle.<sup>60</sup>

The third principle of the C2C design concept is to celebrate diversity in the way nature does to ensure a robust system. Every species on earth has its function and the more diversity exists, the more stable is the entire ecosystem.<sup>61</sup> One example on how the current system does not conform with the principle is a giant global monoculture: the banana. There are over 1,000 varieties of wild bananas worldwide, but 95 per cent of all exports derive from a single variety. This results in the fact that if one plant is attacked by a disease, all other plants are as well.<sup>62</sup>

However, the principle does not only deal with environmental diversity, it further includes cultural and economic diversity.<sup>63</sup> In fact, in a polypolistic market structure, the participants profit from a more resilient and stable system.<sup>64</sup> It reduces the dependency on single players and stimulates innovation and quality through competition. The C2C design concept strongly benefits from innovation, and technological diversity is the key for creative solutions that promote the concept's feasibility.<sup>65</sup>

Furthermore, the principle to celebrate diversity includes the adaptation of local circumstances, such as the use of local energy and material flows.<sup>66</sup> In particular, the use of local materials does not only reduce transportation-related emissions, but also offers economic benefits for the region. By using local suppliers, higher employment rates come along with the local population being hired, which in turn increases the income within the region.<sup>67</sup> In a nutshell, diversity enriches the quality of life in many ways.<sup>68</sup>

<sup>59</sup> Own table based on Mulhall, D. & Braungart, M. (2010), pp. 18–19

<sup>60</sup> Mulhall, D. & Braungart, M. (2010), pp. 18–19

<sup>61</sup> Dijk, S. van et al. (2014), p. 23

<sup>62</sup> The Economist (2014)

<sup>63</sup> Llorach-Massana, P., Farreny, R., & Oliver-Solà, J. (2015), p. 244

<sup>64</sup> Braungart, M. et al. (2011), p. 168

<sup>65</sup> McDonough Braungart Design Chemistry, LLC (2012), p. 4

<sup>66</sup> Braungart, M. et al. (2011), pp. 157–158

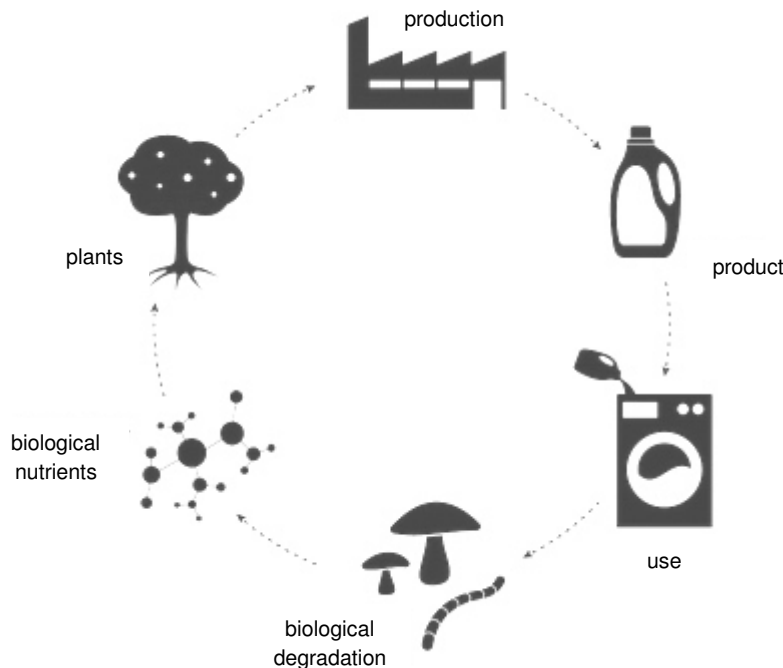
<sup>67</sup> Braungart, M. et al. (2011), pp. 158–161

<sup>68</sup> Braungart, M. et al. (2011), p. 181

### 3.2 Nutrient Cycles

The C2C concept specifies two different material flows on earth. The biological cycle, in other words the biosphere, contains material that is biodegradable, whereas material within the technical cycle is artificially-created and actively-managed.<sup>69</sup> Within the current industrial system, material from the biological cycle is used for industrial production and the resulting products return back to the biosphere at the end of their lifecycle. In fact, this system is not a closed system, because the industrial output does neither provide any nutrient to the biosphere nor for further industrial production.<sup>70</sup> In contrast, the C2C paradigm describes a closed system, in which nutrients are not wasted, as they are either benefiting the biological or the technical cycle.<sup>71</sup>

Products within the biological cycle are named products of consumption, as they are designed to decompose at the end of their lifecycle. They consist of renewable raw materials, which are nontoxic and harmless for the nature. Examples for such products of consumption are natural fibres, cosmetics or detergents, but even packaging can be designed to become a biological nutrient.<sup>72</sup> Figure 3 illustrates the closed loop supply chain offered by nature, which is one pillar of the C2C design concept.



**Figure 3: Biological cycle for products of consumption<sup>73</sup>**

As shown in figure 3, at the end-of-life phase of the product, it is being returned to nature and the materials are broken down by microorganisms. Most important factors for the process of composting are oxygen, moisture and temperature.

<sup>69</sup> EPEA Internationale Umweltforschung GmbH (2016)

<sup>70</sup> Dijk, S. van et al. (2014), pp. 22–23

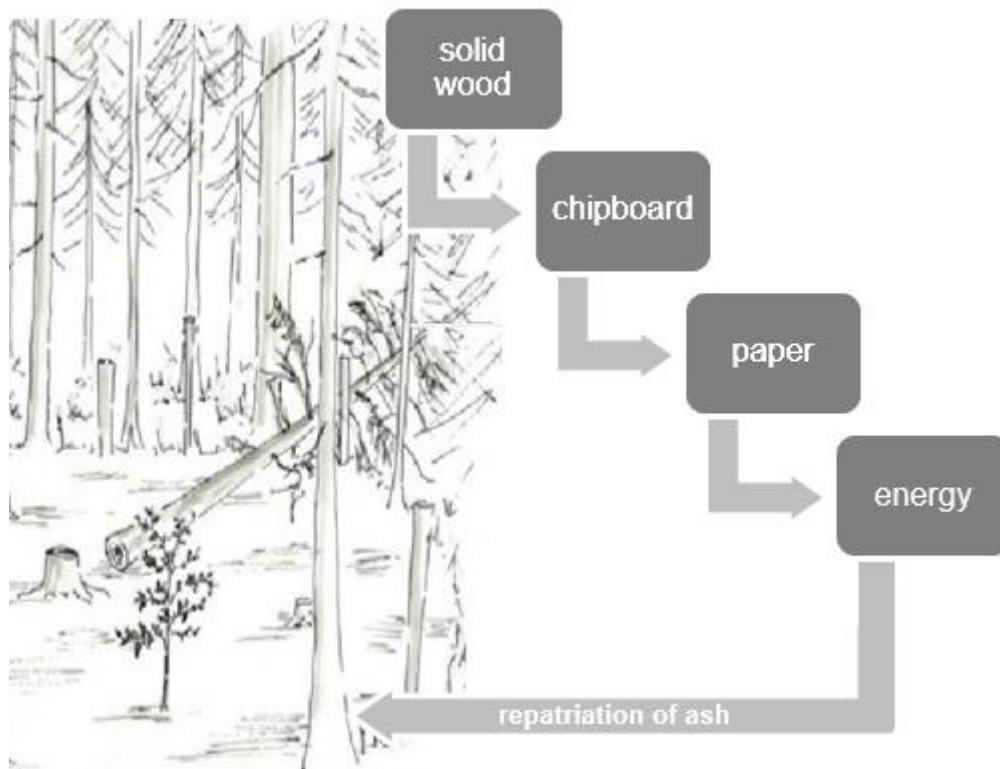
<sup>71</sup> Braungart, M. et al. (2011), p. 136

<sup>72</sup> EPEA Switzerland (2016)

<sup>73</sup> Own illustration based on EPEA Switzerland (2016)

Ultimately, the quality and duration of the decomposition depends on the mixture of products and the containing nutrients. If the products contain some biologically resistant components, the composting process might not function on a stable basis. This can be observed by identifying a decrease in temperature as well as a lack of odour and insects. However, if the products are designed only of biodegradable materials, they enrich the soil structure and support plant growth by providing them with valuable nutrients.<sup>74</sup> With the right design, also liquids, such as detergent or soap, can be nutritious for rivers and lakes, as they are supportive for the equilibrium of the ecosystem.<sup>75</sup> In summary, products at the end of their lifecycle facilitate the production of new products and can be used endlessly in the biological cycle.<sup>76</sup>

However, for certain products it is not favourable to compost them after their time of usage, as the material is still too valuable. In these cases, a cascade utilisation is preferable, as it makes use of the remaining quality resources by recycling it for the production of other kinds of products.<sup>77</sup> As illustrated in figure 4 on the example of wooden products, the material runs through different cascades of utilisation.<sup>78</sup>



**Figure 4: Cascade utilisation on the example of wood<sup>79</sup>**

The cascade starts with a high level of value creation, such as the use of solid wood for the building industry or high-quality furniture, and gradually flows in lower levels of the cascade. As a result, at the end of the product's lifecycle as furniture for example, it can be used as chipboard or insulating material and

<sup>74</sup> El-Haggar, S. M. (2007), p. 234

<sup>75</sup> Braungart, M. et al. (2011), p. 137

<sup>76</sup> EPEA Switzerland (2016)

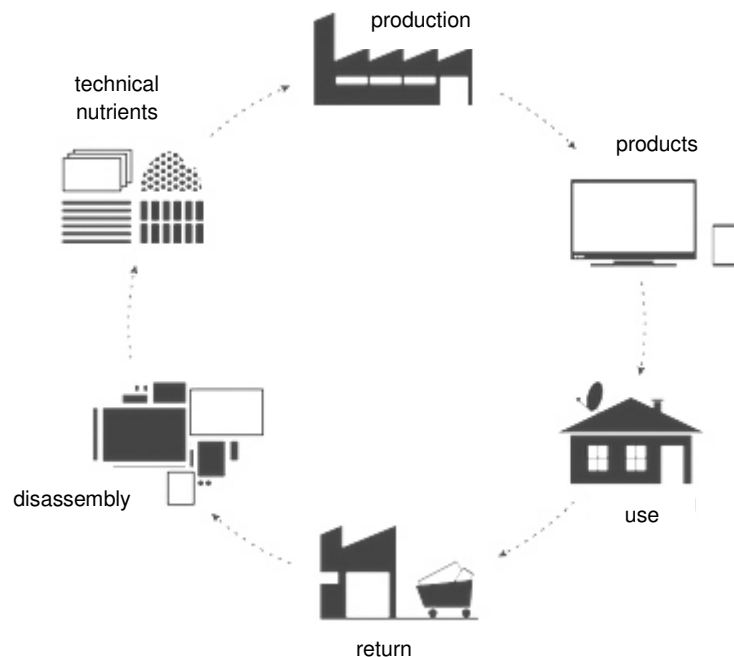
<sup>77</sup> Taskhiri, M. S., Garbs, M., & Geldermann, J. (2016), p. 25

<sup>78</sup> EPEA Internationale Umweltforschung GmbH (2009), pp. 6–7

<sup>79</sup> Own illustration based on EPEA Internationale Umweltforschung GmbH (2009), p. 8

afterwards as paper products. In fact, waste wood and waste paper can be recycled up to seven times for further usages,<sup>80</sup> before finally being used as pellets for energy generation.<sup>81</sup> The resulting ash benefits forests or green areas as fertiliser. Therefore, at the final stage of the cascade, the product is becoming a valuable nutrient for the biosphere, which is facilitating plant growth and therefore leading to new resources.<sup>82</sup> Due to the combination of material based and energetic utilisation, the release of carbon emissions is delayed, as it is stored during the use as wood or paper products. Therefore, the cascade utilisation creates a significant increase in added value.<sup>83</sup>

In comparison, products within the technical cycle may contain inorganic materials, such as synthetics or metals, but they stay safely in a closed loop system.<sup>84</sup> As illustrated in figure 5, these products return to the producer at the end of their lifecycle and are disassembled to become technical nutrients for the manufacturing process of new products. Important to notice is that in the C2C design concept, the technical products become the same product again or another high-quality product. A computer chassis could for example be upcycled to a medical instrument, instead of being down-cycled to a flowerpot.<sup>85</sup>



**Figure 5: Technical cycle for products of service**<sup>86</sup>

In the same way, as it is important not to contaminate the biological cycle with material from the technical cycle, such as mutagenic or toxin substances, biological nutrients should not enter the technical cycle. This is due to the fact that these nutrients would be lost for the biosphere and would reduce the quality of the technical material when mixed, making it complicated to reuse the material

<sup>80</sup> Taskhiri, M. S. et al. (2016), p. 38

<sup>81</sup> Sikkema, R., Junginger, M., McFarlane, P., & Faaij, A. (2013), p. 96

<sup>82</sup> EPEA Internationale Umweltforschung GmbH (2009), pp. 6–7

<sup>83</sup> EPEA Internationale Umweltforschung GmbH (2009), pp. 8–9

<sup>84</sup> Braungart, M. et al. (2007), p. 1343

<sup>85</sup> Braungart, M. et al. (2011), p. 142

<sup>86</sup> Own illustration based on EPEA Switzerland (2016)



in the manufacturing process. However, certain materials can be detracted from the biological cycle and used for the technical cycle, as long as they do not harm the functioning of both metabolisms.<sup>87</sup>

A product of the technical cycle can for example be a car, synthetic fibres or a television. The scientific research- and consulting institute EPEA conducted a study on a television set and found out, that it contains 4360 chemicals. While some of them are toxic, others are valuable nutrients for the industry, which are lost on a landfill after the product's time of usage. However, by separating the biological nutrients, the industrial nutrients can be upcycled instead of being recycled, to maintain the high quality of the materials.<sup>88</sup> As a result, the product design, which includes a careful choice of materials and a system to easily disassemble the product, lays the foundation for a well-functioning technical cycle.<sup>89</sup>

In contrast to products of consumption, products within the technical cycle are usually long-lasting goods that render a service to the customer. The idea behind the concept is to generate customer awareness of the importance to keep the product within the cycle by “using” instead of “owning” the product. In fact, the manufacturer maintains the ownership and benefits from the valuable material several times in the manufacturing process. Besides independency from volatile raw material prices and exchange rates, a reduction of costs for raw material can be achieved. Furthermore, the producer can profit from a long-term relationship with the customer, who is likely to exchange the product for a new one.<sup>90</sup>

### 3.3 Cradle to Cradle Certification

C2C is not only a sustainability concept. Since 2005, the non-profit organisation, named Cradle to Cradle Products Innovation Institute (C2CPPI), administers a certification standard, which has been developed by McDonough Braungart Design Chemistry, LLC (MBDC) in cooperation with EPEA Internationale Umweltforschung GmbH.<sup>91</sup> By providing this certification standard, the C2CPPI aims towards global reindustrialisation, by guiding product manufacturers through the creation process of recyclable and healthy products, based on the laws of nature.<sup>92</sup> So far, more than 200 companies worldwide, including Steelcase, Shaw Industries and Desso, have joined the *Cradle to Cradle Certified* Products Program, with several hundreds of product lines certified.<sup>93</sup>

The *Cradle to Cradle Certified* Products Standard evaluates products across five categories (cf. table 2), which are based upon the three C2C design principles mentioned in a previous chapter.<sup>94</sup>

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<sup>87</sup> Braungart, M. et al. (2011), pp. 136–137

<sup>88</sup> Braungart, M. et al. (2011), p. 142

<sup>89</sup> EPEA Internationale Umweltforschung GmbH (2016)

<sup>90</sup> Braungart, M. et al. (2007), p. 1343; Braungart, M. et al. (2011), pp. 142–148

<sup>91</sup> Cradle to Cradle Products Innovation Institute (2014b), pp. 16–17

<sup>92</sup> Toxopeus, M. E. et al. (2015), pp. 385–388; Cradle to Cradle Products Innovation Institute (2014b), pp. 13–14

<sup>93</sup> Cradle to Cradle Products Innovation Institute (2014a), p. 2; Cradle to Cradle Products Innovation Institute (2014b), pp. 16–17

<sup>94</sup> Cradle to Cradle Products Innovation Institute (2014b), pp. 16–17

Category	Requirements
Material health	Safe and healthy materials: <ul style="list-style-type: none"> <li>- Quantifying and understanding the product material composition</li> <li>- Identifying these as biological or technical nutrients</li> <li>- Removing hazardous chemicals</li> <li>- Replacing less healthy materials with preferable ones</li> </ul>
Material reutilisation	Eliminating the concept of “waste”: <ul style="list-style-type: none"> <li>- Designing products that facilitate a safe return of all materials to either the biological or the technical cycle</li> <li>- Developing systems to recover used products safely and continuously</li> </ul>
Renewable energy and carbon management	Eco-effective energy production: <ul style="list-style-type: none"> <li>- Increasing use of clean and renewable energy for the entire value chain of the product</li> <li>- Generating renewable energy onsite</li> <li>- Keeping carbon in soil and earth vegetation</li> </ul>
Water stewardship	Protection and enrichment of water supplies in the manufacturing process: <ul style="list-style-type: none"> <li>- Reducing water consumption</li> <li>- Enhancing water quality</li> <li>- Monitoring performance over time</li> </ul>
Social fairness	Sustaining business operations that contribute to all stakeholder interests: <ul style="list-style-type: none"> <li>- Honouring employees, customers, communities and ecosystems</li> <li>- Publicly reporting on achievements and challenges</li> <li>- Regularly auditing own standards and those of suppliers, regarding health, safety and ethical performance</li> <li>- Engaging with communities and regions close to the production site</li> </ul>

**Table 2: Cradle to Cradle Certified product standard categories<sup>95</sup>**

The material assessment is based on hazards of chemicals in products, aiming towards the sole use of materials that are considered as safe and healthy according to the certification standard.<sup>96</sup> Important to notice is that to be able to participate in the certification program, the material health requirements have to be assessed by 75 per cent.<sup>97</sup> The material is further evaluated regarding its reutilisation, meaning its design for recyclability and/or biodegradability. Material reutilisation is therefore measured by the percentage of a product's components that remain in one of the two metabolisms, to successfully eliminate the concept of “waste”.<sup>98</sup> This principle combined with the use of renewable energy can be covered by the third category, which is renewable energy and carbon management. By replacing energy generated from fossil fuels with renewable energy, the issue of carbon emission can be addressed. However, the emissions

<sup>95</sup> Own table based on Cradle to Cradle Products Innovation Institute (2014b), pp. 18–23, 32–34; McDonough Braungart Design Chemistry, LLC (2012), pp. 8, 11–21

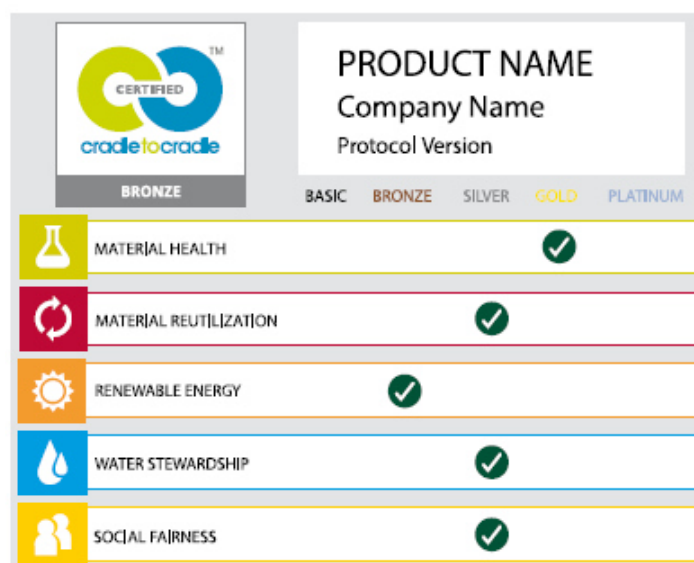
<sup>96</sup> McDonough Braungart Design Chemistry, LLC (2012), p. 11

<sup>97</sup> Cradle to Cradle Products Innovation Institute (2014b), pp. 20–23

<sup>98</sup> McDonough Braungart Design Chemistry, LLC (2012), pp. 8, 20

that still occur linked with the product, should be managed as biological nutrients to ensure a carbon balance in the atmosphere.<sup>99</sup> The percentage of renewable energy generated and used in the manufacturing process is assessed by the committee, and determines the certification level of the product.<sup>100</sup> Furthermore, the awareness and initiative towards the treatment of water as a scarce and valuable resource is evaluated. In fact, the manufacturer's responsibility is to effectively manage water resources. Especially innovations that facilitate water conservation and quality are rewarded by the assessment committee.<sup>101</sup> The last category which is assessed within the certification program is social fairness. By supporting social systems and engaging in responsible production, such as fair treatment of workers and reinvestment in natural capital, the manufacturer can achieve higher levels within the certification scheme.<sup>102</sup>

The program is not based on a pass/fail model. Instead, it encourages towards continuous improvement in all five categories, as the minimum level of achievement in any of the five categories determines the overall certification level.<sup>103</sup> A certification can be awarded on five levels of achievement – BASIC, BRONZE, SILVER, GOLD and PLATINUM.<sup>104</sup> However, the entry level BASIC is only considered as a provisional step to reward the company's intention and commitment to continuous improvement. Detailed information on the requirements of each category for each level of achievement is provided in appendix A. Finally, when the certification process is completed, the manufacturer will receive a certificate and a scorecard (cf. figure 6).<sup>105</sup> Every two years a re-certification is required<sup>106</sup> to ensure continual improvement.



**Figure 6: Example of a scorecard BRONZE<sup>107</sup>**

<sup>99</sup> McDonough Braungart Design Chemistry, LLC (2012), p. 21

<sup>100</sup> McDonough Braungart Design Chemistry, LLC (2012), p. 8

<sup>101</sup> McDonough Braungart Design Chemistry, LLC (2012), p. 22

<sup>102</sup> McDonough Braungart Design Chemistry, LLC (2012), p. 23

<sup>103</sup> McDonough Braungart Design Chemistry, LLC (2012), p. 8

<sup>104</sup> Cradle to Cradle Products Innovation Institute (2014b), p. 4; McDonough Braungart Design Chemistry, LLC (2012), p. 8

<sup>105</sup> McDonough Braungart Design Chemistry, LLC (2012), p. 8

<sup>106</sup> Cradle to Cradle Products Innovation Institute (2014b), pp. 20–23

<sup>107</sup> Cradle to Cradle Products Innovation Institute (2014a), p. 2

### 3.4 Economic Relevance of the Concept

Changing the design and the material composition of a product potentially results in additional expenditure, such as research and reengineering costs. Furthermore, if a participation in the certification program is desired, it is not free of charge and requires continuous development. However, the benefits of producing effective, healthy, safe and re-usable products seem to outweigh the initial costs. In fact, being recognized as a leader in innovation, design and sustainability can provide a competitive advantage in the marketplace for the company.<sup>108</sup> As a result of the improved product value, the company can benefit from long-term relationships with customers and the acquisition of new clients.<sup>109</sup> Moreover, being appreciated as a transparent company with commitment towards social and environmental goals can attract potential employees, which is an important factor in the competition for the best talents.<sup>110</sup>

It is possible that future research studies encounter health risks in material that is today considered as safe. This can lead to limitations in the use of these materials during the manufacturing process and to reputational damage, resulting in a loss of customers and revenue. Furthermore, to lower the price of environmentally preferable products, a reduced taxation for these products might be implemented by the government in the future. Alternatively, an additional taxation for environmental protection might apply for products that are negatively impacting the environment.<sup>111</sup> Product manufacturers that apply the C2C design concept are not exposed to such risks and benefit from these potential changes while the competitors suffer harm.

Moreover, while some preferable materials, like wool instead of conventional cotton, might today be more expensive than less-healthy ones for example, this can change in the future, due to resource scarcity or regulations regarding the producer's responsibility for pollution and emission.<sup>112</sup> With this in mind, the new product design leads to cost reduction resulting from an increase in resource efficiency, the re-use of material, the generation of renewable energy, lower water consumption and the use of recycling water.<sup>113</sup> In fact, by designing a system of collection and reuse of the products at the end of their lifecycle, indispensable scarce resources can be maintained within the technical cycle and used for the production of new products. As a result, raw material expenditure can be reduced. Alternatively, re-marketing of product materials after their traditional use can result in a new source of income.<sup>114</sup>

Most compelling evidence often is a practical example, which is provided in the book "Einfach intelligent produzieren: Cradle to Cradle: die Natur zeigt, wie wir die Dinge besser machen können" by Braungart et al. (2011). By changing the product design of fabric in a textile factory according to the C2C design concept, interesting results have been achieved. Due to the replacement of conventional

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<sup>108</sup> Cradle to Cradle Products Innovation Institute (2014a), p. 6

<sup>109</sup> Cradle to Cradle Products Innovation Institute (2014a), pp. 4–6

<sup>110</sup> Lenssen, G., Lacy, P., Arnott, J., & Lowitt, E. (2009), p. 485

<sup>111</sup> Radhakrishnan, S. (2015), p. 25

<sup>112</sup> Kumar, S. & Putnam, V. (2008), pp. 306–307

<sup>113</sup> Cradle to Cradle Products Innovation Institute (2014a), p. 4; Mulhall, D. & Braungart, M. (2010), p. 10

<sup>114</sup> Cradle to Cradle Products Innovation Institute (2014a), p. 4

chemicals with components that only have positive features, the quality of the waste water changed drastically. The water that left the factory was even cleaner than the water that was entering the factory. The company benefited from this change in several ways. The waste water could be reused for the production, leading to reduced expenditure and the compliance of regulatory regarding pollution was no longer a burden. Furthermore, space that was formerly needed for the storage of toxic chemicals became a recreation area for employees and protective clothing became unnecessary.<sup>115</sup>

Important to realise are also the avoided risks and reduced dependency that come along with the C2C design. The risk of instable prices and supply disruption of resources can be avoided or minimized by using renewable energy and renewable raw material resources for the production.<sup>116</sup> Furthermore, as described in a previous chapter, a cascade utilisation of wood in the biological cycle does not only substitute finite energetic resources, such as fossil fuel. Due to the combination of energetic and material utilisation, the total cost of the wood logistic network as well as greenhouse gas emissions can be reduced.<sup>117</sup> This can also be achieved in other sectors by choosing regional suppliers and locally extractable resources for the production. An additional benefit is the positive contribution to the region's economy, due to the creation of regional demand and employment, as previously mentioned.<sup>118</sup>

To sum up, for companies to apply the C2C concept to their products requires a major change in their operations, their vision and their culture.<sup>119</sup> However, an increasing number of companies is recognising sustainability as a source of financial profits and not only as a necessity to their business.<sup>120</sup> In fact, these companies do not only see their actions as benefits for the environment and the society, they have identified their own benefits, such as reduced costs and risks. Additionally to these tangible advantages, they are aware of the benefits of a better brand reputation, improved competitiveness as well as increased attractiveness to talent.<sup>121</sup>

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<sup>115</sup> Braungart, M. et al. (2011), pp. 138–141

<sup>116</sup> Cradle to Cradle Products Innovation Institute (2014a), pp. 4–5

<sup>117</sup> EPEA Internationale Umweltforschung GmbH (2009), pp. 8–9; Taskhiri, M. S. et al. (2016), p. 38

<sup>118</sup> Braungart, M. et al. (2011), pp. 158–161

<sup>119</sup> Nail, J. (2010), p. 26

<sup>120</sup> Kim, H.-S. & Hall, M. L. (2015), pp. 31–32

<sup>121</sup> Dyllick, T. & Muff, K. (2016), p. 157

## 4 The Outdoor Apparel Industry

### 4.1 Relevance of Sustainability within the Industry

The textile and apparel industry accounts for worldwide sales of three trillion dollars.<sup>122</sup> The processes in the textile industry, such as manufacturing and retailing are very labour intensive and the products are often produced in countries with low social standards.<sup>123</sup> Due to a high utilisation of water, energy, chemicals and materials,<sup>124</sup> combined with various forms of waste created, the importance of a change towards environmentally friendly and healthy products in the industry is clearly recognisable.<sup>125</sup>

In the life cycle of apparel, the transport and end-of-life stage have the lowest impact;<sup>126</sup> still, greenhouse gas emissions and waste are generated.<sup>127</sup> Instead, the production and processing stages are the main contributors for the environmental impact, which varies according to the fibre type used in the process. The main fibres used in the textile industry are cotton, wool, nylon and polyester. Cotton which is most commonly used,<sup>128</sup> has a very high impact on the environment due to the amount of fertilizers and pesticides used as well as due to its high water consumption.<sup>129</sup>

However, the use stage of apparel is the one with the highest environmental impact. Some argue that the C2C concept only improves the production and the end-of-life-stage of a product, which accounts in the textile industry not even for half of the environmental impact.<sup>130</sup> This is only partly true, as apparel can be designed with improved breathability or dirt-repellent to reduce the washing frequency and the water temperature. By choosing materials that dry faster and eliminate wrinkling, energy for the tumble drying and ironing can be saved.<sup>131</sup> Furthermore, apparel that is designed without unhealthy chemicals does not deteriorate the water quality in the washing process.<sup>132</sup>

Whereas the food industry has got much more attention from consumers in the past, regarding environmental pollution, genetic modification and over usage of hormones and antibiotics for livestock animals,<sup>133</sup> nowadays an increasing awareness regarding environmental pollution can be recognised among consumers in the textile industry.<sup>134</sup> Thereby, sustainably manufactured apparel is a growing driver for sales.<sup>135</sup> A pioneer industry in terms of sustainability, social fairness and working conditions is the outdoor industry. Several outdoor

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<sup>122</sup> Radhakrishnan, S. (2015), p. 28

<sup>123</sup> Radhakrishnan, S. (2015), p. 38

<sup>124</sup> Radhakrishnan, S. (2015), p. 29

<sup>125</sup> Bakker, C. A. et al. (2010), p. 6

<sup>126</sup> Butow, J. (2014), pp. 48–49

<sup>127</sup> Butow, J. (2014), p. 25

<sup>128</sup> Butow, J. (2014), pp. 48–49

<sup>129</sup> Butow, J. (2014), pp. 17–18

<sup>130</sup> Llorach-Massana, P. et al. (2015), p. 248

<sup>131</sup> Bakker, C. A. et al. (2010), pp. 6–7

<sup>132</sup> Radhakrishnan, S. (2015), p. 38

<sup>133</sup> Butow, J. (2014), pp. 1–2

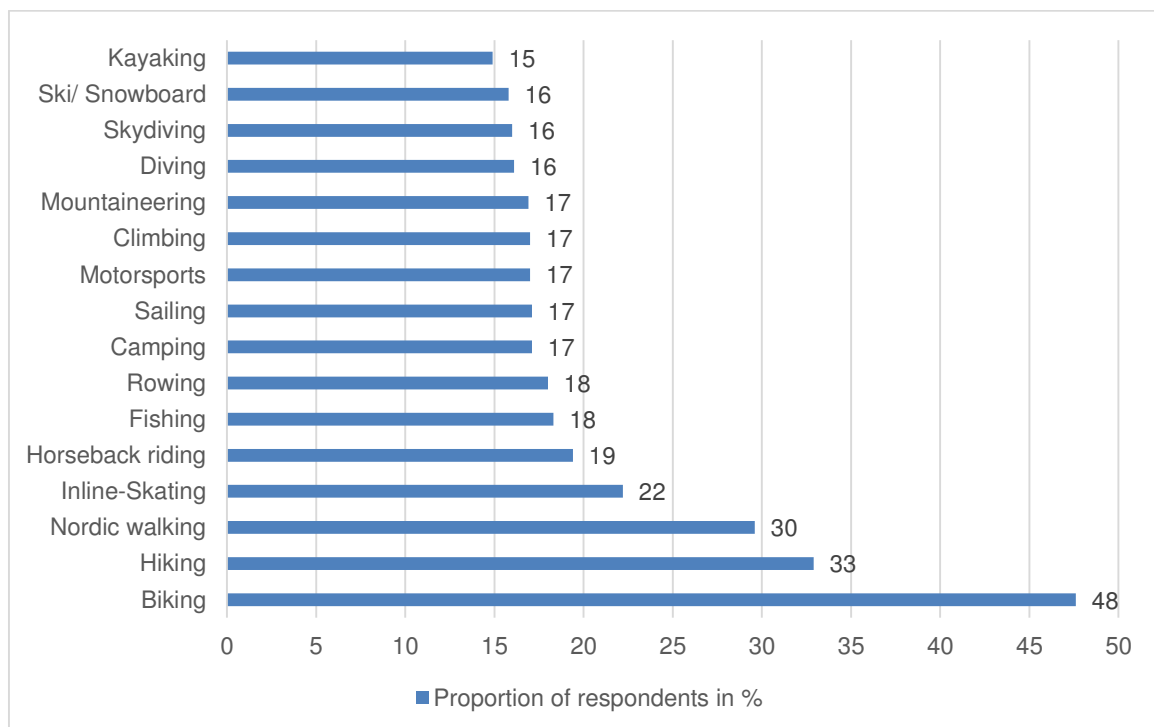
<sup>134</sup> Kim, H.-S. & Hall, M. L. (2015), p. 40

<sup>135</sup> Jahr Top Special Verlag GmbH & Co. KG (2016a)

manufacturers have recognised the trend of sustainability among the consumers of outdoor products.<sup>136</sup> Furthermore, the implementation of closed cycles in the outdoor apparel industry is feasible and described in detail based on exemplary outdoor manufacturers in chapter 6.

## 4.2 Definition of Outdoor Apparel

The term outdoor is defined by the Bundesverband der Deutschen Sportartikel-Industrie e.V. as activities that can be exercised by oneself in the nature. Thereby taking into account the environmental protection, it aims to increase people's enjoyment of nature and to preserve the natural heritage for future generations.<sup>137</sup> As there is no common definition, the activities vary from camping to sport disciplines such as kayaking or climbing up to motorsports and even skydiving. Whereas the most regularly practiced outdoor activities in Germany are biking, hiking as well as Nordic walking (cf. figure 7).



**Figure 7: Outdoor activities regularly practiced in Germany in 2012<sup>138</sup>**

The outdoor market can be divided in the six product segments: apparel, footwear, backpacks, tents, sleeping bags and outdoor gear, such as camping equipment.<sup>139</sup> With more than half of the total sales, the apparel segment accounts for the largest share within the German outdoor market.<sup>140</sup> The range of apparel covers all kinds of clothing, such as jackets, trousers, shirts and underwear.<sup>141</sup>

<sup>136</sup> Jahr Top Special Verlag GmbH & Co. KG (2016a)

<sup>137</sup> Bundesverband der Deutschen Sportartikel-Industrie e.V. (2014)

<sup>138</sup> Own illustration based on Tomorrow Focus AG (2012)

<sup>139</sup> Polotzek, B. (2009), p. 4

<sup>140</sup> bbw Marketing Dr. Vossen & Partner (2015); Loke, M. (2015); figures from 2010 to 2012

<sup>141</sup> Polotzek, B. (2009), p. 4

While keeping in mind that there is no clear cut between outdoor apparel and fashion or street wear,<sup>142</sup> the functionality of outdoor clothing can be described as one of its main characteristics. Outdoor apparel has the function to protect the human body for instance from climatic influences, as they have an impact on the personal performance and physiological functions.<sup>143</sup> Another key element of outdoor apparel is a good fit, meaning the conformity of the clothing to size and shape of the person. Whereas a good fit of a fashion apparel is often less important than the look of the clothing itself, for outdoor apparel the right fit is absolutely necessary to ensure an ease of movement under extreme conditions.<sup>144</sup>

### 4.3 Consumers of Outdoor Products

The consumer's expectations and demands regarding the quality and functionality of appropriate clothing are as diverse as the outdoor activities.<sup>145</sup> In fact, the consumers of outdoor apparel can be divided into three user types. The first group consists of active people, which are exercising outdoor sports, such as biking, climbing or hiking.<sup>146</sup> It can be assumed that these consumers value the functionality and fit of clothing the most. The second group is less sportive and is using outdoor fashion for recreational activities in the nature, such as camping or fishing. Finally, an increasing number of people is wearing outdoor fashion in their daily life, while walking through the city for example.<sup>147</sup> A reason for this development might be the so called "Normcore"-trend, worn by people that prefer casual or subdued clothing.<sup>148</sup> This third type of consumer values outdoor fashion as a trendy accessory compared to functionality.<sup>149</sup>

According to a market study by bbw Marketing Dr. Vossen & Partner (2015), the consumer with the most interest in outdoor activities and the highest willingness to spend money on outdoor products is a sportive man, between 18 and 29 years old. He is positioned in the high-price segment and especially values innovative products as well as environmental sustainability. Traditional demand criteria, such as high-quality, functionality and the material itself are still most important to consumers of outdoor apparel, followed by the price. However, in consumer expectations a trend towards social responsibility, transparency and ecological harmlessness of products can be recognised.<sup>150</sup> Furthermore, consumers of outdoor products are willing to pay higher prices for innovative products.<sup>151</sup> Especially the so called Millennials, in other words the generation Y is attracted by built-in technology for outdoor clothing.<sup>152</sup>

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<sup>142</sup> Jahr Top Special Verlag GmbH & Co. KG (2016b)

<sup>143</sup> Strähle, J. & Wagner, Y. (2016), pp. 67–69

<sup>144</sup> Strähle, J. & Wagner, Y. (2016), pp. 66–67

<sup>145</sup> Gesellschaft für Konsumforschung (2015), pp. 9–11; Marketmedia24 (2012); figures from 2010 to 2013

<sup>146</sup> Polotzek, B. (2009), p. 7

<sup>147</sup> Herrmann, L. & BBE Handelsberatung (2012)

<sup>148</sup> Jahr Top Special Verlag GmbH & Co. KG (2015)

<sup>149</sup> Polotzek, B. (2009), p. 7

<sup>150</sup> Jahr Top Special Verlag GmbH & Co. KG (2014)

<sup>151</sup> Jahr Top Special Verlag GmbH & Co. KG (2016b)

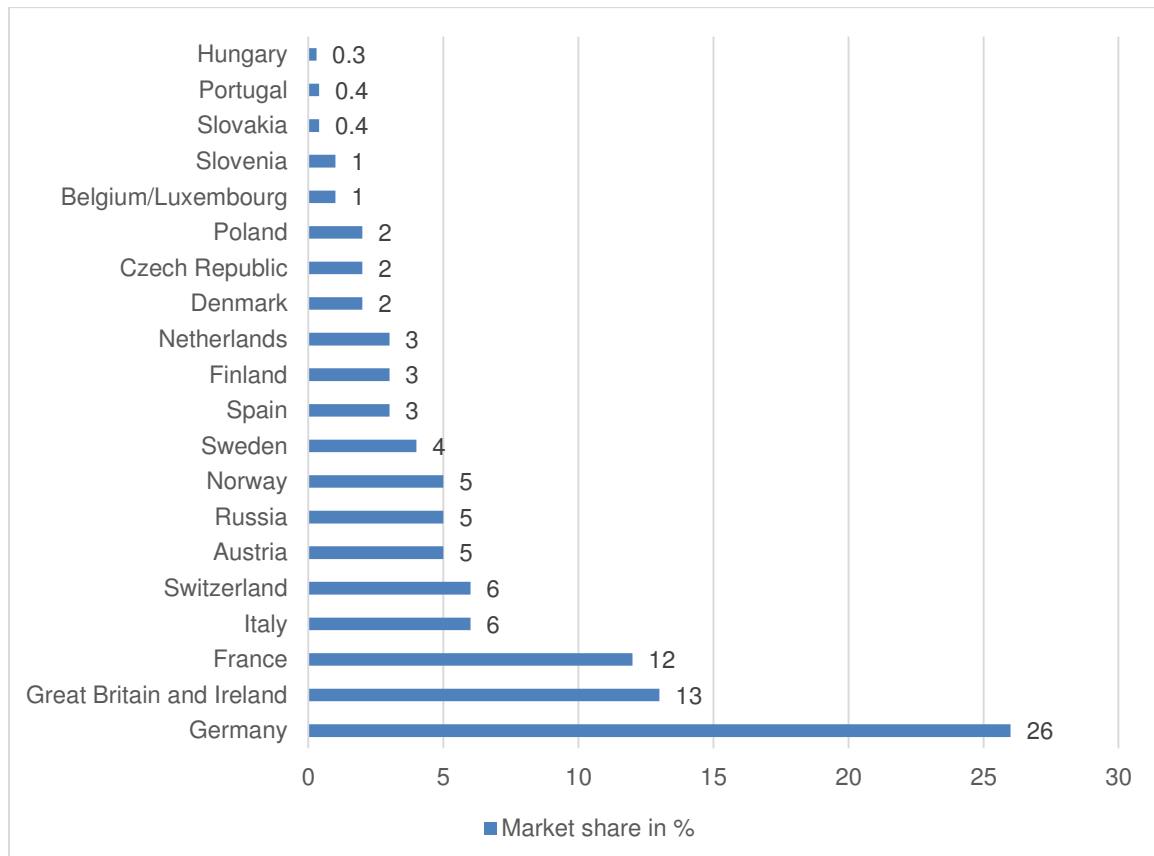
<sup>152</sup> Jahr Top Special Verlag GmbH & Co. KG (2016a)



## 5 Market Analysis

### 5.1 Methodology

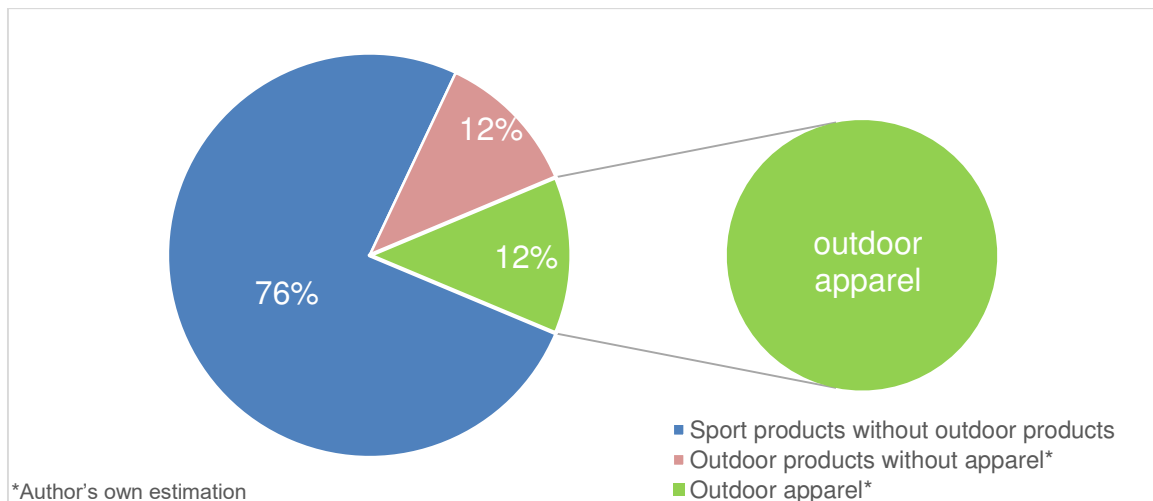
This thesis investigates the market potential in the German outdoor apparel industry for products designed in accordance with the C2C concept. The scope is limited to the German outdoor market, which has the highest market share of all European countries. In fact, 26 per cent of the sales generated with outdoor sporting goods in Europe in 2014 belonged to the German market (cf. figure 8).



**Figure 8: Market share of outdoor sporting goods in Europe in 2014<sup>153</sup>**

The aim of the market analysis is to determine the market size, in terms of sales generated for the last five years in order to identify reasons for past developments and future predictions and to calculate the potential market volume. The necessary information consists of sales figures of outdoor apparel in Germany over several years. In addition, it is important to differentiate between the sporting goods market, the outdoor market and specifically the outdoor apparel market. Especially for the latter, sales figures are seldom publicly available. Therefore, all three markets were analysed to identify the appropriate sales distribution. Figure 9 shows the sales distribution of each submarket in Germany for the year 2014 to demonstrate the proportions more clearly. However, the sales figure for outdoor apparel was estimated by the author and based on the share of outdoor apparel in the European market. Furthermore, the turnover for the German outdoor market is a forecast, but a similar graphic is provided in appendix B, which is based on reliable data for the year 2012.

<sup>153</sup> Own illustration based on European Outdoor Group (2015a)



**Figure 9: Sales distribution of the German sporting goods market in 2014<sup>154</sup>**

For the analysis of the market potential, information regarding the German population and the buying behaviour as well as the prices for outdoor apparel were collected. In the subsequent competitive analysis, the market power of the competitors and their actions to integrate sustainability in their strategy is the kind of information the chapter focuses on.

Porter's (1998) five forces model was used to identify the market participants and their power as well as potential threats that influence the market structure. The model was chosen because the thesis does not focus on a single company; instead the attractiveness of the entire outdoor apparel industry was analysed. Therefore, Porter's five forces model classifies the different market players and provides a basis for the identification of future trends and influences on the industry. Furthermore, the distribution channels of outdoor apparel are defined to differentiate between the competitors. The goal of the final in-depth analysis of three selected outdoor manufacturers that have a strong focus on sustainability is to provide a positioning strategy for a C2C outdoor apparel brand.

To gather the information, an exploratory research approach was chosen, as the analysis was not based on hypotheses, but rather on structuring the information of a relatively unexplored research topic.<sup>155</sup> As the topic of this thesis is not suitable for the collection of statistically accurate data, the research focuses on the discovery of ideas and insights. Within the limits of publicly available data from internet sources and access to databases provided by the Hochschule Hannover (University of Applied Sciences and Arts in Hanover), the information was gained by secondary research. The collected data was derived from external data sources, such as official statistics, sport associations and journal articles.

Market data on the European outdoor market is partly provided for free by the European Outdoor Group. The GfK SE (Gesellschaft für Konsumforschung) is a further source of information regarding the German sporting goods and outdoor market. Additionally, the database Statista provides several surveys about

<sup>154</sup> Own illustration based on European Outdoor Group (2015b) (Apparel = 52% of total sales in the European outdoor market); Handelsblatt GmbH (2015) (German outdoor market forecast = sales of 1777 mil. €); Verband Deutscher Sportfachhandel (2016) (German sporting goods market = 7310 mil. €)

<sup>155</sup> Homburg, C. (2012), p. 252

consumer behaviour in the outdoor market and market shares of outdoor providers. Detailed information regarding employees and turnover of single outdoor providers were mostly derived from the company databases Hoppenstedt and LexisNexis. Articles in journals, such as Textilnews, Werben & Verkaufen and Personal protection & fashion, are important for a comprehensive picture of trends and development in the outdoor market. Furthermore, press releases of sport and outdoor fairs as well as articles published on websites, such as outdoormarkt.com, were used within the research.

One of the main challenges during research is coping with missing data. As previously mentioned, for the calculation of the market size of each submarket some sales figures for the German market were deducted from the European market and are therefore not certain. Another limitation of the accuracy of the collected data refers to the calculation of the market potential. The purchase frequency of outdoor apparel is based on the answers of 2838 female and 2833 male respondents. As this sample size is relatively small in comparison to the number of potential customers to which it is applied in this analysis, the significance of the market potential is limited. Additionally, own assumptions had to be made by the author, as the response options were not precisely enough formulated in the study, which is explained in detail in chapter 5.3. The average price per unit is based on three kinds of clothing and the average of the cheapest and the highest garment of five selected companies. The most accurate figure would consist of all kinds of clothing, the average price of all differently priced garments and from all outdoor apparel providers. However, such research would have extended the boundaries of this thesis. In the competitive analysis, the three companies examined in depth regarding the C2C criteria were chosen based on the author's perception of their sustainability approaches. Other than that, the collected data mainly derived from the companies' websites and the accuracy of the published information could not be verified within the limits of this paper.

## **5.2 Market Size and Developments**

About 30 years ago, the outdoor industry was considered a niche market. The shift from almost exclusively selling extreme sport equipment to a broad assortment of apparel, shoes and various outdoor sports equipment resulted in double-digit growth rates within the outdoor market. Outdoor activities, such as hiking, climbing and Nordic walking became very popular and the demand led to a wide range of outdoor products with a strong focus on the customer's needs. Additionally, outdoor apparel became recognised as urban fashion further boosting the outdoor market.<sup>156</sup> Nowadays, the outdoor market is a major and very important part of the sporting goods market. In fact, in Germany it accounts for almost a quarter of the total sales<sup>157</sup> and is therefore the sector with the highest turnover within the sporting goods market.<sup>158</sup>

However, attracted by high growth rates in the last decades more competitors entered the market place, leading to a drop in prices. The provider of outdoor

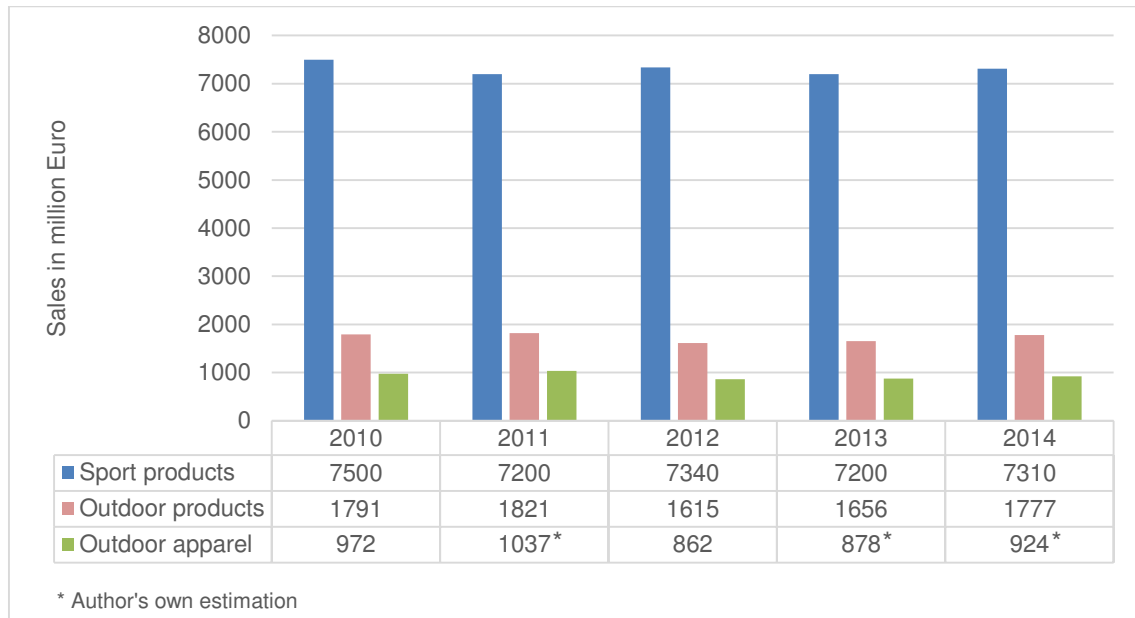
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<sup>156</sup> bbw Marketing Dr. Vossen & Partner (2015)

<sup>157</sup> Gesellschaft für Konsumforschung (2014)

<sup>158</sup> bbw Marketing Dr. Vossen & Partner (2015)

fashion more often had their origin in other industry sectors such as the food industry or the textile industry that was originally offering fashion instead of functional clothing.<sup>159</sup> As a result, the outdoor market is nowadays growing at a far lower pace and when observing the last five years, a stagnation can be recognised (cf. figure 10).



**Figure 10: Total sales of sporting goods, outdoor products and outdoor apparel in Germany from 2010 to 2014<sup>160</sup>**

While the figures for sales in the sporting goods market in Germany are easily accessible through secondary research, the sales figures in the outdoor market for the years 2012 and 2013 derive from deeper research based on proportional shares within the sporting goods market.<sup>161</sup> Far more difficult to identify are the sales figures that solely derive from outdoor apparel. One way to estimate those numbers is by basing the sales for the German outdoor market on the ones from the European outdoor market. For the year 2014, the share of apparel in the European outdoor market accounted for 52% of the total sales.<sup>162</sup> It can be assumed that there is not a strong deviation in the share of outdoor apparel in the German outdoor market. In case of 2013, not even the share for outdoor apparel in Europe is publicly available and free of charge. Therefore, the average share of outdoor apparel in the outdoor product market is calculated based on the years 2007 until 2012.

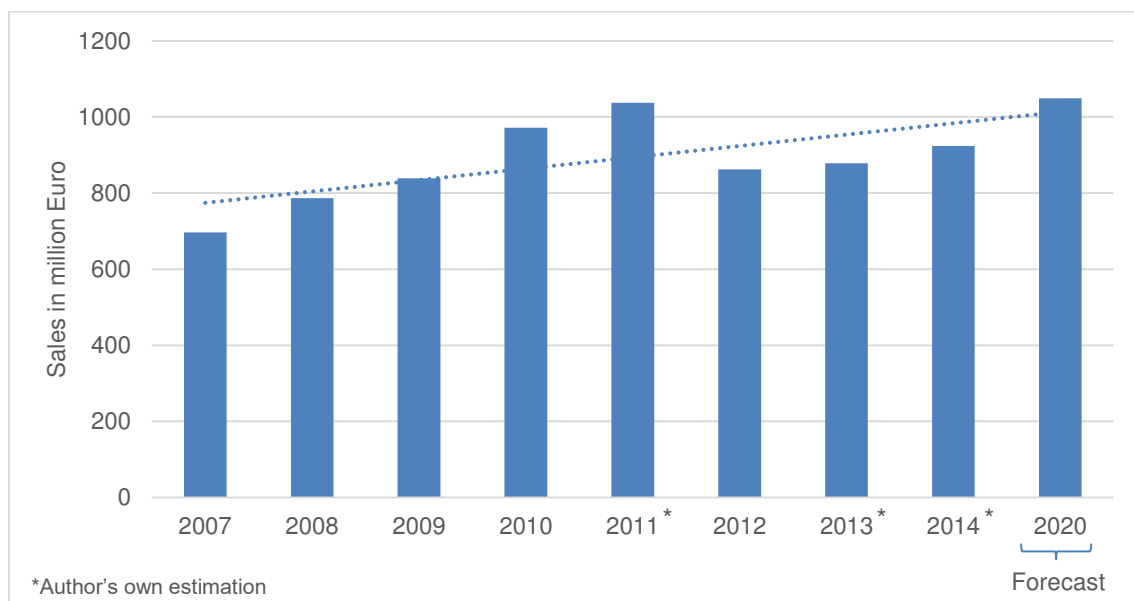
<sup>159</sup> bbw Marketing Dr. Vossen & Partner (2015)

<sup>160</sup> Own illustration based on European Outdoor Group (2015b) (no free data available for the German market; European market: Apparel = 52% of the outdoor market); Gesellschaft für Konsumforschung (2014), p. 9 (sales in the German outdoor market = 22% in 2012 and 23% in 2013 of total sales in sporting goods market); Handelsblatt GmbH (2015) (sales in the German outdoor market in 2014); Herrmann, L. & BBE Handelsberatung (2012), p. 15 (sales of outdoor apparel in Germany in 2010 and 2011-forecast); Marketmedia24 (2012) (sales in the German outdoor market 2010-2011); Marketmedia24 (2013) (Apparel = 53.4% of total sales in the German outdoor market in 2012); Verband Deutscher Sportfachhandel (2016) (sales in the sporting goods market 2010-2014)

<sup>161</sup> Gesellschaft für Konsumforschung (2014), p. 9

<sup>162</sup> European Outdoor Group (2015b)

After analysing the market size of the outdoor market with a strong focus on the share of outdoor apparel, the dynamic development of the market and future predictions are examined. In the study “Markt: Monitor Outdoor 2015”, a forecast of the market volume for the German outdoor market in 2020 is published by the BBE Handelsberatung in cooperation with Marketmedia24. In fact, they predict an increase in sales to 1.98 billion Euro. Based on the average share of outdoor apparel in the outdoor product market derived from the last years, the prediction for 2020 would indicate an increase in sales of outdoor apparel to 1.05 billion Euro (cf. figure 11).<sup>163</sup> In comparison to the sales in 2014 this is an increase in 11.4 per cent over the time of six years. A similar picture derives from a survey at the outdoor fair 2015 in Friedrichshafen, where the biggest share of visitors estimated a constant or a slightly increasing tendency in the outdoor market.<sup>164</sup>



**Figure 11: Total sales of outdoor apparel in Germany from 2010 to 2020**<sup>165</sup>

The years 2015 until 2019 are not illustrated in figure 11 as there is no free data on sales and forecasts for sales available. However, after reviewing several journals, it can be assumed that there was not a high growth rate from 2014 to 2015 and due to the mild winter, the sales in 2016 were also only slightly above the figures from the previous year.<sup>166</sup> The assumption is confirmed by a study from bbw Marketing Dr. Vossen & Partner (2015) as 51 per cent of the respondents are willing to spend the same amount of money on outdoor clothing in the future and 18.5 per cent are willing to spend even more money on it.<sup>167</sup> Especially the latter can be realised due to an increase in pensions and wages in several industries. The additional income, the ongoing inflation and lower fuel prices are leading to an increase in purchasing power.<sup>168</sup> However, the weak Euro

<sup>163</sup> BBE Handelsberatung (2016)

<sup>164</sup> Burmester, S. (2015)

<sup>165</sup> Own illustration based on Herrmann, L. & BBE Handelsberatung (2012), p. 15 (sales of outdoor apparel in Germany for the years 2007-2010 & 2011 = forecast); Handelsblatt GmbH (2015) (sales in the outdoor market for 2020-forecast; apparel = 53% of total sales/author's own estimation); see figure 9 for the years 2012-2014

<sup>166</sup> Bundesverband der Deutschen Sportartikel-Industrie e.V. (2016), pp. 1–2; Jahr Top Special Verlag GmbH & Co. KG (2016a); Jahr Top Special Verlag GmbH & Co. KG (2016b)

<sup>167</sup> Jahr Top Special Verlag GmbH & Co. KG (2014)

<sup>168</sup> Gesellschaft für Konsumforschung (2015), pp. 6–8

can lead to an increase in prices for outdoor goods, as many suppliers produce their products outside Europe.<sup>169</sup>

By focusing on the broad mass of customers, the outdoor apparel industry has changed from a niche for practitioners of mountain sports to a very important lifestyle market. As mentioned in the previous chapter, outdoor apparel is more frequently worn as everyday wear. Functional and trendy outdoor clothing attracts nowadays a far broader mass of people.<sup>170</sup> Moreover, a change in travel habits can be identified, which positively effects the outdoor industry. Instead of spending vast amounts of money on long-distance journeys, travellers prefer to spend their holidays in the highlands nearby or in the Alps. The money can then be spent for outdoor apparel, as an increasing number of people exercises outdoor sports, such as hiking.<sup>171</sup> Especially in the high-price segment the interest on outdoor products registers an increasing tendency.<sup>172</sup>

The digitisation might attract new customers in the outdoor market, as they are willing to spend more money on innovative products.<sup>173</sup> These innovations range from activity trackers over customised clothing to a relatively new innovation which is intelligent clothing. The garment can contain microorganisms that change the structure of the garment depending on body temperature and moisture.<sup>174</sup>

In times of veganism, nutritional awareness and climate change, a strong trend towards sustainability can be recognised in the outdoor industry. More and more consumers expect outdoor fashion to be produced environmentally friendly and under fair working conditions.<sup>175</sup> Several suppliers of outdoor products have recognised the trend and produce outdoor apparel consistent of merino wool, organic cotton or recycled material. In fact, an increasing number of brands has incorporated sustainability in their brand strategy.<sup>176</sup> Whether those companies truly try to lessen their negative impact or even already producing a positive impact is analysed in chapter 6.

### 5.3 Market Potential

After analysing the market volume, in other words, the total sales of all providers in the market place, the market potential is analysed in this chapter. The assessment of the maximum capacity of a market provides information about the limits and facilitates a better perception of possible risks.<sup>177</sup> As a result, the theoretically possible sales volume for outdoor apparel in the German market is assessed. Thereby, the maximum number of potential customers, the purchase frequency of outdoor apparel per year and the average price per unit are

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<sup>169</sup> Burmester, S. (2015); Motor Presse Stuttgart GmbH & Co. KG (2015)

<sup>170</sup> Hennersdorf, A. (2005)

<sup>171</sup> Allgayer, F. (2009)

<sup>172</sup> Jahr Top Special Verlag GmbH & Co. KG (2014)

<sup>173</sup> Jahr Top Special Verlag GmbH & Co. KG (2016a)

<sup>174</sup> Wochenblatt Verlagsgruppe GmbH (2016)

<sup>175</sup> Jahr Top Special Verlag GmbH & Co. KG (2016a)

<sup>176</sup> Kim, H.-S. & Hall, M. L. (2015), pp. 31–32

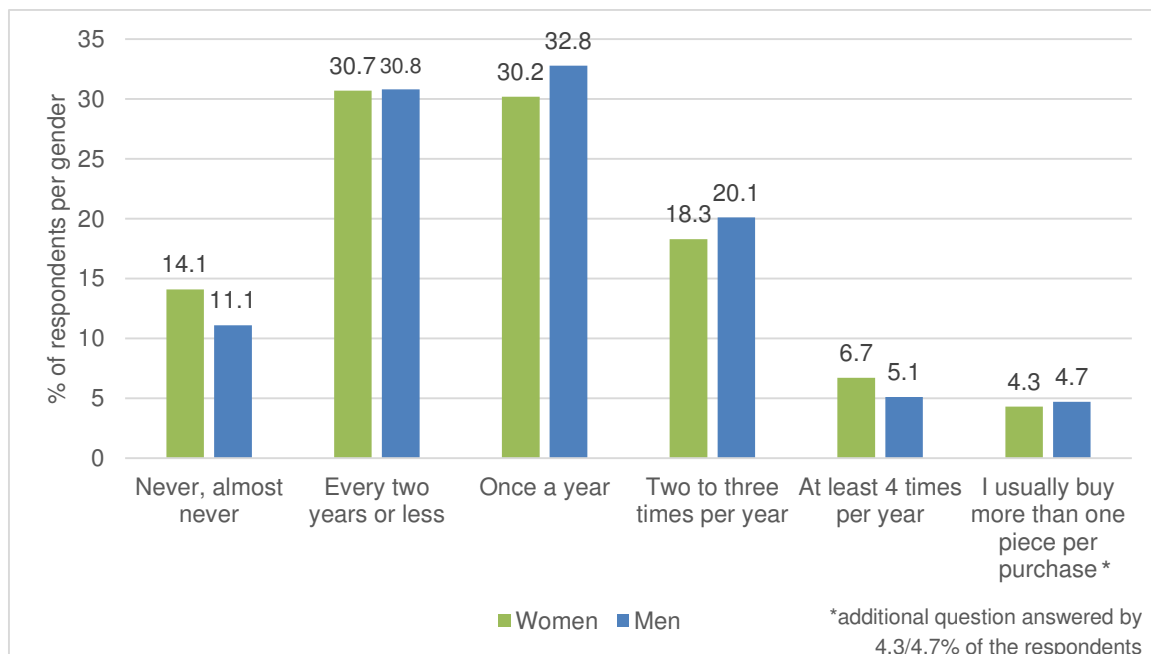
<sup>177</sup> Kastin, K. S. (2008), pp. 272–274

estimated by the author. A bottom-up approach is followed, as the potential turnover is determined by the demand side, resulting from single calculations that are summarised to calculate the size of the market potential.<sup>178</sup>

First, to estimate the maximum number of potential customers, certain limits are determined. As the German outdoor apparel market is analysed in this paper, the target group is limited to the German population. Furthermore, the following calculations are based on surveys with respondents in the age range 14 to 69. A limitation to this age range is favourable as people older than 69 are more unlikely to exercise outdoor activities. Children under the age of 14 are also not the target group for outdoor apparel and seldom able to purchase these costly products.

According to Statista GmbH (2015), the German population in 2014 accounted for around 81.2 million inhabitants.<sup>179</sup> Thereof, 50.94 per cent were women and 49.06 per cent were men.<sup>180</sup> In the age of 14 to 69 were approximately 58.3 million people ranged.<sup>181</sup> Assuming that the gender distribution of all ages equals the distribution in the age range 14 to 69, the number of potential customers that are women accounts for 29.7 million, whereas 28.6 million potential customers are men. A detailed calculation is provided in appendix C, table 4.

The gender distribution is important for the calculation of the purchase frequency of outdoor apparel/functional wear illustrated in figure 12. The respondents of the survey conducted by Spiegel-Verlag Rudolf Augstein GmbH & Co. KG and published by Statista GmbH (2011) were between 14 and 69 years old. Further to notice is that instead of 100 per cent only 99.9 per cent of the male respondents delivered a viable answer in this survey.



**Figure 12: Purchase frequency of outdoor apparel/functional wear<sup>182</sup>**

<sup>178</sup> Kastin, K. S. (2008), pp. 275–277

<sup>179</sup> Statista GmbH (2015), p. 7

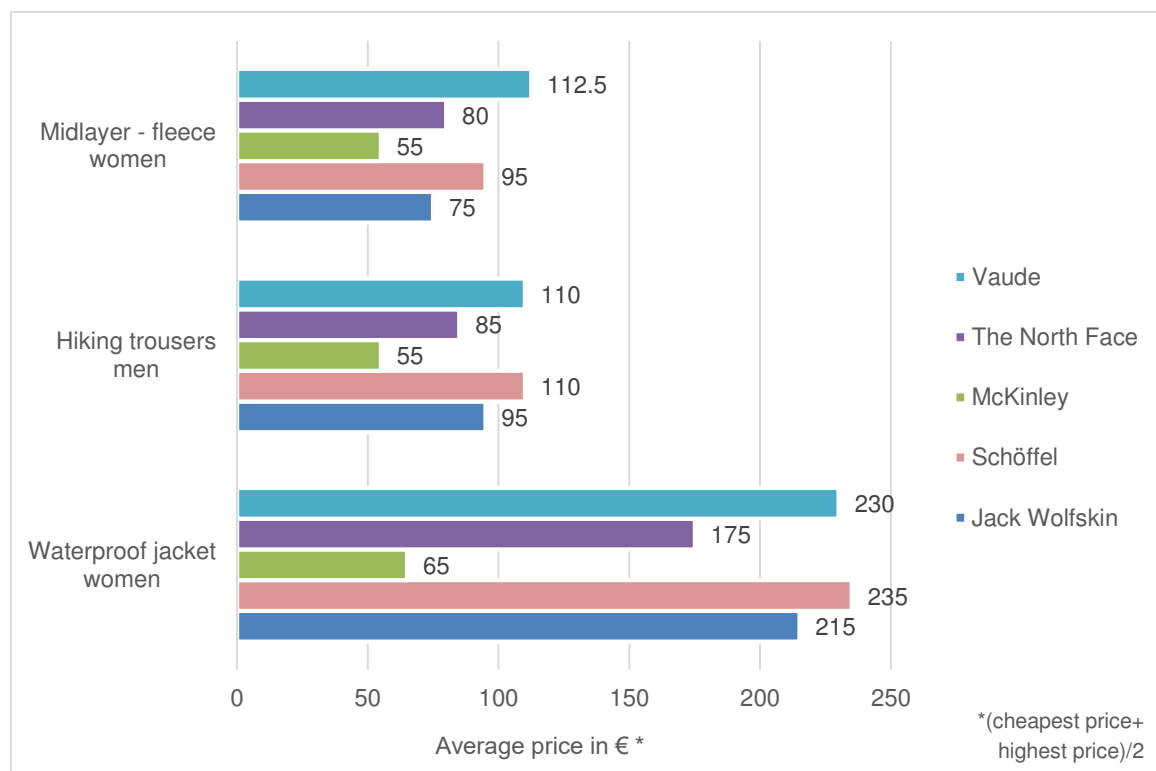
<sup>180</sup> Statista GmbH (2015), p. 8

<sup>181</sup> Statistisches Bundesamt (2015)

<sup>182</sup> Own illustration based on Spiegel-Verlag Rudolf Augstein GmbH & Co. KG (2011a); Spiegel-Verlag Rudolf Augstein GmbH & Co. KG (2011b); respondents 14-69 years old, 2838 f / 2833 m

To be able to calculate the purchase frequency, it is necessary to adjust the survey. As some answers are too broadly formulated, assumptions had to be made by the author. In detail, in the calculation the answer “every two years or less” equals every two years and “at least four times per year” equals four times per year et cetera. Furthermore, the additional answer of “more than one purchase per year” had to be specified to three purchases per year, which is an arbitrary choice by the author. The fact that the survey does not provide any information about the combination of the two answers given by some respondents, in other words, whether a person that is purchasing more than one piece is purchasing those once a year or four times a year, leads to a calculation based on the mean value. Finally, as illustrated in appendix C, table 5, the purchase frequency of women and men only differs slightly. Female customers purchase outdoor apparel 1.28 times per year and men 1.3 times per year.

Last but not least, the average price per unit is calculated. However, outdoor apparel comprises a variety of garments at a different sales value and is offered by several outdoor manufacturers to a different price. As a result, three different types of clothing were chosen by the author. Those are fleece midlayers, hiking trousers and rain jackets. Furthermore, based on a survey of 188 outdoor retailers conducted by Polotzek (2009), the five most important outdoor brands were chosen.<sup>183</sup> For each type of apparel the highest and the lowest price per brand has been summed up and divided by two, to calculate an average price per brand. The result can be seen in figure 13. Finally, the average of all average prices per brand and all types of apparel accounts for 119.5 Euro per unit, as calculated in appendix C, table 6.



**Figure 13: Average price of selected outdoor apparel<sup>184</sup>**

<sup>183</sup> Polotzek, B. (2009), pp. 30–31

<sup>184</sup> Own illustration based on appendix C, table 6

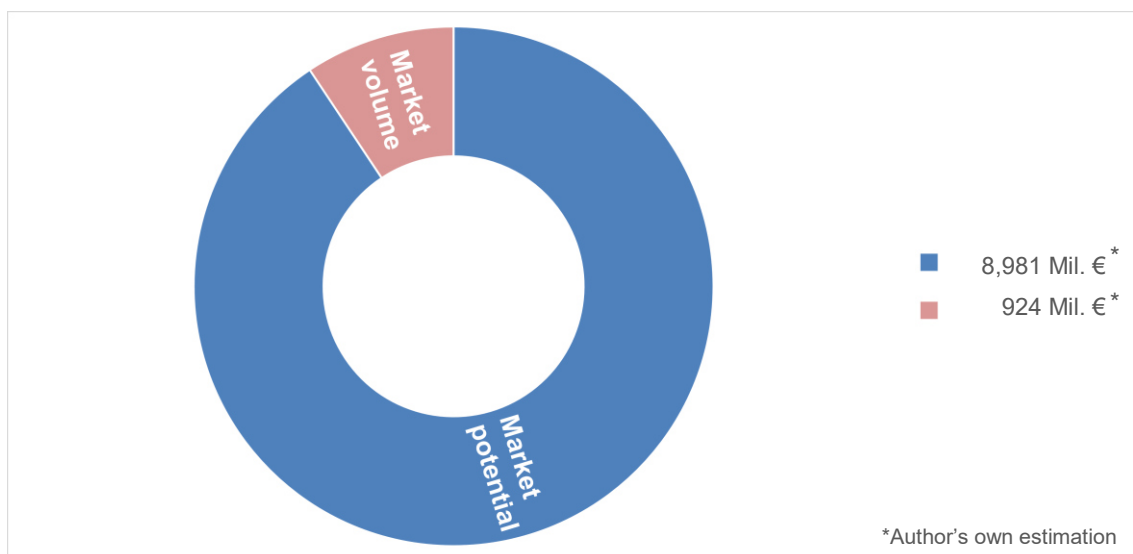


After determining the number of potential customers, the yearly purchase frequency of outdoor apparel and the average price per unit, the market potential is calculated as shown in table 3. The result signifies that if every German inhabitant in the age range 14 to 69 would purchase slightly above once a year one outdoor garment at a price of 119.50 Euro, the turnover within the German outdoor market would be around 8.98 billion Euro.

	Max. number of potential customers	x	Purchase frequency (per year)	x	Average price per unit (in Euro)	=	Potential turnover (in Euro)
Total	58,270,498			x	119.5	=	8,981,379,962
Women	29,682,804	x	1.28				
Men	28,587,694	x	1.3				

**Table 3: Market potential of outdoor apparel in Germany**<sup>185</sup>

The market potential is therefore significantly higher than the current sales volume in the German outdoor market (cf. figure 14). However, the figures have to be handled with care, as the market potential only is a theoretical dimension. In fact, the target audience for outdoor apparel is probably a lot smaller than the considered group of people in the market potential calculation. Still the target group has not been limited to the people that are currently potential customers, as this fact can change in the future, leading to a different result.



**Figure 14: Market potential of the German outdoor apparel industry**<sup>186</sup>

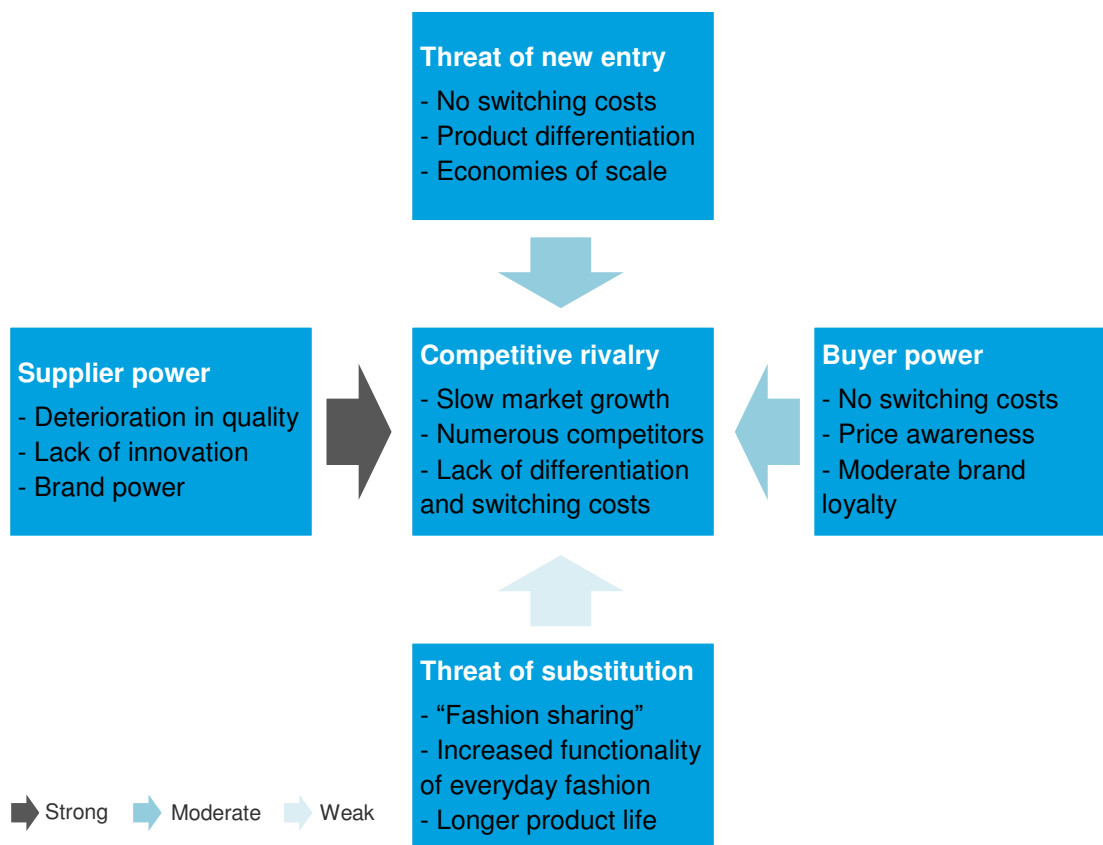
<sup>185</sup> Own illustration based on appendix C, table 4, 5 and 6

<sup>186</sup> Own illustration based on European Outdoor Group (2015b) (no free data available for the German market; European market: Apparel = 52% of the outdoor market); Handelsblatt GmbH (2015) (sales in the German outdoor market in 2014); table 3; appendix C, table 4, 5 and 6

## 6 Competitive Analysis

### 6.1 Industry Structure

The following industry structure analysis is providing an overview of the different factors that influence the competition within the outdoor market. By analysing threats of new entrants and substitute products, the bargaining power of suppliers and customers as well as the degree of rivalry among the competitors, the power structures within the market can be assessed.<sup>187</sup> In figure 15, Porter's (1998) five forces model is used to illustrate the five forces that determine the intensity of competition in the outdoor industry.



**Figure 15: Outdoor industry structure based on Porter's five forces<sup>188</sup>**

A supplier can use its bargaining power by threatening to drive up prices or to produce its products with a lower level of quality.<sup>189</sup> The latter is the most important purchasing criteria for consumers of outdoor products, followed by the material itself and is therefore increasing the outdoor provider's dependency on its supplier.<sup>190</sup> Furthermore, consumers are willing to pay higher prices for innovative products.<sup>191</sup> Special equipment is an enabler for new sport disciplines and the consumers of outdoor apparel expect outdoor providers to be innovative by constantly offering clothing with improved or new functions.<sup>192</sup> Thereby, the

<sup>187</sup> Vogelsang, E., Fink, C., & Baumann, M. (2013), pp. 290–291

<sup>188</sup> Own illustration based on Porter, M. E. (1998), p. 4

<sup>189</sup> Porter, M. E. (1998), p. 27

<sup>190</sup> Jahr Top Special Verlag GmbH & Co. KG (2014)

<sup>191</sup> Jahr Top Special Verlag GmbH & Co. KG (2016a)

<sup>192</sup> Hennersdorf, A. (2005)

provider depends on its supplier to develop and produce innovative fabrics. Moreover, certain suppliers in the outdoor industry are very powerful due to their brand image. In comparison to most other industries, the so called ingredience brand, meaning the brand of the material manufacturer, such as Gore-Tex, is well known among the end-customers of outdoor apparel.<sup>193</sup>

The customers within the outdoor industry have a moderate power. As they do not purchase large volumes, each individual buyer is not able to force down prices.<sup>194</sup> However, due to non-existent switching costs, meaning the one-time costs for switching the provider of outdoor apparel, the entirety of customers drives the competition by their high expectations regarding the quality of outdoor apparel. Still the price is an important factor for most customers and even more important than the brand.<sup>195</sup> In contrast to ingredience brands, the brands of outdoor apparel provider do not matter in the purchase decision for 65 per cent of the respondents from a survey conducted by the Gesellschaft für Konsumforschung.<sup>196</sup> More important for them are the functionality of the clothing and the personal experience with the new outfit in the nature.<sup>197</sup>

If customers find a substitute for buying outdoor clothing from the merchant, the substitute product is weakening his power and is therefore a threat for the profitability of his business.<sup>198</sup> As the so called sharing economy is growing rapidly, this might be a future substitute for the purchase of outdoor clothing. For items that are only used sometimes by the consumer, ownership is not cost-effective.<sup>199</sup> Therefore, it might be reasonable for people who do not exercise outdoor sports very frequently to pay for using the apparel during the hiking trip or climbing holidays for example. Dozens of fashion companies have recognised the increasing importance of the sharing economy and some of them offer rental services, where they allow their customers to borrow the apparel for a certain period of time, for ten to 20 per cent of the item's retail value. Another option are peer-to-peer rental services that connect the consumers that are willing to borrow fashion from each other.<sup>200</sup>

Another threat is the fact that an increasing number of people is wearing outdoor fashion in their daily life. As a result, fashion companies such as H&M are offering functional clothing in their stores.<sup>201</sup> Furthermore, outdoor clothing is mostly offered as a high-quality and very robust product. As a result, it is not necessary for the consumer to replace the apparel frequently. The long product life can be considered as a substitute, as it limits the potential return for the industry. However, as none of the mentioned substitutes is factually replacing the outdoor apparel itself, the threat of substitution can be considered as low.

A higher threat is that new competitors enter the industry. They desire to gain market share and put pressure on prices by increasing the offer within the market

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<sup>193</sup> Gesellschaft für Konsumforschung (2015), pp. 9–11

<sup>194</sup> Porter, M. E. (1998), pp. 24–27

<sup>195</sup> Jahr Top Special Verlag GmbH & Co. KG (2014)

<sup>196</sup> Gesellschaft für Konsumforschung (2015), pp. 9–11

<sup>197</sup> Gesellschaft für Konsumforschung (2015), p. 2

<sup>198</sup> Porter, M. E. (1998), pp. 23–24

<sup>199</sup> Pike, H. (2016)

<sup>200</sup> Pike, H. (2016)

<sup>201</sup> Thieme, T. (2014a)

place.<sup>202</sup> The fact that there are no switching costs for consumer of outdoor apparel is decreasing the market barriers for new entrants. However, as the brands of existing providers of outdoor fashion are already positioned in the market, it can be difficult for new entrants to differentiate their products from the ones already offered. In fact, the benefit of their product must be clearly communicated to the target customer and the necessary resources that are required for marketing are often a financial barrier for start-ups.<sup>203</sup> Furthermore, economies of scale, which refers to the decline in unit costs of a product by raising the absolute volume per period,<sup>204</sup> have a significant impact on the entrants of the outdoor apparel industry, as it forces them to either accept cost disadvantage or to produce on a large scale.

As mentioned in the previous chapter, the outdoor industry is lately growing at a very low pace. As a result, the companies can only grow by capturing market shares from their competitors. The rivalry among existing competitors is therefore very high in a slowly growing industry.<sup>205</sup> Furthermore, the competitive pressure in the outdoor industry is high, due to the great number of outdoor brands in the market. In fact, more than 1,300 outdoor brands exist worldwide and especially the German market seems to be quite saturated.<sup>206</sup> As the consumers of outdoor apparel are well informed nowadays, their expectations regarding quality and service are growing. To be able to compete in the market, the providers of outdoor apparel need to optimise their value chain constantly. Beside this, differentiation is an important factor to compete within the market place.<sup>207</sup> However, a lack of differentiation can be observed within the outdoor industry. As a result, a tough rivalry exists in the market.<sup>208</sup>

## 6.2 Distribution Channels of the Outdoor Industry

When analysing the outdoor apparel industry, the market can be distinguished in the three levels: material manufacturers, clothing manufacturers and retailers. The author places the material manufacturers in the first level as they produce the fabric of which the outdoor apparel is made of. In the outdoor industry, they are of particular interest, due to the strong brand loyalty of ingredience brands<sup>209</sup> and the importance of quality, functionality and innovation for consumers of outdoor apparel. Examples for well-known material manufacturers are Gore-Tex, Polartec and Primaloft.<sup>210</sup>

The second level of the outdoor apparel market belongs to the clothing manufacturers. They usually offer a broad variety of outdoor clothing, such as trousers, hard- and softshell and insulating jackets. Many clothing manufacturers receive their material from the earlier mentioned material manufacturers and

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<sup>202</sup> Porter, M. E. (1998), p. 7

<sup>203</sup> Porter, M. E. (1998), p. 9

<sup>204</sup> Porter, M. E. (1998), p. 7

<sup>205</sup> Porter, M. E. (1998), p. 18

<sup>206</sup> Becher, M. (2015)

<sup>207</sup> Becher, M. (2015)

<sup>208</sup> Hofer, J. (2016)

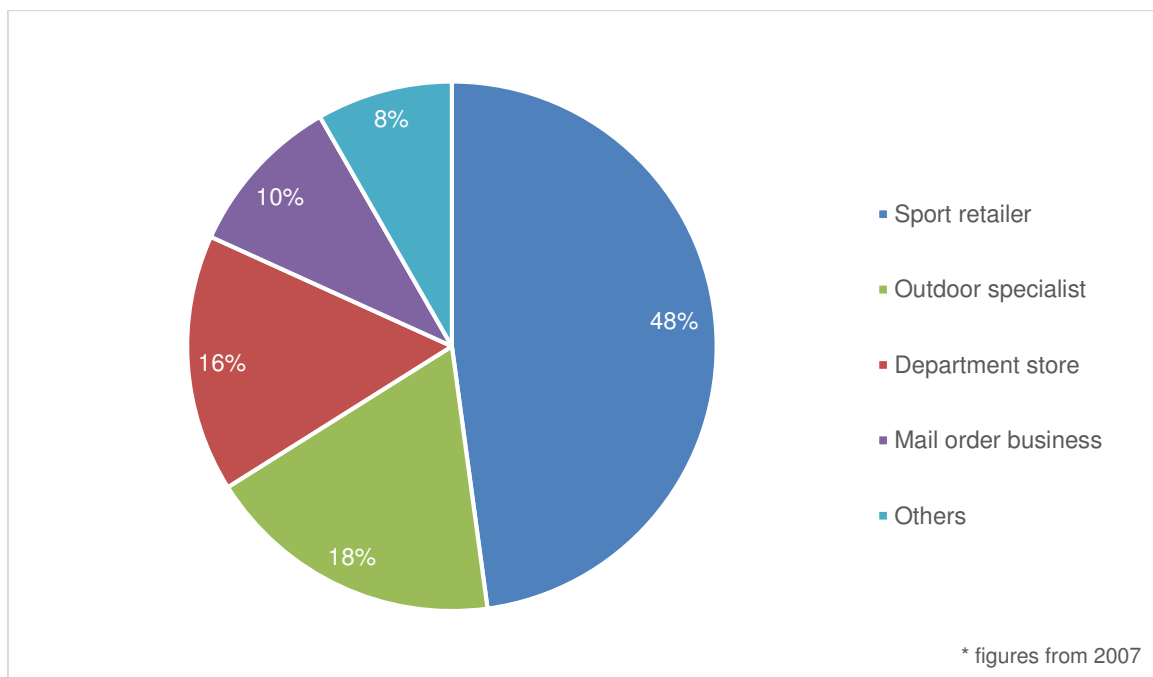
<sup>209</sup> Gesellschaft für Konsumforschung (2015), pp. 9–11

<sup>210</sup> Jahr Top Special Verlag GmbH & Co. KG (2014)

some of them process these materials or a part of it by themselves.<sup>211</sup> Outdoor clothing manufacturer are companies such as VAUDE, the North Face and Fjällräven.<sup>212</sup>

Finally, in the third market level the retailers are positioned. Those can be retailers that offer other products besides outdoor products, like sport retailers, such as SportScheck and Sport 2000 or retailers that solely offer outdoor products, such as Globetrotter. However, not only retailers sell outdoor products directly to the end-customer, also clothing manufacturers such as Mammut or Schöffel sell their products directly to the end-customer through their monobrand-stores.<sup>213</sup> By doing so, clothing manufacturers can save the trader margin and can offer their products for a lower price.<sup>214</sup>

In Germany, most outdoor products are sold by sport retailers, followed by outdoor specialists. The latter includes the just mentioned clothing manufacturers as well as the outdoor retailers that solely offer outdoor products.<sup>215</sup> Figure 16 illustrates the market share of each type of distribution channel for the German outdoor market.



**Figure 16: Distributions channels in the German outdoor market<sup>216</sup>**

The sport retailer with the highest share in the German outdoor market are Intersport, Sport 2000 and Sport Scheck. In comparison, the major outdoor specialists include the outdoor-retailer Globetrotter,<sup>217</sup> but also the clothing manufacturers Jack Wolfskin, VAUDE and Schöffel.<sup>218</sup> The two major department

<sup>211</sup> VAUDE Sport GmbH & Co. KG (2016s)

<sup>212</sup> Polotzek, B. (2009), pp. 11–14

<sup>213</sup> Thieme, T. (2014b)

<sup>214</sup> Becher, M. (2015)

<sup>215</sup> Polotzek, B. (2009), pp. 8–9

<sup>216</sup> Own illustration based on Polotzek, B. (2009), pp. 8–9

<sup>217</sup> Loke, M. (2015)

<sup>218</sup> Hennersdorf, A. (2005)

stores that offer outdoor products in Germany are Karstadt and Kaufhof.<sup>219</sup> Additionally, consumer goods companies, such as Aldi and Tchibo offer outdoor apparel in their stores.<sup>220</sup> Additionally, mail order businesses, such as Amazon and Zalando constantly gain higher market shares and have to be observed carefully.<sup>221</sup> The outdoor market is highly competitive and numerous players enter the market with a similar brand positioning.<sup>222</sup> An overview of the most important outdoor brands in the German outdoor apparel industry can be found in appendix D.

### 6.3 Outdoor Apparel Brands with a Focus on Sustainability

An increasing number of outdoor providers have identified the trend towards environmental sustainability. While some of them are truly committed to the topic and place it in the centre of their brand strategy, others see it solely as a source of financial profit.<sup>223</sup> The sporting goods manufacturer Nike Inc. for example is using a blending strategy by adding small amounts of organic cotton in their cotton-products.<sup>224</sup> The French outdoor specialist Lafuma is producing 18 per cent of their products under their own eco-design standard, named ECOLIFE. The standard consists of the two criteria low-impact materials, such as recycled or organic and certified materials, such as BLUESIGN® and OEKO-TEX®.<sup>225</sup> However, it can be argued that there is a lack of transparency, as detailed information about the origin and composition of materials, production methods, working conditions et cetera are not transparent for consumers. As a matter of fact, several companies use one or two product lines to cover the demand for sustainable products.

In comparison, three companies that seem to be truly committed to sustainable outdoor products are VAUDE Sport GmbH & Co. KG, Patagonia Inc. and the Sportsman's Delight GmbH with the outdoor brand PYUA. Those companies are chosen based on the author's own perception of their particular sustainability strategies. In the following, these three companies are assessed in terms of their market power, strategy, products and the earlier mentioned C2C certification requirements (cf. figure 17). However, none of those companies have been certified by the *Cradle to Cradle Certified* Products Program yet.

The VAUDE Sport GmbH & Co. KG is founded in 1974<sup>226</sup> and 486 employees<sup>227</sup> are working in the headquarter in Obereisenbach in the South of Germany. Further 1,000 workers are employed in the company's own production site in Vietnam.<sup>228</sup> The company is family-owned and operated in the second generation by Antje von Dewitz. Under the brand VAUDE, products from all six outdoor

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<sup>219</sup> Statista GmbH (2014)

<sup>220</sup> Thieme, T. (2014a)

<sup>221</sup> SportCombi Verlag GmbH (2016)

<sup>222</sup> Herrmann, L. & BBE Handelsberatung (2012)

<sup>223</sup> Kim, H.-S. & Hall, M. L. (2015), pp. 31–32

<sup>224</sup> Gminder, C. U. (2006), pp. 130–133

<sup>225</sup> LAFUMA S.A. (2016)

<sup>226</sup> VAUDE Sport GmbH & Co. KG (2016h)

<sup>227</sup> VAUDE Sport GmbH & Co. KG (2016r)

<sup>228</sup> VAUDE Sport GmbH & Co. KG (2016a)

segments are offered. According to the company, the brand stands for mountain sports expertise, innovation as well as social and environmental responsibility.<sup>229</sup> Information about sales and market share of Vaude Sport GmbH & Co. KG are not made public by the company, however, it can be assumed that the company has a market share of five to 10 percent in the German outdoor product market.<sup>230</sup> The brand can be considered as one of the top five outdoor brands in terms of brand importance to the retailers of outdoor apparel in Germany.<sup>231</sup> The brand is clearly following a strategy of transparency and sustainability to gain the customers' trust.<sup>232</sup> As a result, the company's image seems to be positive, which might also be due to several awards won by the company, such as the German sustainability award, Axia-Award or the DAV Panorama award.<sup>233</sup>

The second company that is assessed closely in the following is Patagonia Inc. The Californian outdoor provider was founded in 1972 by Yvon Chouinard, an US-American climbing pioneer.<sup>234</sup> With 1,350 people employed and annual revenue of 540 Mio. USD,<sup>235</sup> in terms of figures Patagonia Inc. is the company with the highest market power from the three outdoor providers analysed in this chapter. However, when focusing on the German outdoor market the brand appears to be less powerful than VAUDE; however, sales figures for the German market are for none of them publicly available. The company's mission statement is to "Build the best product, cause no unnecessary harm, use business to inspire and implement solutions to the environmental crisis."<sup>236</sup> In fact, the brand demonstrates simplicity and utility and solely produces products for non-motorised outdoor sports, such as climbing, skiing and surfing.<sup>237</sup> The company's strategy is to design high-quality products that are long-lasting and to communicate to their customers to not buy their products if they do not really need them, to avoid unnecessary harm for the environment.<sup>238</sup>

In comparison to the other two outdoor companies, the Sportsman's Delight GmbH with its outdoor brand PYUA is relatively new in the market. The company was founded in 2008 and is based in Kiel in Germany.<sup>239</sup> With only 13 employees and sales of 2.86 Mio. Euro, the company only has a low market power.<sup>240</sup> As a result, their market share in the German outdoor market can be assumed to be around 0.1 to 0.2 per cent.<sup>241</sup> In contrast to the other two brands, so far PYUA solely covers outdoor apparel, therefore, no footwear or backpacks which most other outdoor brands do. However, PYUA is the first brand worldwide that offers

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<sup>229</sup> VAUDE Sport GmbH & Co. KG (2016h)

<sup>230</sup> Bürgel Wirtschaftsinformationen GmbH & Co. KG (2016) (Sales of VAUDE Sport GmbH & Co. KG: 71.25 Mio. Euro in 2012); Handelsblatt GmbH (2015) (Sales in the German outdoor market in 2014: 1,777 Mio. Euro); LexisNexis Corporate Affiliations (2016h) (Sales of VAUDE Sport GmbH & Co. KG: 250 – 300 Mio. USD); VAUDE Sport GmbH & Co. KG (2016q) (Sales in Germany: 73.26 %)

<sup>231</sup> Polotzek, B. (2009), p. 31

<sup>232</sup> VAUDE Sport GmbH & Co. KG (2016g)

<sup>233</sup> VAUDE Sport GmbH & Co. KG (2016p)

<sup>234</sup> Patagonia Inc. (2016i)

<sup>235</sup> Welch, L. (2013)

<sup>236</sup> Patagonia Inc. (2016c)

<sup>237</sup> Patagonia Inc. (2016c)

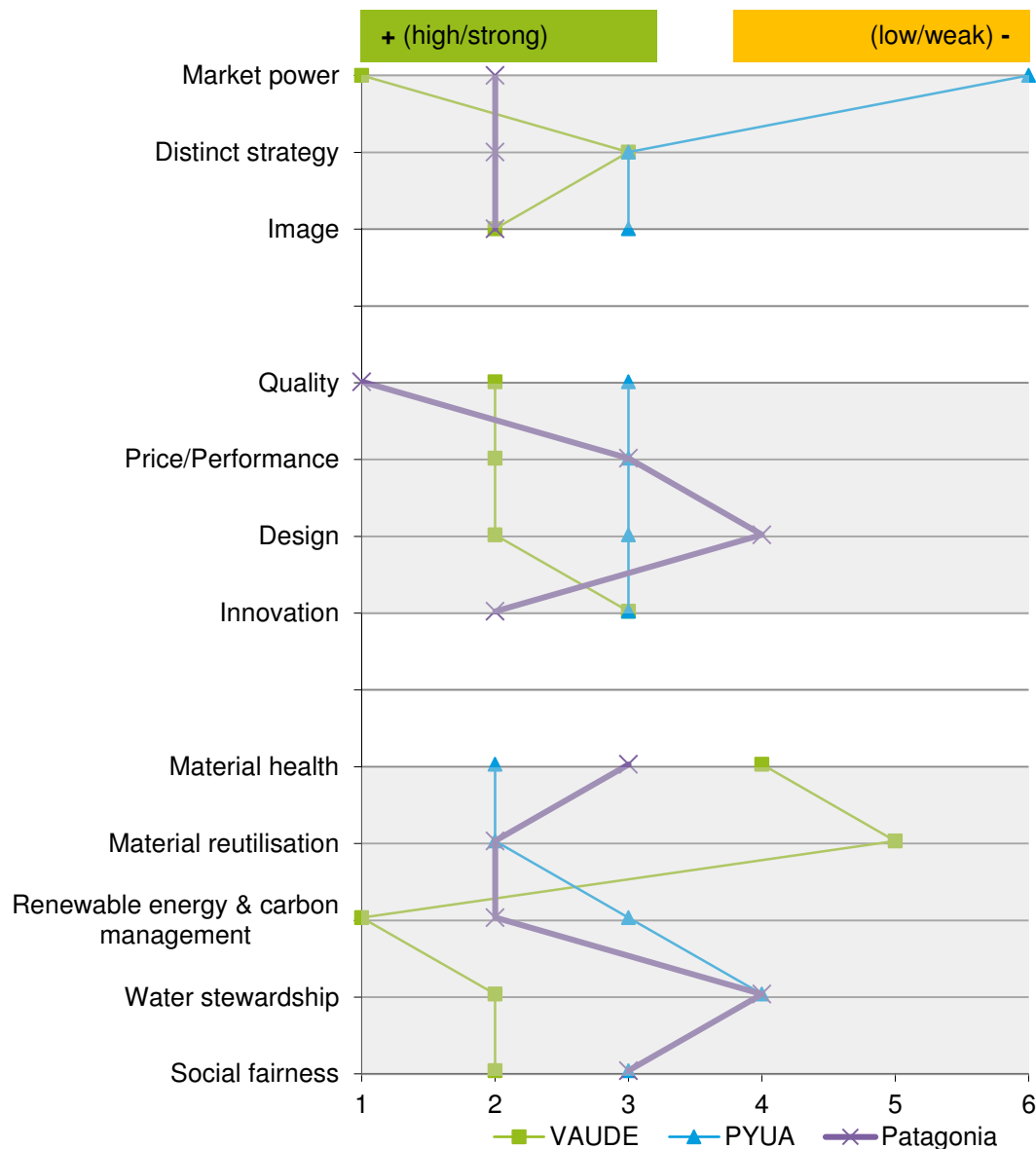
<sup>238</sup> Lowitt, E. (2011)

<sup>239</sup> Sportsman's Delight GmbH (2016a)

<sup>240</sup> Bisnode Deutschland GmbH (2016d) (figures from 2014)

<sup>241</sup> Handelsblatt GmbH (2015) (Sales in the German outdoor market: 1777 Mio. Euro in 2014)

high-quality outdoor apparel made of recycled or recyclable polyester fabrics combined with a special return-system.<sup>242</sup> In fact, most outdoor companies fail to implement such a closed loop recycling within its own value chain.<sup>243</sup> With PYUA's strategy of designing "ECORrect outerwear" to minimize their ecological footprint, the company won numerous awards, such as the Bundespreis Ecodesign or several ISPO Awards for their outstanding marketing and communication campaign and their ecological responsibility for example.<sup>244</sup>



**Figure 17: Competitive analysis of three selected outdoor brands<sup>245</sup>**

When comparing the products of all three brands, they are all high-quality and designed to offer the customer maximum functionality. However, while VAUDE and PYUA seem to place more emphasis on the product's design, Patagonia abides by their approach of simplicity and utility. When comparing the prices Patagonia also differs from the other two brands, as the products seem to be

<sup>242</sup> Sportsman's Delight GmbH (2016d)

<sup>243</sup> VAUDE Sport GmbH & Co. KG (2016k)

<sup>244</sup> Sportsman's Delight GmbH (2016a)

<sup>245</sup> Own illustration



more expensive.<sup>246</sup> Nevertheless, if the price is appropriate to the clothing's performance and whether the quality of the one brand is higher than the other, goes beyond the scope of this thesis. As a result, the assessment of quality, price/performance, design and innovation are based on the author's impression without carrying out an in-depth analysis.

More closely assessed in this paper are the products in terms of their compliance to the C2C design concept. To begin with the material health, meaning safe and healthy materials of which the products are made of, most outdoor providers use fluorocarbons (FCs) to make the clothing waterproof.<sup>247</sup> Nevertheless, these chemicals are suspected to be harmful for human health and the environment. The alternatives lack of performance, are rare and more expensive for the producers.<sup>248</sup> All of the three outdoor companies state on their website the problematic of toxic chemicals such as FC and their approach to replace it.<sup>249</sup> While Patagonia is not providing any information whether at least one of those chemicals is already eliminated from its entire production lines, VAUDE is transparent about the current state of use. In fact, 78 per cent of its clothing is free of FC.<sup>250</sup> PYUA has developed its own FC-free waterproof fabric named CLIMALOOP™, making it to a pioneer in the outdoor industry.<sup>251</sup> Furthermore, all three companies have adapted the bluesign®<sup>252</sup> standard, which is a worldwide accepted standard for environmental and consumer protection as well as resource efficiency. Around the half of Patagonia's products are bluesign® certified<sup>253</sup> and all products that are made of PYUA's CLIMALOOP™ fabric are also certified.<sup>254</sup> However, VAUDE for example is now replacing the standard with its own label named "Green Shape", due to the much stricter bluesign® regulations, applicable from the beginning of 2015.<sup>255</sup>

When assessing the material reutilisation, the three companies are examined regarding their concept to eliminate waste by either using the biological or the technical cycle. VAUDE products are mostly made of synthetic fabric,<sup>256</sup> obtained from crude oil and therefore not applicable for the biological cycle. Nevertheless, some products are made of organic cotton<sup>257</sup> and cellulose from eucalyptus- and beech wood.<sup>258</sup> Furthermore, three per cent of all products are manufactured from recycled materials, such as old fisher nets and PET-bottles.<sup>259</sup> As a result, most VAUDE products are part of the technical cycle, but the products are not designed to be part of a closed loop, respectively a closed loop system is not implemented

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<sup>246</sup> Patagonia Inc. (2016e); Sportsman's Delight GmbH (2016f); VAUDE Sport GmbH & Co. KG (2016z)

<sup>247</sup> WeltN24 GmbH (2016)

<sup>248</sup> Messe München GmbH (2015)

<sup>249</sup> VAUDE Sport GmbH & Co. KG (2016i)

<sup>250</sup> Patagonia Inc. (2013); Sportsman's Delight GmbH (2016b); VAUDE Sport GmbH & Co. KG (2016i)

<sup>251</sup> Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit & Bundesverband der Deutschen Industrie e.V. (2013), p. 26

<sup>252</sup> For more information: [www.bluesign.com](http://www.bluesign.com)

<sup>253</sup> Patagonia Inc. (2016g)

<sup>254</sup> Sportsman's Delight GmbH (2016a)

<sup>255</sup> VAUDE Sport GmbH & Co. KG (2016d)

<sup>256</sup> VAUDE Sport GmbH & Co. KG (2016f)

<sup>257</sup> VAUDE Sport GmbH & Co. KG (2016c)

<sup>258</sup> VAUDE Sport GmbH & Co. KG (2016l)

<sup>259</sup> VAUDE Sport GmbH & Co. KG (2016j)

(cf. figure 18). The 1994 by VAUDE developed Ecolog Recycling Network has been terminated, due to small quantities of returned used products.<sup>260</sup> Nowadays the company is cooperating with eBay Inc. and FairWertung to provide its customers a basis to exchange products.<sup>261</sup>



**Figure 18: VAUDE's open loop system – Green Shape<sup>262</sup>**

In comparison, Patagonia is strongly focusing on using environmentally preferred materials, such as hemp, lyocell fibre, organic cotton and guayule rubber for wetsuits. Furthermore, the company manufactures products from recycled materials, in other words, it offers fleece made from plastic soda bottles and manufactures recycled wool, cotton, nylon and polyester.<sup>263</sup> Nevertheless, the company is not transparent about the share of environmentally preferred materials in its production. Patagonia makes a plea for consuming less and repairing instead of replacing its products with new ones. By implementing the largest repair facility in North America and by providing its customers with repair guides,<sup>264</sup> Patagonia's intention seems to be sincere. Furthermore, they are also partnering with eBay Inc. and give its customers the possibility to resell used clothes on Patagonia's website.<sup>265</sup>

PYUA is the only one of the three analysed brands that has implemented a closed loop to recycle its products combined with a business model of offering a discount on the next product. The products mostly consist of recycled synthetic fibres; as a result, the closed loop is in accordance with a technical cycle of the C2C concept. The unique system is operated by special recycling partners, which collect the products from 16,000 used-clothes containers throughout Europe. By using the PYUA App, customers are able to locate the closest container. In the sorting process PYUA's partner manually allocate the clothes to PYUA. In fact, every garment contains a microchip that facilitates the sorting process. As a result, a used PYUA product is recycled to become again a PYUA product

<sup>260</sup> VAUDE Sport GmbH & Co. KG (2016k)

<sup>261</sup> VAUDE Sport GmbH & Co. KG (2016m)

<sup>262</sup> Own illustration based on VAUDE Sport GmbH & Co. KG (2016f)

<sup>263</sup> Patagonia Inc. (2016g)

<sup>264</sup> Patagonia Inc. (2016d)

<sup>265</sup> Lowitt, E. (2011)

(cf. figure 19).<sup>266</sup> However, the company does not provide any information on the percentage of recycled material that is gained from returned PYUA products.



**Figure 19: PYUA's closed loop recycling**<sup>267</sup>

Despite implementing a closed loop, when manufacturing and dispatching outdoor apparel, energy and water is used and CO<sub>2</sub> emissions cannot be avoided. The three companies have implemented different methods to minimise their environmental impact. VAUDE is producing parts of their collection in Germany<sup>268</sup> and all other products are shipped in container vessels and are afterwards transported by train, as far as it is possible.<sup>269</sup> Furthermore, the company has installed photovoltaic on the company site, which covers almost 100 per cent of the power consumption. Additional energy is supplied by the regional provider for renewable energy if more energy is needed than the company can generate on-site.<sup>270</sup> Moreover, VAUDE financially compensates non-avoidable emissions through climate protection projects. As a result, the company considers itself as climate-neutral.<sup>271</sup> VAUDE regularly publishes an environmental statement<sup>272</sup> and its climate footprint.<sup>273</sup> To minimise further emissions, the company has developed a special dyeing process, which additionally reduces the water consumption at 89 per cent.<sup>274</sup> Furthermore, rain water is collected and used for sanitary purposes.<sup>275</sup>

Patagonia is partly generating its own energy, but has installed a couple of measures to reduce its energy consumption, such as LED lightning and a new heating system. Furthermore, to reduce emissions caused by employee

<sup>266</sup> Sportsman's Delight GmbH (2016c)

<sup>267</sup> Sportsman's Delight GmbH (2016c)

<sup>268</sup> VAUDE Sport GmbH & Co. KG (2016i)

<sup>269</sup> VAUDE Sport GmbH & Co. KG (2016m)

<sup>270</sup> VAUDE Sport GmbH & Co. KG (2016t)

<sup>271</sup> VAUDE Sport GmbH & Co. KG (2016e)

<sup>272</sup> VAUDE Sport GmbH & Co. KG (2016o)

<sup>273</sup> VAUDE Sport GmbH & Co. KG (2016e)

<sup>274</sup> VAUDE Sport GmbH & Co. KG (2016n)

<sup>275</sup> VAUDE Sport GmbH & Co. KG (2016u)

transportation, the company has introduced its own Drive-Less program that provides monetary incentives for not driving alone to work by car. Additionally, Patagonia has installed electric vehicle chargers in its headquarter in Ventura, which can be used by employees as well as the public for little money.<sup>276</sup> By donating one per cent of sales to the preservation and restoration of the natural environment, Patagonia is monetarily compensating its negative impact on the planet.<sup>277</sup> Regarding Patagonia's water stewardship, some information about sanitary facilities and kitchen appliances are mentioned on the company's website;<sup>278</sup> however, these can only be considered as small steps to reduce the water consumption.

Last but not least, PYUA is not as much focusing on implementing measures on its own headquarter, which is understandable, as the environmental impact is quite small, due to the low number of employees. Instead, the company is following the strategy of producing in Europe. Therewith emissions are saved due to the shorter distance and train is mentioned as the preferable mean of transportation.<sup>279</sup> Furthermore, by focusing on already recycled and unmixed synthetics, energy and carbon emissions are reduced.<sup>280</sup> Nevertheless, PYUA is neither communicating its renewable energy and water policy nor an annual carbon footprint on its website.

Finally, the last C2C requirement is analysed, named social fairness. VAUDE and PYUA are both members of the Fair Wear Foundation (FWF).<sup>281</sup> As a result, both companies are required to comply with worldwide applicable minimum standards based on the International Labour Organization. Those include forced or child labour, discrimination, fair wages, health and safety et cetera.<sup>282</sup> In comparison, Patagonia collaborates with several initiatives to enhance labour practices, such as Fair Trade USA and the Fair Labour Association.<sup>283</sup> Furthermore, the company publishes an own Supplier Workplace Code of Conduct<sup>284</sup> and a complete factory list on their website.<sup>285</sup> VAUDE is communicating its focus on long-lasting relationships with its suppliers. In fact, half of the suppliers is working for VAUDE for more than five years.<sup>286</sup> Furthermore, the production site in Germany is mentioned as an example for fair working conditions and job security.<sup>287</sup> PYUA on the other hand, is not only producing parts of its collection in low risk countries, instead the entire product lines are manufactured in Europe, mainly in Portugal, Estonia and Sweden. Therewith, social standards are already embedded in the countries' law, making it less risky to produce in those countries.<sup>288</sup>

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<sup>276</sup> Patagonia Inc. (2016b)

<sup>277</sup> Patagonia Inc. (2016a)

<sup>278</sup> Patagonia Inc. (2016b)

<sup>279</sup> Sportsman's Delight GmbH (2016e)

<sup>280</sup> Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit & Bundesverband der Deutschen Industrie e.V. (2013), p. 26

<sup>281</sup> Fair Wear Foundation (2010); Fair Wear Foundation (2014)

<sup>282</sup> VAUDE Sport GmbH & Co. KG (2016b)

<sup>283</sup> Patagonia Inc. (2016f)

<sup>284</sup> Patagonia Inc. (2016j)

<sup>285</sup> Patagonia Inc. (2016h)

<sup>286</sup> VAUDE Sport GmbH & Co. KG (2016b)

<sup>287</sup> VAUDE Sport GmbH & Co. KG (2016i)

<sup>288</sup> Rank a Brand e.V. (2014)

## 6.4 Positioning Strategy for Cradle to Cradle Outdoor Apparel

The strategy of PYUA to produce all products in Europe has several advantages. The environmental impact of the transportation of goods around the world is easy to identify for consumers.<sup>289</sup> Additionally, most consumers are informed about unfair working conditions in most low-wage countries.<sup>290</sup> Even if many customers do not question the product's origin, the sales clerk can use it as an argument for buying the product. In fact, many customers associate higher quality with products manufactured in Europe and especially products "made in Germany".<sup>291</sup> For an outdoor manufacturer based in Germany it can be assumed that the production in Europe has the advantage of a better control over the manufacturing process and a faster reaction when production faults occur, due to the shorter distance. Furthermore, the currency risks can be avoided in most European countries, so that there is no need to increase prices in times of a weak Euro.<sup>292</sup> As a result, for a C2C outdoor apparel provider to produce nearby might be the most appropriate choice. The result would be a competitive advantage, as there does not seem to be an outdoor provider yet that is exclusively producing in Germany. Additionally, the created jobs increase wealth in the region and thus enhance the buying power. Furthermore, employees might become customers and increase the brand recognition by word-of-mouth advertising.

In terms of customer segmentation, the demographic change should be considered. As stated by Pompe (2011), in around 20 years Germany will have the oldest population worldwide. The generation 50plus is growing and is becoming the most important customer segment. Their buying power of yearly over 720 billion Euro has long been underestimated. They become healthier, are more active and gain wealth.<sup>293</sup> Outdoor sports, such as Nordic Walking and hiking are very popular in this generation.<sup>294</sup> However, in order to benefit from this market, their needs and interests have to be identified, as they differ from the younger generations.<sup>295</sup> The generation has a high net income and is not very price sensitive in case of excellent service and quality.<sup>296</sup> As a result, they prefer to buy in high-class specialist shops in search of valuable goods.<sup>297</sup> Healthy materials combined with "made in Germany" might be what the generation 50plus is looking for.

On the other hand, the young generations are more conscious about social and environmental issues. Furthermore, they are more open towards innovative ideas while being more sceptical than previous generations, as they often demand rationale. Before purchasing goods, they search for more information and they pay attention to material consumption. Additionally, the young generation does not only consider the present, they care about the future consequences of their current actions.<sup>298</sup> As a result of higher education and access to borderless

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<sup>289</sup> The Institute of Science in Society (2016)

<sup>290</sup> Hartman, L. & Arnold, D. (2006), p. 677

<sup>291</sup> Kalicharan, H. D. (2014), p. 899

<sup>292</sup> Bundesverband der Deutschen Sportartikel-Industrie e.V. (2016), pp. 2–3

<sup>293</sup> Pompe, H.-G. (2011), p. 7

<sup>294</sup> Polotzek, B. (2009), p. 84

<sup>295</sup> Pompe, H.-G. (2011), p. 7

<sup>296</sup> Pompe, H.-G. (2011), p. 72

<sup>297</sup> Pompe, H.-G. (2011), p. 43

<sup>298</sup> Kanchanapibul, M., Lacka, E., Wang, X., & Chan, H. K. (2014), pp. 529–530

communication technology, people have developed more awareness.<sup>299</sup> Combined with their knowledge about environmental issues, they are more supportive of green intentions, such as purchasing environmentally preferable products.<sup>300</sup> The market for these products is no longer in a niche, it has become a mainstream market. The young generation represents the customers, workers and innovators of the future. They have more disposable income than any previous generation had, making them to a powerful target audience.<sup>301</sup>

As most companies link sustainability with an improved brand image, with actions undertaken that are often limited to regulatory requirements, many products are communicated as “green” while in reality not being good for the environment.<sup>302</sup> In contrast, an organisation that is truly sustainable is one that aims “to solve the sustainability challenges we are collectively facing and thus to create value for the common good”, as defined by Dyllick and Muff (2016, p. 169). The latter can be achieved by companies that are producing products according to the C2C design concept. As companies with such a “true sustainability strategy” differ considerably from most other companies, they have a competitive advantage.<sup>303</sup> Especially due to the fact, that the outdoor market is highly competitive combined with stagnant growth rates, a company is only able to gain market shares by taking over the ones of its competitors.<sup>304</sup>

For the practical implementation of a “true sustainability strategy” in the German outdoor apparel market, a company can either choose between the technical or the biological cycle for the product. As mentioned earlier, PYUA is producing according to the technical cycle. However, the success of the return and recycling procedure as a replacement of new materials has probably not yet been proven to be true, as the company is not operating for a very long time yet. Especially due to the fact that synthetic materials are non-renewable as well as difficult to collect and recycle, it might be recommendable to implement the biological cycle combined with a cascade utilisation. Thereby it is important to be strict and careful when choosing the right materials to differentiate from the companies that only partly try to follow this path. It might be helpful to choose certified fabrics to ensure the functioning of the closed loop and to profit from the existing certification of the supplier. A fabric and yarn manufacturer that offers products which are C2C certified, is named Lauffenmühle GmbH & Co. KG. Due to his innovative closed loop system, the German manufacturer won the ITMA Future Material Award 2014.<sup>305</sup> So far the company is C2C certified for its compostable work wear and might be a potential partner for the development of innovations in the field of functional wear.<sup>306</sup>

The goal of the communication policy of a C2C outdoor apparel manufacturer should be aligned to the target group and the distribution channel. As mentioned in the previous chapter, sport retailers account for the largest share of sales in

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<sup>299</sup> Kanchanapibul, M. et al. (2014), p. 534

<sup>300</sup> Kanchanapibul, M. et al. (2014), p. 533

<sup>301</sup> Kanchanapibul, M. et al. (2014), pp. 529–530

<sup>302</sup> Nail, J. (2010), p. 26

<sup>303</sup> Dyllick, T. & Muff, K. (2016), p. 157

<sup>304</sup> Simon, P. (2012), p. 134

<sup>305</sup> Lauffenmühle GmbH & Co. KG (2016)

<sup>306</sup> Verlagshaus Gruber GmbH (2014), p. 26

the German outdoor market.<sup>307</sup> They have different preferences for the choice of outdoor brands they are going to offer in their shops than outdoor specialists have. While sport retailers value a good price/performance ratio as well as functionality and quality of the products, outdoor specialists focus on innovation, functionality and a high-quality brand image.<sup>308</sup> As the potential target group 50plus appreciates excellent quality and service, the outdoor specialist might be a more suitable distribution partner. However, if it is desired to cover a wider range of customers, both distribution channels should be utilised. In that case it is important to offer a high-quality product, which is affordable at the same time.<sup>309</sup> Nevertheless, this strategy might harm the exclusivity of the brand. Furthermore, to differentiate from brands like VAUDE, which offers a broad assortment and a balanced pricing structure,<sup>310</sup> the C2C outdoor apparel brand might be more successful by focusing on outdoor specialists that are able to communicate the added value of non-polluting and healthy products.

Despite the fact that functional wear is very complex and requires intensive advice, many outdoor manufacturers offer their products additionally in the internet.<sup>311</sup> By following such a multichannel-strategy, a C2C outdoor apparel manufacturer can provide a Europe-wide distribution, leading to a higher margin, and attract the customers that specifically look for sustainable apparel brands. In fact, internet market places such as Avocado Store offer a platform to sell sustainable products.<sup>312</sup> With transparency and detailed information about origin and treatment of materials as well as the company's actions to be "truly sustainable", the company can draw the potential customer's attention to its added value and might attract journalists and bloggers that help building up a positive image. Thereby innovations and a distinct strategy boost the publicity and open doors to awards that are further pushing the image. The success can be seen by PYUA that has won several awards for its innovative technical cycle<sup>313</sup> or Patagonia with the first neoprene-free wetsuit for example.<sup>314</sup>

In summary, as many outdoor apparel manufacturers already offer environmentally preferable materials combined with high-quality and functionality, the only way for a C2C outdoor apparel manufacturer to differentiate from its competitors seems to be by positioning its brand as "truly sustainable" without any exceptions and in best case leaving a positive footprint behind. It starts by local production over generating renewable energy for the business and ends by the sole use of compostable fabrics without any questionable chemicals. This might today only be interesting for a few people, but it will probably change in the future, when non-renewable resources become rare and expensive, and when businesses are made responsible for the disposal of their products at the end of the use period. In that case, it is no longer an added value to produce eco-friendly products, it might be the only way to secure the basis of human life.

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<sup>307</sup> Polotzek, B. (2009), pp. 8–9

<sup>308</sup> Polotzek, B. (2009), p. 84

<sup>309</sup> Polotzek, B. (2009), p. 84

<sup>310</sup> Polotzek, B. (2009), p. 83

<sup>311</sup> Jahr Top Special Verlag GmbH & Co. KG (2016a)

<sup>312</sup> Avocado Store GmbH (2016)

<sup>313</sup> Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit & Bundesverband der Deutschen Industrie e.V. (2013), p. 26

<sup>314</sup> Messe München GmbH (2016)

## 7 Conclusion

The objective of this thesis was to apply the C2C design concept to the outdoor apparel industry, as the concept aims for a sustainable world by designing products that are beneficial in health, environmental and economic terms.<sup>315</sup> In the literature research criteria for designing products according to the C2C concept were encountered and turned out to be practically applicable to outdoor apparel. The technical as well as the biological cycle are both already at least partly implemented by a few outdoor providers.

Additionally, the demand for environmentally friendly products is growing, as consumers are more aware of the issues that arise from the current state of production and consumption of products.<sup>316</sup> In fact, the so-called cradle to grave model results in pollution, waste and ecological destruction. Particularly consumers of outdoor products are more likely to choose the desired product based on their perception of the company's environmental and social responsibility practices.<sup>317</sup>

Many outdoor manufacturers have identified the demand for sustainable clothing and produce at least one product line with environmentally preferable materials.<sup>318</sup> However, only a few companies follow such a positioning strategy for their whole product range. In fact, the three outdoor manufacturers VAUDE Sport GmbH & Co. KG, Patagonia Inc. and the Sportsman's Delight GmbH with the outdoor brand PYUA seem to be very committed to the topic and have been examined more closely in this paper. With regards to the outcome, none of the companies are actually beneficial for the environment yet. They are much less harmful than most other companies, but in the implementation of all C2C principles they still seem to have difficulties or different objectives. Nevertheless, all of them are pioneers in terms of environmental and social responsibility in comparison to many other companies of different industries.

In conclusion, after years of strong growth rates in the outdoor market, stagnant turnover figures were identified for the last years. Furthermore, the projections indicate slow growth rates until 2020. However, favourable trends for outdoor providers were recognised, such as the use of outdoor clothing as everyday wear. Additionally, according to the calculations a significant market potential is apparent in the outdoor industry.

Nevertheless, the competitive analysis clearly demonstrated the high rivalry among the players in the outdoor market. Additionally, a lack of differentiation was identified in the industry, as many outdoor providers offer similar high-quality and functional apparel.<sup>319</sup> The outdoor providers are only able to gain market shares by taking over the shares of their competitors.<sup>320</sup> As a result, a competitive advantage and an exceptional position strategy are needed to be successful within the outdoor industry.

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<sup>315</sup> Toxopeus, M. E. et al. (2015), p. 385

<sup>316</sup> Llorach-Massana, P. et al. (2015), p. 243

<sup>317</sup> Butow, J. (2014), p. 14

<sup>318</sup> Kim, H.-S. & Hall, M. L. (2015), pp. 31–32

<sup>319</sup> Hofer, J. (2016)

<sup>320</sup> Simon, P. (2012), p. 134



Thereby, the production of outdoor apparel in accordance with the C2C concept might be a strategy of demonstrating transparency and full commitment to environmental and social responsibility. The economic benefits of healthy and environmentally friendly materials have been carried out in this thesis. The attraction of a producer of C2C outdoor apparel is likely to increase for customers which desire sustainable products, but also for talented employees, which appreciate such a company's vision and working conditions.<sup>321</sup> Further benefits might derive from future developments, such as resource scarcity and extended producer responsibility for pollution and emission.

The key findings of this thesis do not only address the outdoor industry; instead, they are of great importance for the whole fashion industry. The implementation of closed cycles is technically more challenging for functional clothing than for fashion. As a result, the production of fashion according to the C2C design concept is feasible even without extensive research beforehand. Furthermore, the relevance of a change in the current industrial design of fashion, which leads to short life-cycles, is much greater than for outdoor apparel. The latter is usually less fashionable and the robust design results in much longer wearing times. However, further research is required to assess the relevance and the demand of environmentally friendly apparel in the fashion industry.

The scenario of a worldwide application of the C2C design concept in various industries would require additional research and major changes in culture and infrastructure.<sup>322</sup> In fact, the main challenges are probably the sole use of renewable energy, a hundred per cent recovery of products from the technical cycle and the biological capacity of the planet for the cultivation of biological raw materials. However, by looking back in history, humankind has managed to overcome challenges that seemed to be impossible at that time. Why give up on the challenge of preserving the natural heritage, which is the existential basis for human life?

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<sup>321</sup> Dyllick, T. & Muff, K. (2016), p. 157

<sup>322</sup> Llorach-Massana, P. et al. (2015), p. 245

## **Appendix**

### **Appendix A – Certification Requirements**

Figure 20: Material health requirements.....	46
Figure 21: Material reutilisation requirements.....	46
Figure 22: Renewable energy and carbon management requirements.....	47
Figure 23: Water stewardship requirements.....	47
Figure 24: Social fairness requirements .....	48

### **Appendix B – Market Analysis**

Figure 25: Sales distribution of the German sporting goods market in 2012 ....	49
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### **Appendix C – Market Potential Analysis**

Table 4: Maximum number of potential customers.....	50
Table 5: Yearly purchase frequency of outdoor apparel .....	51
Table 6: Average price per unit of outdoor apparel .....	52

### **Appendix D – Competitive Analysis**

Table 7: Most important brands in the outdoor apparel industry.....	53
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## Appendix A – Certification Requirements

LEVEL	ACHIEVEMENT
BASIC	<ul style="list-style-type: none"> <li>The product is 100% characterized by its generic materials (e.g., aluminum, polyethylene, steel, etc.) and/or product categories and names (e.g., coatings).</li> <li>The appropriate metabolism (i.e., technical nutrient (TN) or biological nutrient (BN) is identified for the product and its materials and/or chemicals.</li> <li>The product does not contain any Banned List chemicals based on supplier declarations.</li> </ul>
BRONZE	<ul style="list-style-type: none"> <li>The product is at least 75% assessed (by weight) using ABC-X ratings. Externally Managed Components (EMCs) are considered assessed and contribute to the overall percentage of the product that has been assessed. Products that are entirely BN in nature (e.g., cosmetics, personal care, soaps, detergents, etc.) are 100% assessed.</li> <li>A phase-out or optimization strategy has been developed for those materials with an X rating.</li> </ul>
SILVER	<ul style="list-style-type: none"> <li>The product has been at least 95% assessed (by weight) using ABC-X ratings. Externally Managed Components (EMCs) are considered assessed and contribute to the overall percentage of the product that has been assessed. Products that are entirely BN in nature (e.g., cosmetics, personal care, soaps, detergents, etc.) are 100% assessed.</li> <li>The product contains no substances known or suspected to cause cancer, birth defects, genetic damage, or reproductive harm (CMRs) after the A, B, C, X assessment has been carried out.</li> </ul>
GOLD	<ul style="list-style-type: none"> <li>The product has been 100% assessed (by weight) using ABC ratings. All EMCs are considered assessed as non-X.</li> <li>The product contains no X assessed materials (optimization strategy is not required).</li> <li>Product meets Cradle to Cradle emissions standards.</li> </ul>
PLATINUM	<ul style="list-style-type: none"> <li>All process chemicals have been assessed and none have been assessed as X.</li> </ul>

Figure 20: Material health requirements<sup>323</sup>

LEVEL	ACHIEVEMENT
BASIC	<ul style="list-style-type: none"> <li>Each generic material in the product is clearly defined as an intended part of a biological or technical cycle (this is covered by the Material Health requirement at Basic level; see Material Health guidance in Section 3.2).</li> </ul>
BRONZE	<ul style="list-style-type: none"> <li>The product has a Material Reutilization Score that is <math>\geq 35</math>.</li> </ul>
SILVER	<ul style="list-style-type: none"> <li>The product has a Material Reutilization Score that is <math>\geq 50</math>.</li> </ul>
GOLD	<ul style="list-style-type: none"> <li>The product has a Material Reutilization Score that is <math>\geq 65</math>.</li> <li>The manufacturer has completed a "nutrient management" strategy for the product including scope, timeline, and budget.</li> </ul>
PLATINUM	<ul style="list-style-type: none"> <li>The product has a Material Reutilization Score of 100.</li> <li>The product is actively being recovered and cycled in a technical or biological metabolism.</li> </ul>

Figure 21: Material reutilisation requirements<sup>324</sup>

<sup>323</sup> McDonough Braungart Design Chemistry, LLC (2012), p. 11

<sup>324</sup> McDonough Braungart Design Chemistry, LLC (2012), p. 20

LEVEL	ACHIEVEMENT
BASIC	<ul style="list-style-type: none"> <li>Annual purchased electricity and direct on-site emissions associated with the final manufacturing stage of the product are quantified.</li> </ul>
BRONZE	<ul style="list-style-type: none"> <li>A renewable energy use and carbon management strategy is developed.</li> </ul>
SILVER	<ul style="list-style-type: none"> <li>For the final manufacturing stage of the product, 5% of purchased electricity is renewably sourced or offset with renewable energy projects, and 5% of direct on-site emissions are offset.</li> </ul>
GOLD	<ul style="list-style-type: none"> <li>For the final manufacturing stage of the product, 50% of purchased electricity is renewably sourced or offset with renewable energy projects, and 50% of direct on-site emissions are offset.</li> </ul>
PLATINUM	<ul style="list-style-type: none"> <li>For the final manufacturing stage of the product, &gt;100% of purchased electricity is renewably sourced or offset with renewable energy projects, and &gt;100% of direct on-site emissions are offset.</li> <li>The embodied energy associated with the product from Cradle to Gate is characterized and quantified, and a strategy to optimize is developed. At re-application, progress on the optimization plan is demonstrated.</li> <li>≥ 5% of the embodied energy associated with the product from Cradle to Gate is covered by offsets or otherwise addressed (e.g., through projects with suppliers, product re-design, savings during the use phase, etc.).</li> </ul>

**Figure 22: Renewable energy and carbon management requirements<sup>325</sup>**

LEVEL	ACHIEVEMENT
BASIC	<ul style="list-style-type: none"> <li>The manufacturer has not received a significant violation of their discharge permit within the last two years.</li> <li>Local- and business-specific water-related issues are characterized (e.g., the manufacturer will determine if water scarcity is an issue and/or if sensitive ecosystems are at risk due to direct operations).</li> <li>A statement of water stewardship intentions describing what action is being taken for mitigating the identified problems and concerns is provided. At re-application, progress on action plans is demonstrated.</li> </ul>
BRONZE	<ul style="list-style-type: none"> <li>A facility-wide water audit is completed.</li> </ul>
SILVER	<ul style="list-style-type: none"> <li>Product-related process chemicals in effluent are characterized and assessed.</li> </ul> OR <ul style="list-style-type: none"> <li>Supply chain-relevant water issues for at least 20% of Tier 1 suppliers are characterized and a positive impact strategy is developed (required for facilities with no product-relevant effluent).</li> </ul>
GOLD	<ul style="list-style-type: none"> <li>Product-related process chemicals in effluent are optimized (chemicals identified as problematic are kept flowing in systems of nutrient recovery; effluents leaving facility do not contain chemicals assessed as problematic).</li> </ul> OR <ul style="list-style-type: none"> <li>Demonstrated progress on the strategy developed for the Silver level requirements (required for facilities with no product relevant effluent).</li> </ul>
PLATINUM	<ul style="list-style-type: none"> <li>All water leaving the manufacturing facility meets drinking water quality standards.</li> </ul>

**Figure 23: Water stewardship requirements<sup>326</sup>**

<sup>325</sup> McDonough Braungart Design Chemistry, LLC (2012), p. 21

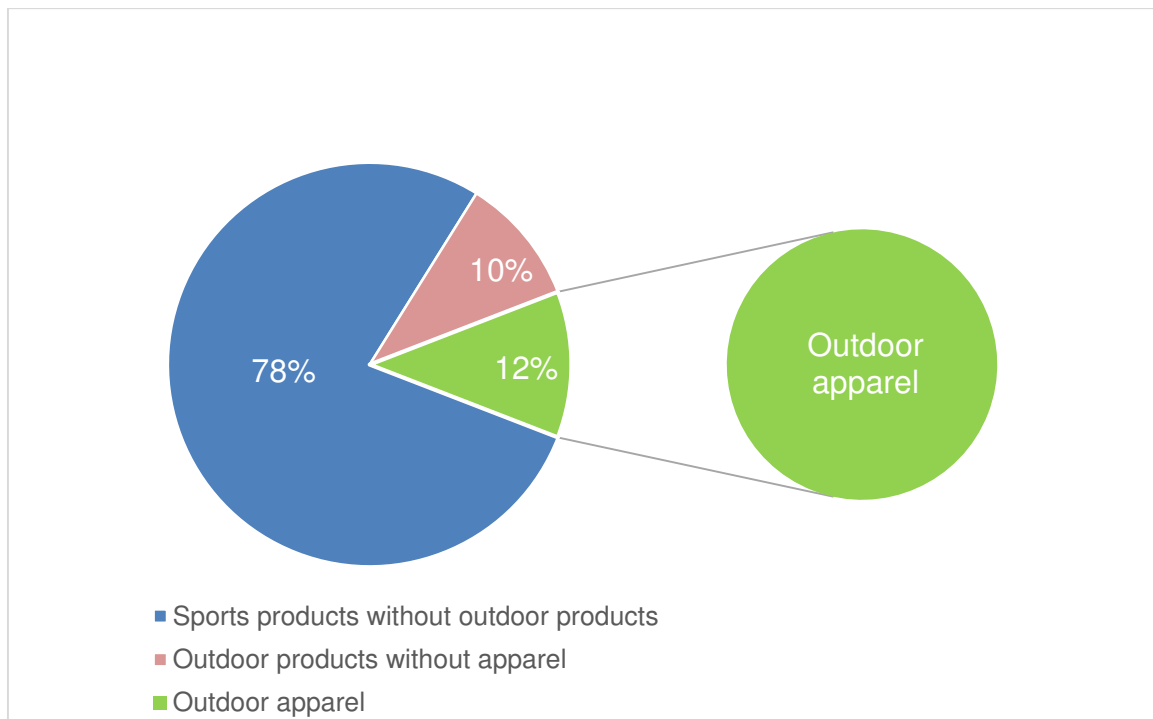
<sup>326</sup> McDonough Braungart Design Chemistry, LLC (2012), p. 22

LEVEL	ACHIEVEMENT
<b>BASIC</b>	<ul style="list-style-type: none"> <li>• A streamlined self-audit is conducted to assess protection of fundamental human rights.</li> <li>• Management procedures aiming to address any identified issues are provided. Demonstration of progress on the management plan is required for re-application.</li> </ul>
<b>BRONZE</b>	<ul style="list-style-type: none"> <li>• A full social responsibility self-audit is complete and a positive impact strategy is developed (based on UN Global Compact Tool or B-Corp).</li> </ul>
<b>SILVER</b>	<p>COMPLETE ONE OF THE FOLLOWING:</p> <ul style="list-style-type: none"> <li>• Material specific and/or issue-related audit or certification relevant to a minimum of 25% of the product material by weight is complete (FSC Certified, Fair Trade, etc.).</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Supply chain-relevant social issues are fully investigated and a positive impact strategy is developed.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• The company is actively conducting an innovative social project that positively impacts employee's lives, the local community, global community, social aspects of the product's supply chain, or recycling/reuse.</li> </ul>
<b>GOLD</b>	<ul style="list-style-type: none"> <li>• Two of the Silver-Level requirements are complete.</li> </ul>
<b>PLATINUM</b>	<ul style="list-style-type: none"> <li>• A facility-level audit is completed by a third party against an internationally recognized social responsibility program (e.g., SA8000 standard or B-Corp).</li> <li>• All Silver-Level requirements are complete.</li> </ul>

**Figure 24: Social fairness requirements<sup>327</sup>**

<sup>327</sup> McDonough Braungart Design Chemistry, LLC (2012), p. 23

## Appendix B – Market Analysis



**Figure 25: Sales distribution of the German sporting goods market in 2012<sup>328</sup>**

<sup>328</sup> Own illustration based on Gesellschaft für Konsumforschung (2014), p. 9 (German outdoor market = 22% of total sales in the German sporting goods market); Marketmedia24 (2013) (Apparel = 53.4% of total sales in the German outdoor market); Verband Deutscher Sportfachhandel (2016) (German sporting goods market = sales of 7340 mil. €)

## Appendix C – Market Potential Analysis

Population in Germany		Potential Customers		Potential Customers (gender distribution)	
All ages (data from 2014)		Population in Germany age range: 14-69 (data from 2014)		Assumption: gender distribution in the selected age range is similar to all ages	
Total	81,198,000	Total	58,270,498		
Women	Men			Women	Men
		Age 14-25	10,461,986		
41,362,000	39,836,000	Age 26-50	27,381,278	29,682,804	28,587,694
0	0	Age 51-69	20,427,234		
50.94%	49.06%				

**Table 4: Maximum number of potential customers<sup>329</sup>**

<sup>329</sup> Own illustration based on Statista GmbH (2015); Statistisches Bundesamt (2015)



Purchase frequency of outdoor apparel	Equally to x times per year	% of respondents	
		Women	Men
Never, almost never	0	14.1	11.1
Every two years or less	0.5	30.7	30.8
Once a year	1	30.2	32.8
Two to three times per year	2.5	18.3	20.1
At least 4 times per year	4	6.7	5.1
Total		100	99.9
<i>I usually buy more than one piece per purchase</i>	3	4.3	4.7

	Calculation (women)	Women	Men
Never, almost never	0 x 14.1	0	0
Every two years or less	0.5 x 30.7	15.35	15.4
Once a year	1 x 30.2	30.2	32.8
Two to three times per year	2.5 x 18.3	45.75	50.25
At least 4 times per year	4 x 6.7	26.8	20.4
Total		118.1	118.85
% of respondent that purchased more than one piece per purchase (assumption: 3 pieces)		4.3	4.7
% of respondent that purchased one piece per purchase	100 - 4.3	95.7	95.3
Yearly purchase frequency of respondents that purchase <b>three pieces</b> per purchase	$((118.1 / 100) \times 4.3 \%) \times 3$	0.15	0.17
Yearly purchase frequency of respondents that purchase <b>one piece</b> per purchase	$(118.1 \times 100) / 95.7 \%$	1.13	1.13
<b>Yearly purchase frequency of all respondents</b>		<b>1.28</b>	<b>1.30</b>

**Table 5: Yearly purchase frequency of outdoor apparel<sup>330</sup>**

<sup>330</sup> Own illustration based on Spiegel-Verlag Rudolf Augstein GmbH & Co. KG (2011a); Spiegel-Verlag Rudolf Augstein GmbH & Co. KG (2011b)



	Jack Wolfskin	Schöffel	McKinley	The North Face	VAUDE	Total
<b>Rain jacket female</b>	<b>215</b>	<b>235</b>	<b>65</b>	<b>175</b>	<b>230</b>	<b>184</b>
Cheapest	80	120	50	100	90	
Most expensive	350	350	80	250	370	
<b>Hiking pants male</b>	<b>95</b>	<b>110</b>	<b>55</b>	<b>85</b>	<b>110</b>	<b>91</b>
Cheapest	60	70	30	70	80	
Most expensive	130	150	80	100	140	
<b>Midlayer - Fleece female</b>	<b>75</b>	<b>95</b>	<b>55</b>	<b>80</b>	<b>112.5</b>	<b>83.5</b>
Cheapest	30	120	30	50	65	
Most expensive	120	70	80	110	160	
<b>Total</b>						<b>119.5</b>

**Table 6: Average price per unit of outdoor apparel<sup>331</sup>**

<sup>331</sup> Own illustration based on INTERSPORT Deutschland eG (2016b); INTERSPORT Deutschland eG (2016a); INTERSPORT Deutschland eG (2016c); INTERSPORT Deutschland eG (2016d); INTERSPORT Deutschland eG (2016e); JACK WOLFSKIN Retail GmbH (2016a); JACK WOLFSKIN Retail GmbH (2016b); JACK WOLFSKIN Retail GmbH (2016c); JACK WOLFSKIN Retail GmbH (2016d); Schöffel Sportbekleidung GmbH (2016a); Schöffel Sportbekleidung GmbH (2016b); Schöffel Sportbekleidung GmbH (2016c); Schöffel Sportbekleidung GmbH (2016d); The North Face Apparel Corp. (2016a); The North Face Apparel Corp. (2016b); The North Face Apparel Corp. (2016c); VAUDE Sport GmbH & Co. KG (2016w); VAUDE Sport GmbH & Co. KG (2016v); VAUDE Sport GmbH & Co. KG (2016y); VAUDE Sport GmbH & Co. KG (2016x); VAUDE Sport GmbH & Co. KG (2016aa)

## Appendix D – Competitive Analysis

Brand	Company	Sales	Employees	Head quarter
Jack Wolfskin	Jack Wolfskin GmbH & Co. KGaA	450 – 500 Mio. USD	n.a.	Germany
Schöffel	Schöffel Sportbekleidung GmbH	100 – 125 Mio. USD	150	Germany
McKinley	IIC-Intersport International Corporation GmbH	n.a.	n.a.	Switzerland
The North Face	The North Face, Inc.	n.a.	859	USA
VAUDE	VAUDE Sport GmbH & Co. KG	250 – 300 Mio. USD	1,300	Germany
Salewa	Oberalp S.p.A.	150 Mio. USD	750	Italy
High Colorado	Sport 2000 Deutschland GmbH	n.a.	70	Germany
Mammut	Mammut Sports Group AG	50 – 75 Mio. USD	200	Switzerland
Odlo	Odlo Sports Group AG	n.a.	n.a.	Switzerland
Fjällräven	Fjällräven AB	n.a.	n.a.	Sweden
Adidas	Adidas AG	300 Mio. Euro <sup>332</sup>	5,775	Germany
Columbia	Columbia Sportswear	n.a.	5,978	USA
Maier	Maier Sports GmbH & Co. KG	25 – 50 Mio. USD	n.a.	Germany
Regatta	Regatta Ltd.	150 – 200 Mio. USD	534	UK
Ice Peak	Luhta Sportswear Company	2.4 Mio. USD	12	Canada
Killtec	killtec Sport- und Freizeit GmbH	45 Mio. Euro	130	Germany
Haglöfs	Haglöfs AB	n.a.	n.a.	Sweden
Lafuma	Lafuma SA	300 – 350 Mio. USD	1,559	France
Marmot	Marmot Mountain, LLC.	n.a.	n.a.	USA
Decathlon	Decathlon SA	n.a.	n.a.	France
Patagonia	Patagonia Inc.	540 Mio. USD <sup>333</sup>	1,350 <sup>334</sup>	USA

**Table 7: Most important brands in the outdoor apparel industry<sup>334</sup>**

<sup>332</sup> Handelsblatt GmbH (2012) (Sales of outdoor products in 2011)

<sup>333</sup> Welch, L. (2013) (sales and number of employees in 2013)

<sup>334</sup> Bisnode Deutschland GmbH (2016a); Bisnode Deutschland GmbH (2016b); Bisnode Deutschland GmbH (2016c); Bisnode Deutschland GmbH (2016e); LexisNexis Corporate Affiliations (2016e); LexisNexis Corporate Affiliations (2016a); LexisNexis Corporate Affiliations (2016b); LexisNexis Corporate Affiliations (2016c); LexisNexis Corporate Affiliations (2016d);

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## **Statutory Declaration**

I declare that I have developed and written the enclosed thesis entitled:

“Cradle to Cradle – An analysis of the market potential in the German outdoor apparel industry”

Entirely by myself and have not used sources or means without declaration in the text. Any thoughts or quotations which were inferred from these sources are clearly marked as such. This thesis was not submitted in the same or in a substantially similar version, not even partially, to any other authority to achieve an academic grading and was not published elsewhere.

Hannover, 09.08.2016

A handwritten signature in black ink, appearing to read 'Weiner', written in a cursive style.

Mareike Weiner

