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Managing eco-efficiency in tourism businesses



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Authorship statement

I hereby declare that this thesis is wholly the work of **Shalini Autar**. Any other contributors have either been referenced in the prescribed manner or are listed in the acknowledgements together with the nature and the scope of their contribution.

Where I have consulted the published work of others this is always clearly attributed. Where I have quoted from the work of others the source is always given. A list of the references used, is included. An appropriate referencing style is used throughout. With the exception of such quotations this thesis is entirely my own work. I have read and understand the penalties associated with plagiarism as stated in the Student Charter.

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Preface

This thesis is the result of three month research on eco-efficiency that was conducted in order to graduate the Bachelor of Science Tourism at NHTV Breda University of Applied Science and Wageningen University. The three month period of writing this thesis has gone through ups and downs. The thesis topic was assigned by my supervisor. My job was to develop an interesting research within this topic. In the beginning, it was difficult to define a suitable research due to the unclear concept of eco-efficiency. I have chosen to focus particularly on eco-efficiency in tourism businesses, as tourism is my field of interest.

I am grateful to all the people that were involved in this research. First, I would like to thank my supervisor Drs. Jeroen Klijs for helping me through all the obstacles concerning the thesis writing, for his valuable and most helpful comments, and for his help on earlier versions of this thesis. Second, I would like to thank Associate Professor Paul Peeters for his valuable insights and comments on my thesis. Third, I would like to thank the four interviewees who took time and effort to give me valuable insights on my topic. Without their help I would not have been able to develop a valuable answer to my research question. Fourth, I would like to thank fellow students, friends, and my parents for their moral support. Last, but not least, I would like to thank my boyfriend for his support and to make me see the light again in all the struggles of this thesis.

I hope you will enjoy reading this thesis.

Spijkenisse, June 2014

Shalini Autar

Abstract

The concept of eco-efficiency (EE) is an upcoming concept related to sustainable development. EE is defined as creating added value and minimizing environmental impacts. Environmental commitment can give a business a better competitive and innovative position. However, only a small number of general businesses have adopted eco-efficient practices due to lack of clarity. The purpose of this thesis is to study the success factors for the integration of EE in tourism businesses. Thus, the focus lies on the applicability of EE in tourism businesses. The following research question is addressed: *Under what conditions is it possible for tourism businesses to integrate EE?* Qualitative data is obtained through desk-research. In addition, in-depth interviews were conducted. Findings shed light on the potential of EE in tourism businesses and its success factors. It is found that the application of EE as a policy in tourism businesses slightly differs from integrating EE as a policy in general businesses. The objectives and limitations of EE differ between general businesses and tourism businesses. On the contrary, the definition, goal, strategies, success factors and benefits of EE are similar for general businesses and tourism businesses.

Keywords: EE; sustainable development; tourism businesses; success factors

1. Introduction

1.1 The concept

The concept of EE is extensively discussed in academic research. Nevertheless, there is a lack of clarity towards this concept. First, there is no universal definition. Many academics have defined EE as: undertaking business economically profitable while reducing environmental impacts, in the context of a business's product or process (Shonnard, Kicherer & Saling, 2003; Gössling, Peeters, Ceron, Dubois, Patterson & Richardson, 2005; Fet, 2003; Ehrenfeld, 2005). The intention is to enhance the competitive position of a business and improve products and services by means of innovation, while taking responsibility for the created environmental impacts (Saling, Kicherer, Dittrich-Krämer, Wittlinger, Zombik, Schmidt, Schrott & Schmidt, 2002). Since the last decade, the concept of EE is better understood as "to get more from less" (Braungart, McDonough & Bollinger, 2007, p. 2). Second, it is not clear which conditions are required to integrate EE in businesses (Kondoh, Kurakwa, Kato, Umeda & Takata, 2006).

Despite the lack of clarity towards the concept of EE, it is still an important concept. Most businesses strive for maximum added value. However, this strive is sometimes at the expense of the environment. So, there are two sides of the coin. On the one hand, some believe that undertaking business environmentally friendly increases costs and thus decreases added value (International Institute for Sustainable Development, n.d.). Therefore, some businesses might be hesitant to perform environmentally friendly by reducing environmental impacts. On the other hand, businesses are pushed to perform environmentally friendly due to social and governmental pressure (van Swigchem & de Haan, 2001). The challenge is then to perform environmentally friendly and create maximum added value at the same time, which allows businesses to kill two birds with one stone. This challenge is what the concept of EE is about. Throughout this thesis, EE is defined as '*creating added value while minimizing environmental impacts*'.

EE contributes to the concept of sustainable development, which is an upcoming key concept since the past decade (Glavič & Lukman, 2007; Gössling et al., 2005). Sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987, p. 37). Sustainable development consists of three aspects: the economic, environmental and social aspect. Although EE only focuses on the first two concepts (Ehrenfeld, 2005; Fet, 2003) it can still promote the change towards a sustainable world. Therefore, significant attention is devoted to EE (UNESCAP, 2009).

1.2 EE in tourism

It must be noted that the main focus of this thesis lies on tourism businesses. To relate EE to tourism, sustainable tourism is a good starting point. Currently, sustainable tourism is an upcoming trend within the tourism sector which deals with minimizing environmental impacts caused by tourism products and services offered. According to the World Tourism Organisation (2008), tourism is one of the economic sectors with the highest contribution to climate change (in Cadarso Vecina, Gómez Sanz, López Santiago, & Tobarra Gómez, 2011). Due to tourism's major contribution to environmental impacts and the continued growth of tourism, it is important to minimize impacts and prevent scenarios such as climate change. It is argued that EE has to be integrated in tourism business practices in order to achieve the development of sustainable tourism (Kelly, Haider, Williams and Egmund, 2007). Due to increasing awareness to reduce environmental impacts caused by tourism products and services, EE can be a useful tool to realize the minimization of environmental impacts while maintaining added value.

EE gives insight to tourism businesses on how more environmentally friendly tourism products and services can be offered while maintaining their added value. It must be noted that EE in the tourism sector must be applied on the consumption of tourism products and services, such as air travels and hotel stays, because the production process does not need improvements in terms of environmentally friendly activities (P. Peeters, personal communication, March 24, 2014). For example, booking a hotel stay is currently done by the internet which can be considered as environmentally friendly. However, the use of tourism products and services, such as fuel consumption due to taking a flight, can be improved in terms of reducing environmental impacts. This stands tourism businesses apart from other business sectors in production for which EE originally was developed.

1.3 Research question

On the one hand, there is significant proof that EE is beneficial for general businesses, since they have experienced success by the adoption of EE in their business practices (Shonnard, Kicherer & Saling, 2003; Huang, 2000). However, it is not mentioned by these academics why these businesses have integrated it and what proof has been identified which shows how this success has been achieved. On the other hand, there are general businesses who are skeptic about the concept, due to lack of clarity and lack of certainty (Kondoh et al., 2006).

In spite of the skepticism, it can be assumed that integrating EE offers potential for general businesses and tourism businesses (Shonnard, Kicherer & Saling, 2003; Huang, 2000), depending on the way in which it is integrated. Therefore, it is necessary to understand why and how EE should be integrated by businesses, tourism businesses in particular. The following main research question is developed: *Under what conditions is it possible for tourism businesses to integrate of EE?*

The following three specific research questions, related to the main research question, are developed and will be addressed in this thesis:

1. *What does the concept of EE mean?*

This specific research question addresses which definitions of EE have been used so far in academic literature. Thus, the concept of EE is discussed focused on general businesses.

2. *How to integrate EE?*

This specific research question addresses the goals, objectives, strategies success factors, benefits and limitations of EE in general businesses and tourism businesses.

3. *In what respect have tourism businesses integrated EE?*

This specific research question addresses whether or not tourism businesses have integrated EE.

4. *Why and how have tourism businesses integrated the concept of EE?*

This specific research question addresses how EE has been integrated by tourism businesses in practice, paying attention to goals, objectives, strategies, success factors, benefits and limitations.

This thesis is organized in the following way: this first chapter provides an introduction to the research of this thesis. Chapter two presents the methodologies used and its rationale. It clarifies the research design and research methods used. Chapter three presents an extensive literature review of the concept EE. Chapter four presents the results on the integration of EE by tourism businesses. Chapter five presents the discussion on the potential application of EE in tourism businesses by comparing data from desk-research with empirical data. Furthermore, recommendations are provided concerning the integration of EE in tourism businesses. Chapter six concludes by providing an answer on the main research question of this thesis. Chapter seven presents limitations of the research and recommendations for future research.

1.4 CARMATOP

The Centre for Sustainable Tourism and Transport (CSTT) developed a project 'Carbon management for tour operators' (CARMATOP). This project focuses on the development of a tool that allows tour operators to measure carbon footprints of the offered tourism trips in order to manage carbon emissions. Participating tour operators are allowed to become international frontrunners ("CARMATOP", 2014). Within the CARMATOP project, EE is considered as "one of the possible important and effective method in carbon management" (Eijelaar & Peeters, 2014, para. 9). Thus, one of the elements of the CARMATOP project is the concept of EE, which is researched in this thesis. Due to the importance of EE within the CARMATOP project, access is granted to its network and knowledge, used in this thesis. More information on the CARMATOP project can be found on the website of CSTT: <http://www.cstt.nl/Projects/CARMATOP/17>.

2. Methodology

This thesis is based on descriptive and exploratory research. Descriptive research was done, by means of desk-research, to describe the concept of EE and its application. Exploratory research was done, by means of unstructured in-depth interviews, to explore whether or not the information gained by desk-research is applicable to tourism businesses. This method has been applied as it might be the case that tourism businesses in practice have other perspectives towards the concept of EE compared with the perspectives towards EE discussed in literature. Below, the two research methods will be discussed in more detail.

2.1 Desk-research

The concept of EE is extensively discussed in academic literature. Relevant secondary qualitative data including peer-reviewed academic journal articles and websites were collected and discussed. In order to find relevant academic journal articles the word 'eco-efficiency' was used in the search engine of Google Scholar. The most relevant journal articles were selected based on the inclusion of definitions and relevance for businesses which described the concept of EE. Subsequently, the network method was applied to search for additional relevant academic journal articles. This method means that other relevant academic journal articles based on the references in the initial found relevant articles were retrieved (O'Connor, 1992). As one can continue with the appliance of this method, the author decided to stop searching for potential relevant articles when it was concluded that these articles did not have added value compared to the collected data. With the collected relevant literature, theories on EE were compared. In addition, scientific articles and other sources about the application of EE in tourism businesses were studied. The results of this part of the research can be found in chapter four.

Next, five tourism businesses have been selected in order to analyze if and how EE has been integrated in these tourism businesses in the past two years. The method by which the five tourism businesses were selected will be discussed in section 2.1.1. Annual reports, environmental reports and websites of the five tourism businesses were studied to test whether or not EE is integrated in their business practices (either as policy or as ratio). Furthermore, these sources have been studied to see whether or not they meet the requirements of this thesis's definition, goal, objectives, strategies and success factors of EE which will be defined in chapter three of this thesis. Subsequently, benefits and limitations of EE have been studied from the perspective of the selected tourism businesses. A table is developed which provides an overview of EE integration by the five tourism businesses including the goal, objectives, strategies, success factors, and benefits and limitations of EE. This table is presented in appendix C. Thus, with this information the potential of EE in tourism businesses is analyzed. Theoretical research was done on the concept of EE and its application to tourism businesses.

2.1.1 Tourism business selection

Tourism business selection was made based on the different types of tourism businesses existing in the tourism sector. Five tourism businesses were selected by the end of the procedure. Below, the procedure conducted for this selection will be discussed.

Steps of tourism business selection:

1. Types of businesses in tourism sector
2. "Best" and "most popular" tourism businesses based on Zoover Awards
3. Check EE of hotel chains based on Green Key

2.1.1.1 Types of businesses in the tourism sector

First, the tourism sector has been divided into subsectors of existing tourism businesses. According to "Sectors in tourism" (n.d.), eight different types of businesses exist within the tourism sector. These are:

1. Accommodation: including hotels and other lodging operations.
2. Adventure tourism and recreation: including travel adventures where tourists can learn about nature and/or culture.
3. Attractions: including historic sites, heritage homes, museums, halls of fame, art galleries, botanical gardens, aquariums, zoos, water parks, amusement parks, casinos and cultural attractions.
4. Events and conferences: including special events such as festivals and sports events, conferences, meetings, trade shows, and conventions.
5. Food and beverages: including all types of businesses supplying food and beverages for consumption.
6. Tourism services: involving organizations, associations, government, agencies and companies which are specialized to serve the needs of the tourism sector as a whole rather than the needs of travelers specifically.
7. Transportation: including any air, rail, ground and water transport.
8. Travel trade: including the bookings and sales in the other sectors. The people that work in the travel trade make reservations for accommodations, tours, transportation, food and beverage and/or for attractions.

However, Miller (n.d.) identifies only three different types of businesses in the tourism sector.

1. Transportation services: any tourist transport, from aircraft to bicycle to taxi.
2. Accommodations: any type of accommodations where tourists can stay ranged from luxurious hotels to bed and breakfasts.
3. Retail establishments: restaurants, small gift and souvenir shops, shopping malls.

Setup my hotel (n.d.) identifies five types of tourism businesses.

1. Lodging operations: places to stay for tourists.
2. Transportations services: tourist mobility.

3. Food and beverage operations: restaurants, catering.
4. Retail stores: small gift and souvenir shops, shopping malls.
5. Activities: events, attractions, and recreation.

Based on the literature, the author will focus on the common types of tourism businesses. The following five business types in the tourism sector will be focused on throughout this thesis:

1. Accommodation
2. Transportation services
3. Attractions
4. Food and beverages
5. Retail stores

Two selection criteria were used to select one tourism businesses within each of the five selected business types. Below, Zoover Awards and Green Key are discussed as the two selection criteria.

2.1.1.2 Zoover Awards

One tourism business of each tourism sector based on Zoover Awards 2014 has been selected. Only the attractions sector was based on the Zoover Awards 2013, as the awarding of 2014 did not take place when this thesis was written.

Zoover Awards is established in 2009 with the intention to acknowledge the most appreciated tourism businesses. On the website of Zoover Awards, consumers are able to place vacation reviews by which tourism businesses are rated. Currently, Zoover Awards is “the most important website for vacation reviews” (Fletcher Hotels, n.d.^a, para. 1). There are 27 categories in which Zoover Awards are assigned to ‘the best’ and ‘the most popular’ tourism business. These 27 categories include provider of long haul trips, provider of aircraft tickets, low cost airline, hotel chain, etc. Consumers can vote for tourism businesses within these categories, by means of giving a grade, during the voting rounds at the website www.zooverawards.nl and www.zooverawards.com. This grade is based on criteria such as appreciation, location, price, quality, service, etc (Zoover, n.d.). However, EE is not involved as a criterion in the grade.

In each category, a tourism business needs a minimum number of votes in order to qualify for the title ‘best’ business. In this way, a bias is avoided as the grade determines the outcome and thus must be reliable. The tourism business with the highest grade is proclaimed as ‘the best’ in its category. However, there are businesses who receive a significant number of votes. Therefore, the business with the most votes is proclaimed as ‘the most popular’ in its category (Zoover, n.d.). In this thesis the ‘best’ and ‘most popular’ tourism businesses are analyzed to see whether or not they integrated EE in their business.

Zoover Awards do not award businesses in the sectors of ‘food and beverages’ and ‘retail stores’. Furthermore, no additional selection criterion was found which awarded businesses in the sectors of ‘food and beverages’ and ‘retail stores’. Therefore, businesses of these two sectors were not included. Thus, businesses were selected from the remaining three tourism sectors: (1) accommodation, (2) attractions, (3) transportation.

Tourism businesses within each of the three tourism sectors were selected on the basis of the Zoover Award for ‘the best’ and ‘the most popular’ business. Below, a table is included with the selected businesses.

Tourism sector	‘Most popular’ tourism business	‘Best’ tourism business
Accommodation	Fletcher Hotels	NH Hoteles
Attractions	Efteling	Efteling
Transportation	KLM Dutch Airlines	Emirates

Table 1. Tourism businesses selected with Zoover Awards selection criterion

2.1.1.3 Green Key

As Zoover Awards does not involve EE as a criterion for ‘the best’ or ‘most popular’ businesses, the Green Key was applied as an additional selection criterion. The intention of applying Green Key was to have an additional check that the hotel chains selected in the analysis perform environmentally better than businesses without a Green Key label. Green Key was used, because their criteria correspond with the environmental aspect in the EE definition used in this thesis. This means that it is assumed that businesses which have the Green Key certificate perform more environmentally friendly by reducing environmental impacts.

Green Key is a well known international standard for sustainable business in the tourism sector. The standard indicates the businesses who take responsibility to minimize environmental impacts of their products, services and production processes. This responsibility is taken while maintaining the quality of their products and services towards consumers. Green Key participants go beyond the standard laws and regulations. Strict standards have to be met by tourism businesses in order to qualify for the Green Key. These standards are focused on communication, sustainability, energy consumption, water consumption, gas consumption, waste management, etc. The Green Key label consists of three levels: gold, silver and bronze. Gold is achieved when tourism businesses in the accommodation sector meet 33 out of the 59 requirements. Silver is achieved when tourism businesses in the accommodation sector meet 26 out of the 59 requirements. Bronze is achieved when tourism businesses in the accommodation sector meet 17 out of the 59 requirements (Green Key, 2013). The higher the level of environmental friendliness, the higher the level of the Green Key label (Green Key, n.d.). Both, Fletcher Hotels and NH Hoteles (discussed in section 4.1.1 and 4.1.2), do have the Green Key certificate which means that responsibility is taken for the environment.

2.2 Unstructured in-depth interviews

As a third step within the research, unstructured in-depth interviews were conducted to explore whether or not EE is applicable to tourism businesses. The interviews provided insight into the interviewee's thoughts about the potential of EE in tourism businesses. Unstructured in-depth interviews were conducted, because this type of interviewing offers the opportunity to hear the perspectives of the interviewee's on the concept of EE. Even though this method is time consuming, it allows further questions to develop during the unstructured in-depth interview. In addition, the interviewer is able to discover relevant information which was unknown or irrelevant before the interview (Adler & Clark, 2011). The interviewee can take the lead on their experiences and expectations on the concept of EE and its integration in tourism businesses.

Eleven tourism businesses who are partners of the CARMATOP project were approached to do an unstructured in-depth interview with. However, only four unstructured in-depth interviews were conducted as not all the eleven tourism businesses were able to do the unstructured in-depth interview. The selection of the tourism businesses has been made as the CARMATOP project tackles the problem of tourism emissions and a research of the concept of EE is one of the elements of this project. In addition, access was granted to these tourism businesses; therefore it was chosen to interview the tourism businesses participating in the project. Furthermore, a fourth unstructured in-depth interview was conducted with an ex-employee of a tour operator. It was advised by Associate Professor Paul Peeters, one of the founders of the CARMATOP project, to interview this person.

So, four unstructured in-depth interviews were conducted. The first tourism business interviewed was BookDifferent. BookDifferent is an online provider of hotel stays. Furthermore, it is a non-profit organization which does business on a global level. Added value earned by BookDifferent is donated to charities. Consumers are allowed to select the charity to which the money will be donated. An amount of the added value is reinvested in the business in order to ensure its sustainability and viability (BookDifferent, n.d.^a). BookDifferent is engaged in minimizing environmental impacts by providing its consumers with green hotels. The green hotels are sustainable and thus strive to minimize environmental impacts (BookDifferent, n.d.^b). One remark has to be made; as BookDifferent does not strive for added value creation it could be questionable whether or not EE is applicable. This question arises, because one side of EE strives for added value.

Second, tour operator 'Koning Aap' was interviewed. 'Koning Aap' is specialized in providing long haul trips to a wide range of tourism destinations. It provides sustainable tourism trips which takes into consideration the following three aspects: natural environment, cultural heritage and local residents. 'Koning Aap' aims to increase sustainable tourism and minimize environmental impacts (Koning Aap, n.d.).

Third, tour operator SNP was interviewed. SNP is specialized in providing active and adventurous trips around the globe (SNP, n.d.^a). SNP devotes attention to sustainable tourism, as the founders have a 'green' background. This business aims to minimize negative impacts on the natural environment, cultural heritage and local residents, without compromising the quality of the trip (SNP, n.d.^b).

Fourth and last, an ex-employee of the tour operator Sawadee was interviewed. This person had already experiences with EE in tourism businesses. Associate Professor Paul Peeters, one of the establishers of the CARMATOP project, advised to interview this person due to her knowledge about EE.

The interviewees had to answer questions regarding their perspectives on the definition of EE, the goal, objectives, success factors, benefits, and limitations. The unstructured in-depth interviews lasted for approximately 45 minutes and were audio recorded. Furthermore, the in-depth interviews were conducted in Dutch. The in-depth interviews were analyzed by means of summarizing the content of the interviews in English and selecting relevant information specified on the aspects discussed in the thesis. The similarities and differences between desk-research and unstructured in-depth interview results contributed to the explanation on the potential of EE in tourism businesses.

3. Literature review

In this chapter, the following specific research questions will be addressed: *What does the concept of EE mean?* and *how to integrate EE?* It is addressed what definitions have been used so far in academic literature and how EE can be integrated by general businesses.

3.1 The definition of the concept of EE

The definitions of the concept of EE have been developed in qualitative and quantitative terms. Therefore, these two categories are separately discussed.

3.1.1 Qualitative definition of the concept of EE

The concept of EE was originally developed by the World Business Council for Sustainable Development (WBCSD) (Schmidheiny, 1992) and defined as “the delivery of competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing the ecological impact and resource intensity throughout the life cycle, to a level at least in line with the earth’s carrying capacity” (Verfaillie & Bidwell, 2000, p. 7). The intention was to enhance the competitive position of a business and improve products and services by means of innovation, while taking responsibility for the created environmental impacts (Saling et al., 2002). The OECD defines EE as “the efficiency with which ecological resources are used to meet human needs” (Moll & Gee, 1998, p. 10). Compared to the definition of WBCSD, OECD’s definition disregards the business aspect of products and services. The European Environment Agency complements on OECD’s definition by arguing that EE is “a concept and strategy enabling sufficiency de-linking of the ‘use of nature’ from economic activity, needed to meet human needs (welfare) to keep it within carrying capacities; and to allow equitable access to, and use of the environment, by current and future generations” (Moll & Gee, 1998, p. 4).

In short, EE focuses on the balance between added value and the reduction of environmental impacts, in the context of a business’s product or process (Shonnard, Kicherer & Saling, 2003; Gössling et al, 2005; Fet, 2003; Ehrenfeld, 2005). Bleischwitz (2003, p. 453) links the “reduction of physical production inputs” to the economic progress of a business in his definition of EE. Derwall, Guenster, Bauer and Koedijk (2005) define the concept of EE as the economic value of a business’s products and services related to its waste production. This definition has limited boundaries on the environmental impacts of a product and service by focusing only on waste. Kelly et al., (2007) also limit their definition of EE by stating that energy, waste, pollution and the consumption of natural resources should be reduced in order to be considered as eco-efficient.

Korhonen & Seager (2008, p. 416) argues that existing definitions of EE “lack a temporal, social and cultural dimension”. These dimensions should be covered by the definition of EE since scientific knowledge develops and its meaning differs among cultures and countries (Robèrt, Schmidt-Bleek, Aloisi de Larderel, Basile, Jansen, Kuer, Price Thomas, Suzuki, Hawken & Wackernagel, 2002; Pongracz, 2002). However, from my perspective the definitions of WBCSD, OECD and EEA cover the social dimension by considering human wellbeing in their definition of the concept of EE. Nevertheless, the definitions do lack a temporal and cultural dimension.

Since the last decade, the concept of EE is better understood as “to get more from less” (Braungart, McDonough & Bollinger, 2007, p. 2). Van Swigchem and de Haan (2001) complements on Braungart, McDonough and Bollinger, by arguing that more must be produced using fewer natural resources. Huang (2000) indicates EE as the achievement of greater value with lower negative environmental impacts. Compared with the former definitions, this definition can be applied in business as well as societal context (Huang, 2000). Verfaillie and Bidwell (2000) support Huang by stating that although EE is a business concept, it is also applicable for the government, societies and other organizations. Cramer (2000) argues that the concept of EE has been applied in the context of industrial economies. However, EE is also applicable in small and medium-size businesses as well as developing and emerging countries (Lehni, 2000). Since the concept of EE can be applied in many business contexts, any type of business should be able to integrate EE. Nevertheless, the challenge remains how to integrate EE. This will be discussed this in section 3.3.

3.1.2 Quantitative definition of the concept of EE

EE can also be defined in terms of ratios. Below, these quantitative definitions of EE will be discussed.

EE is defined as “units of value generation per unit of environmental influence” (Brattebo, 2005, p. 9). It was already stated in the former section that EE is defined in qualitative terms by The European Environmental Agency. However, they also have created a definition in quantitative terms which is, “the amount of “environment” used per unit of “economic activity”” (Braungart, McDonough & Bollinger, 2007, p. 3). This ratio is the same as the ratio defined by Brattebo. Schaltegger and Sturm (1990, p. 175) have defined EE as $\frac{\text{value added}}{\text{environmental impact added}}$. Here, added value means the value of a product or service created when reduced by the product or service’s costs. Also, Braungart, McDonough and Bollinger (2007) enounce EE as a ratio: $\frac{\text{unit of product or service}}{\text{environmental impact}}$. According to Lehni (2000, p. 19), EE is represented as: $\frac{\text{product or service value}}{\text{environmental influence}}$. Saling et al. (2002, p. 203) developed the EE ratio as $\frac{\text{economic creation}}{\text{ecological destruction}}$.

The ratios defined among different academics represent the same outcome, even though there are (slight) differences between the ratios. In the end it comes down on the same, namely the tradeoff between a business’s economic performance and environmental performance. The outcome of the ratio can be a number between 0 and 1 when both, economic value and environmental impact is represented in the same unit (e.g. €). However, when the ratio is calculated in € per kg or kg per €, the outcome of the ratio can take any value between zero and eternity (P. Peeters, personal communication, June 23 2014; Müller and Sturm, 2001). The ratios can be calculated per product or per market segment, but also per production line and per an entire corporation (Verfaillie & Bidwell, 2000). The difficult part is that ratios must be calculated for each element influencing the environment, for instance, water, energy, waste, emissions, etc. The two aspects in the ratio, added value and environmental impacts, include multiple different indicators. Therefore these indicators cannot be united into a single number (Lehni, 2000). Furthermore, Schaltegger and Burritt (2000) argue that the quantitative definitions of EE include multiple dimensions, which means that the measured units can vary. The authors mentioned above often do not provide explanations on how this ratio works in practice, for instance how the number of environmental impact is calculated.

The benefit of a quantitative definition of EE is that it creates a useful measurement tool and makes EE more concrete. The outcome of the EE ratio will give a value to products and services on their level of EE. Thus, the ratio indicates the positive performance of businesses (Verfaillie & Bidwell, 2000).

As already discussed, in most cases EE means enhancing a business's economic performance, while reducing the environmental impacts created by this business. This is logical as the main goal of EE is to maximize added value of a business's products and services and improve the environmental performance of the business (Verfaillie & Bidwell, 2000). The phenomenon of linking the economic and environmental performance of a business is included in all the definitions discussed above. However, the difference is that some academics enounce this link in qualitative terms and other academics enounce it in quantitative terms. Based on the definitions of different academics discussed above, the author has defined the concept of EE as '*creating added value while minimizing environmental impacts*'. This means that the EE ratio is $\frac{\text{added value of product or service}}{\text{environmental impact}}$.

This definition can be interpreted in three ways. Businesses can perform more eco-efficiently by (1) creating increased added value and decreasing environmental impacts. (2) creating the same added value while decreasing environmental impacts. (3) creating increased added value while maintaining the environmental impacts.

Definition of EE:

- *Qualitative terms: creating added value while minimizing environmental impacts.*
- *Quantitative terms: $\frac{\text{added value of product or service}}{\text{environmental impact}}$.*

3.2 Applications of EE – when is a business eco-efficient?

In this section, the goal, objectives and strategies of EE will be discussed. The goal is a broad aim which answers the question 'what' is intended to achieve by EE. Objectives are often considered as equal to goals. They are closely tied to one another, however they are two different concepts. An objective indicates how the goal must be achieved, thus it narrows down on the goal. Multiple objectives can be designed to indicate the achievement of the goal. Furthermore, an objective should be measurable. Then there are strategies, which indicates 'how' an objective is achieved by means of action plans. Multiple strategies can be designed for every single objective (Kelly, 2008).

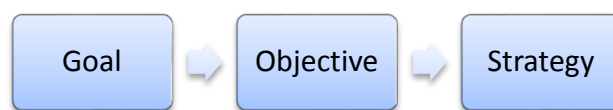


Figure 1. Link between goal, objective and strategy.

3.2.1 Goal of EE

The main goal of EE is defined as maximize added value of a business's products and services while improving the environmental performance. According to van Swigchem and de Haan (2001), there is a lack of clarity with regards to the concept of EE. The varying definitions of EE do not give a proper overview of what objectives should be carried out in order to attain the goal of EE. There are no generally accepted objectives, therefore businesses use many objectives in order to accomplish the goal of EE. It is necessary to identify which objectives are considered as striving towards EE in academic literature. Below, the objectives are reviewed which are identified by different academics in order to accomplish the goal of EE.

3.2.2 Objectives of EE

WBCSD in Lehn, 2000:

1. Reduce material intensity of products and services
2. Reduce energy intensity of products and services
3. Reduce toxic dispersion
4. Enhance recyclability of materials
5. Maximize sustainable use of renewable resources
6. Extend durability of products
7. Increase service intensity of products and services

Verfaillie and Bidwell (2000):

1. Reduction of energy
2. Reduction of water
3. Reduction of pollution
4. Reduction of waste
5. Reduction of resources

Saling, et al. (2002):

1. Reduce raw materials
2. Reduce energy consumption
3. Reduce CO2 emissions
4. Reduce toxic materials
5. Reduce risks

Müller and Sturm (2001):

1. Reduce energy input
2. Reduce water resources
3. Reduce emissions which contribute to global warming
4. Reduce emissions contributing to ozone depletion
5. Reduce waste disposal

Shonnard, Kicherer and Saling (2003):

1. Reduce raw materials
2. Reduce energy consumption
3. Reduce CO2 emissions
4. Reduce toxic materials
5. Reduce risks
6. Reduce land use

Braungart, McDonough & Bollinger (2007, p. 2)

1. Dematerialization
2. Increased resource productivity
3. Reduced toxicity
4. Increased recyclability (downcycling)
5. Extended product lifespan

DeSimone and Popoff (1997) and Kelly et al., (2007):

1. Reduction of energy intensity
2. Reduction of natural resources consumption
3. Reduction of waste and pollutants

Reviewing the objectives of EE made clear that EE is characterized variously among academics. Therefore, it is necessary to cover a number of EE objectives which can be generalized in this thesis. The common objectives, which are mentioned at least three times by the different academics in this section, are:

1. Reduction of energy consumption
2. Reduction of CO2 emissions
3. Reduction of toxic materials
4. Dematerialization
5. Reduction of waste disposal

Reduction of energy consumption means reducing the consumption of electricity. Reduction of CO2 emissions means reducing the emissions caused by for instance cars and aircrafts. Reduction of toxic materials means reducing the use hazardous materials. Dematerialization means that the use of materials is reduced, including raw materials, other process materials, pre-or semi-manufactured goods, parts, and modules (Verfaillie & Bidwell, 2000). Reduction of waste disposal means that the "amount of substances or objects destined for disposal" should be reduced (Verfaillie and Bidwell, 2000, p. 19).

Strategies need to be designed in order to achieve the objectives of EE. Below, these strategies will be discussed.

3.2.3 Strategies of EE

The figure below gives an overview of strategies to achieve the objectives of EE. These strategies do involve the business itself as well as external businesses. According to Lehni (2000), EE can be achieved by means of four main strategies. These four main strategies are also supported by Huang (2000). The figure below presents the four main strategies, which are the following:

1. Re-engineer production processes
2. Re-value by-products
3. Re-design products and services
4. Re-think markets

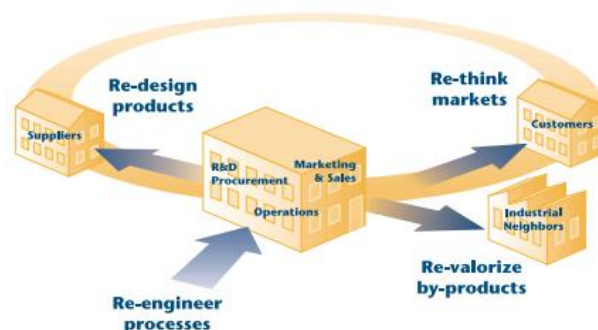


Figure 2. EE strategies. Source: Lehni, 2000, p. 16

The matrix below indicates how an EE strategy can contribute to achieve an EE objective in terms of a plan of action. The plans of action incorporated in the matrix are examples to indicate possible links between the mentioned objectives and strategies. Thus, it is possible that many other plans of action exist besides the ones in the matrix below.

	Reduction of energy consumption	Reduction of emissions	Reduction of toxic materials	Dematerialization	Reduction of waste disposal
Re-engineer production processes	<ul style="list-style-type: none"> - Energy-efficient equipment - Green energy - Solar power - Maximize energy savings 	<ul style="list-style-type: none"> - Engine wash - Optimize process and procedure 	<ul style="list-style-type: none"> - Cleaner technologies¹ - Waste modification¹ 	<ul style="list-style-type: none"> - Process simplification¹ - Produce products with less material use² 	<ul style="list-style-type: none"> - Process simplification¹

Re-value by-products	<ul style="list-style-type: none"> - Reuse - Renewable energy 			<ul style="list-style-type: none"> - Reuse - Recycle 	<ul style="list-style-type: none"> - Reuse - Recycle - Segregate - Cooperation with other businesses
Re-design products and services	<ul style="list-style-type: none"> - Energy saving material - Innovation 	<ul style="list-style-type: none"> - Biofuel - Innovation 	<ul style="list-style-type: none"> - Replace toxic materials with benign ones¹ 	<ul style="list-style-type: none"> - Substitutes - Product life extension² - Innovation - Integrate product functions² 	<ul style="list-style-type: none"> - Make products recyclable - Optimize functions to reduce over packaging²
Re-think markets	<ul style="list-style-type: none"> - Create consumer awareness - Assistance product use 	<ul style="list-style-type: none"> - Create consumer awareness - Rent electric vehicles - Offset - Product delivery 		<ul style="list-style-type: none"> - Leasing 	<ul style="list-style-type: none"> - Create consumer awareness - Leasing - Assistance product use

Table 2. Link between EE objectives and EE strategies.

Below, the four main strategies are discussed.

3.2.3.1 Re-engineer production processes

Businesses can re-engineer their production processes to reduce consumption of energy and materials, reduce waste, reduce emissions, and reduce toxic materials. Reducing these elements provide businesses the benefit to reduce time and costs. The whole businesses must be involved in identifying ways to make relevant changes in the production process, including the business delivery system, supply system, distribution, consumer use and disposal (Lehni, 2000). Thus, strategies should be developed and undertaken to prevent pollution (Verfaillie & Bidwell, 2000).

3.2.3.2 Re-value by-products

Businesses can cooperate with other businesses in order to revalue its waste, also known as re-valoring by-products. The business's waste can be used as input in production processes of other businesses, in this way waste is valuable (Lehni, 2000). This strategy is related to the cradle to cradle principle which argues that waste equals food. Every used material of one product could be used as input for another product. However, there are two conditions which have to be taken into account. First, the other product should not lose quality because of the used material. Second, all used material must be recycled, thus no residues should be disposed. This corresponds with the 'zero

¹ Fiksel, 2009

² Madden et al., 2005

waste' principle, which assumes that no single unit of waste should remain when reused or recycled (McDonough & Braungart, 2010). The re-valorizing by-product strategy contributes to an effective use of resources and additional revenue. Thus, value is created with fewer resources (Lehni, 2000).

3.2.3.3 Re-design products and services

Businesses can re-design their products and services in order to become eco-efficient. Eco-efficient products and services are often less costly to produce, thus more affordable for consumers. Products must be designed small and simple, with fewer resources, and easy to recycle. Nevertheless, they are highly functional, serviceable and easier upgradable (Lehni, 2000). So, re-designing products and services involves innovation. Products and services are re-designed with new and improved functionalities in order to increase the product's or service's value. Thus, these products and services are eco-efficient as they provide high value while environmental impacts are minimized (Lehni, 2000).

3.2.3.4 Re-think markets

Re-thinking business markets will allow businesses to meet consumer demand in new ways. Based on stakeholder perspectives, businesses are allowed to find new way to serve their markets by re-shaping the demand and supply. For example, consumer awareness towards EE can be created which may change the market demand. Huang (2000) argues that businesses can meet their consumer demands by leasing their products. In addition, business can provide add-on services to existing products. New product opportunities are created which contributes opportunities for economic growth and increased revenue (Lehni, 2000).

Overall, EE can be integrated in the overall business strategy, which also maximized the benefits from EE. Thus, EE is applicable in the production process of products and services, the supply of the products and services, and in the use of the products and services (Lehni, 2000).

The goal of EE: maximize added value of a business's products and services while improving the environmental performance.

The common objectives of EE:

1. *Reduction of energy consumption*
2. *Reduction of emissions*
3. *Reduction of toxic materials*
4. *Dematerialization*
5. *Reduction of waste disposal*

The four main strategies of EE:

1. *Re-engineer production processes*
2. *Re-valorize by-products*
3. *Re-design products and services*
4. *Re-think markets*

3.3 Success factors of EE – how is it integrated internally?

Above, the definition of EE and its goal, objectives and strategies have been reviewed. In this section, the success factors of the integration of EE will be discussed, as identified in academic literature. EE success factors are factors which provide some solid foundations in order to develop strategies to achieve the integration of EE in businesses (Foelkel, 2008). It has to be mentioned that these success factors are not meant to use as a step-by-step business practice plan, cannot be prioritized over one another and that businesses might not be aware of the existence and importance of these success factors.

Four main categories of success factors are identified in which underlying success factors are included. Van Swigchem and de Haan (2001) point out the following four main categories: organizational embedding, embedding of daily operations, collection of relevant information, and brainstorm sessions on promising improvements of the integration of EE.

The success factors of the integration of EE:

1. *Organizational embedding*
 - *Involvement of top management*
 - *Business commitment*
 - *Employee commitment*
 - *Creation of awareness*
 - *Motivation*
2. *Embedding of daily operations*
 - *Creation of “new” routine*
 - *Monitoring results*
3. *Collection of relevant information*
 - *EE integration*
 - *Stakeholders perspectives*
4. *Brainstorm sessions*

3.3.1 Organizational embedding

Organizational embedding involves the following aspects which also could be considered as underlying success factors.

- Involvement of top management concerns the approach of integrating EE by means of a bottom-up or top-down approach. WBCSD identifies the essence of top managers in businesses who want to integrate EE. It is necessary that the business's top management supports the adaptation of EE and that they gain the basic knowledge on the concept (Lehni, 2000). In addition, Foelkel (2008) argues that top management should be the example and drivers for their employees to be involved in the integration of EE in the business.
- Business commitment is necessary to integrate EE within a business (van Swigchem & de Haan, 2001). Bleischwitz (2003) supports van Swigchem and de Haan by arguing that EE must be integrated in all the departments of the business, thus not only in the department which is involved in environmental issues. Huang (2000) points out that the business should be committed to the integration of EE. It should be clear in the business's vision how EE will be

achieved. Furthermore, Madden, Young, Brady and Hall (2005) argue that EE should be integrated in each business practice.

- Employee commitment is identified as a success factor by Huang (2000). For the adaptation in all departments, top managers and employees need basic knowledge on the integration of EE. Thus, it is also important that all the employees gain greater understanding about the concept of EE in order to commit themselves to eco-efficient business practices. It should be clear what the concept means, how value can be created to the business by means of it, and how it should be realized. For example, training and procedures can be established in order to ensure commitment.
- Awareness must be created towards the concept of EE within a business.
- Everyone within the business should also be motivated to improve their business practices eco-efficiently (Foelkel, 2008). To come back on the approach of integrating EE in a business, it can be concluded that a top-down as well as bottom-up approach can be applied. Top management as well as employees have the power to come up with initiatives for the integration of eco-efficient business practices.

3.3.2 Embedding of daily operations

Embedding of daily operations involves the following two aspects which also could be considered as underlying success factors.

- A 'new' routine within a business must be created based on EE. It is considered necessary that the organizational structure as well as the management system of a business is integrated by eco-efficient practices in order to realize its integration. For instance, guidelines should be formulated in order to realize EE in businesses and a holistic perspective towards the environment must be created within a company to integrate EE (van Swigchem & de Haan, 2001). Thus, EE should be integrated in a business's overall decision making and communication process.
- EE results should be monitored. This underlying success factor concerns the evaluation of strategies by which EE is integrated in a business (van Swigchem & de Haan, 2001). In this way, these strategies are evaluated and decisions are made whether or not these should be improved to achieve and maximize intended results.

3.3.3 Collection of relevant information

Collection of relevant information involves the following aspects which also could be considered as an underlying success factor.

- Relevant information about EE integration should be collected. Businesses should know how EE can be integrated and what needs to be undertaken in order to achieve EE. Furthermore, relevant information is needed to develop EE strategies. In addition, consumer behavior and consumer demand should be analyzed in order to respond with eco-efficient products and services (van Swigchem & de Haan, 2001). According to Bleischwitz (2003), business owners do not need profound knowledge on the environment and its impacts. However, it is necessary to gain basic knowledge on how their business's environmental performance can be improved.

- Business should take into consideration the perspectives of different stakeholders in order to respond on their needs. According to Gill & Williams (1994), support from stakeholders with different interests is considered as a success factor for the integration of EE in tourism businesses. Lehn (2000) also supports on the statement on stakeholders by arguing that perspectives of each stakeholder need to be taken into consideration by which consensus have to be reached, in order to satisfy their needs.

3.3.4 Brainstorm sessions

Brainstorm sessions on promising improvements of the integration of EE is considered as a success factor. Continuous brainstorm sessions are necessary to update improvements of the integration of EE. According to Verfaillie & Bidwell (2000), businesses need to be creative and innovative in order to become eco-efficient.

3.4 Benefits and limitations of EE

Integrating EE in a business is considered as beneficial for the economy and the environment, which contributes towards the achievement of sustainable development. In this section, it will be discussed why EE is beneficial for businesses. In addition, the limitations of EE are discussed as integrating EE does not always work out the way businesses want.

3.4.1 Benefits

In this section, seven benefits of EE for general businesses is discussed. Below, a list is provided with the discussed benefits.

Benefits of EE:

1. *Insight in efficiency practices of businesses*
2. *Creation of business opportunities*
 - *Innovation*
 - *Enhancement of competitive position*
3. *More added value*
 - *Reduction of costs*
 - *Opportunity to grow and expand*
4. *Reduction of (natural) resources consumption*
5. *Reduction of environmental impacts*
6. *Limitation of risks*
7. *Contribution to sustainable development*

First, EE is a tool for businesses which gives insight in the reduction of costs contributed by innovative, environmentally friendly products and services. The highest priority of a business is to create maximum added value. This priority can be accomplished by creating maximum efficiency within the business (Lehni, 2000). This is where EE comes in as a tool to provide an overview on the efficiency of the business practices. Second, as EE is considered as a useful tool, it can also contribute to the creation of business opportunities by providing eco-efficient innovative products and services (Huang, 2000). Due to the innovative eco-efficient products and services, businesses are able to outperform competitors. It is proven in academic literature that products which are eco-efficiently produced perform significantly better than products which have not been produced eco-efficiently. Eco-efficient products are stronger in the competitive market, through which eco-efficient businesses gain a stronger competitive market position (Shonnard, Kicherer & Saling, 2003). Lehni (2000) supports Shonnard, Kicherer and Saling by stating that there is significant proof that eco-efficient businesses create increased added value.

Third, businesses are able to create more added value by providing eco-efficient products and services since economic as well as environmental value is created on their products and services (Lehni, 2000). Underlying this third benefit are related benefits. Added value is created due to the reduction of costs. Furthermore, when businesses create more added value, they have the opportunity to grow and expand (Verfaillie & Bidwell, 2000). Fourth, EE drives businesses to reduce their consumption of natural resources. Fifth, EE helps to reduce environmental impacts. Sixth, risks are limited concerning the environment due to EE. Seventh and final, EE contributes to sustainable development (Huang, 2000; Korhonen & Seager, 2008). In addition, Korhonen and Seager (2008, p. 411) points out that EE supports sustainable development "from the standpoint of meeting current needs while conserving resources for the benefit of future generation". According to Madden et al. (2005), EE helps to create sustainable strategies.

In spite the benefits, there is skepticism with regards to EE. Businesses still seem to be insecure when it comes to integrating EE. Is it possible that EE creates the win-win game of improved economic and environmental performance? Does it yield concrete results in practice (van Swigchem & de Haan, 2001)? It may be possible that this skepticism is supported by the limitations of the concept of EE. Below, the limitations of EE in businesses is discussed.

3.4.2 Limitations

In this section, three limitations of EE for general businesses are discussed. Below, a list is provided with the discussed limitations.

Limitations of EE:

1. *Lack of information and certainty limit valuable performance*
2. *Contribution to rebound effect*
3. *Insufficient concept*

Korhonen and Seager (2008) argue that although EE should lead to a reduction in costs and environmental impacts, it does not always work out in practice. First, lack of information and of certainties limits the valuable eco-efficient performance in businesses. As already mentioned in section 1.3.3, relevant information is needed in order to benefit from EE. Second, the rebound effect is a limitation of EE (van Swigchem & de Haan, 2001). According to Ehrenfeld (2005) and van Swigchem and de Haan (2001), EE is considered insufficient as a useful tool, because of the rebound effect. The rebound effect means that while costs reduce, it can consequently lead to increased consumption due to low consumer prices. The increased demand for products and services will then lead again to increased consumption of natural resources which contributes to detrimental environmental impacts (Hertwich, 2005; Binswanger, 2001; Berkhout, Muskens & Velthuisen, 2000). This means that the accomplishment of long-term sustainable development will be endangered. Therefore, they suggest that seeking for effective solutions to increase efficiency is in vain. There should be rather searched for substitutes to significantly reduce the extensive production and consumption of products and services (Ehrenfeld, 2005). Lehtinen (2000) complements by arguing that it is more effective to seek for a different lifestyle in order to improve one's wellbeing, by means of consuming limited natural resources. Furthermore, it is argued that EE can only be a useful tool to achieve sustainable development when combined with other tools (van Swigchem & de Haan, 2001; Ehrenfeld, 2005). Therefore, Elkington (1998) argues that EE only does not ensure complete sustainable development. Third, EE is an insufficient concept as it does not cover the social aspect of sustainable development (Gössling et al., 2005).

Some remarks have to be made concerning the rebound effect. First, there are authors who argue that the rebound effect occurs when a product or service is made more efficient, not eco-efficient. For instance, when an aircraft becomes more fuel efficient, the cost of aircraft goes down and thus the demand for air tickets increases, partly spoiling the environmental gain from the efficiency gain. Second, there are authors who consider the limitation of rebound effect not as negative. They argue that the rebound effect is by definition smaller than the efficiency gains. This means that in practice the reduction of environmental impacts will always be positive and higher than the additional created environmental impacts. So, even normal efficiency generally has a positive effect, only less than the direct efficiency improvement (P. Peeters, personal communication, June 17, 2014).

Even though it was tried to cover as much of the literature as possible, it might be that certain benefits and/or limitations are missed. In short, EE seem to have more benefits than limitations for general businesses. However, on this basis conclusions cannot be made whether or not EE has potential for tourism businesses. The potential of EE for tourism businesses will be discussed in chapter four based on empirical data.

3.5 Overview of the discussed elements

Before this thesis narrows down the focus from EE in general businesses to EE in tourism businesses, it is convenient to provide you a brief re-cap of the discussed aspects so far. A table is included in appendix A which presents the discussed elements on EE applicable for general businesses.

3.6 Related concepts

In this section, concepts will be discussed which are related to the concept of EE.

3.6.1 Sustainable development

EE is closely linked to the phenomenon of sustainable development, which is an upcoming key concept since the past decade (Gössling et al., 2005; Glavič & Lukman, 2007; Schaltegger and Sturm, 1990). The link can be supported by the fact that significant attention is devoted to EE in literature on sustainable development (UNESCAP, 2009). Moreover, EE is considered universally as a supportive tool to achieve sustainable development (Huang, 2000; Korhonen & Seager, 2008). Sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987, p. 37).

Sustainable development consists of the following three aspects: the economic, environmental and social aspect. According to Gössling et al. (2005), EE is a limited tool to measure sustainable development, since it does not cover the social aspect of sustainable development. This statement is supported by Lehtinen (2000) who points out that EE alone is not sufficient because it disregards the social aspect of sustainable development. However, he points out that there are businesses who take responsibility to improve the wellbeing of societies, which corresponds to the social aspect of sustainable development. From the author’s perspective, there are indeed businesses, also tourism businesses, who take responsibility for societal consequences of their business practices. This thesis’ author have read a number of cases which supports this perspective. Although there are many businesses which are engaged in social development, the author provides an example of a tourism business and a manufacturing business. NH Hoteles are committed to the society by creating a workplace for people to develop (NH Hoteles, 2012). Sony is also committed to the society by engaging in various projects which contributes to social development. Various programs are set up in order to address the needs of local communities in developing countries, such as providing children with education (Sony, n.d.). However, many academics do not include the social aspect in the definition of EE as can be noticed in section 3.1.1.

Elkington (1998) argues that EE does not ensure complete sustainable development. This statement is supported by WBCSD in Lehtinen (2000). WBCSD argues that EE does not solve all the problems to achieve sustainable development. This means that EE does not automatically leads to sustainable

development. Nevertheless, EE is considered as the main driver of sustainable development for businesses. Therefore, EE contributes to sustainable development and promotes the change towards a sustainable world (Huang, 2000).

3.6.2 Corporate Social Responsibility

The concept of corporate social responsibility (CSR) is defined as “a balanced approach for organizations to address economic, social and environmental issues in a way that aims to benefit people, communities and society” (Leonard & McAdam, 2003, p. 27). Thus, three aspects are included in this concept: (1) economic aspect, (2) social aspect, (3) environmental aspect. These three aspects corresponds with the three aspects of sustainable development. However, Davis and Blomstrom (1975, p. 6) argues that CSR is “the managerial obligation to take action to protect and improve both the welfare of society as a whole and the interest of organizations”. Thus, more emphasis is placed on the social aspect as businesses are expected to contribute to societal development. The principle of CSR is increasingly supported by businesses across the globe. The main benefit of CSR is that businesses are allowed experience profitability through quality, while enhancing its sustainable performance (Leonard & McAdam, 2003). Whereas EE only focuses on two aspects of sustainable development, CSR focuses on all three aspects of sustainable development. CSR is related to EE as both principles’ aim to minimize environmental impacts. The objectives and strategies of both principles are developed to achieve this aim. As one will see in section 4.1, the objectives, strategies and success factors of CSR are similar to that of EE. Furthermore, CSR is a global reporting instrument of which EE should be an important, but not the only tool (P. Peeters, personal communication, June 17, 2014). Moreover, CSR and EE are both important terms when talking about sustainable development.

3.7 EE in tourism businesses

3.7.1 Definition of the concept of EE relevant for tourism businesses

In this thesis EE is qualitatively defined as 'creating added value while minimizing environmental impacts'. EE is quantitatively defined as $\frac{\text{added value of product or service}}{\text{environmental impact}}$. The creation of added value of products or services provided by tourism businesses can be produced while minimizing environmental impacts. Thus, the EE definition is applicable for tourism businesses; therefore the same definition will be used for tourism businesses.

3.7.2 Application of EE in tourism businesses

The goal of EE is also applicable for general businesses as well for tourism business, because the definition of EE is applicable to both types of businesses. Since the focus of my thesis will be on EE in tourism businesses, this thesis' author decided to cover the main environmental impacts caused by the tourism sector as objectives to strive towards EE.

According to Kelly et al. (2007), the main causes of environmental deterioration, on tourism destinations, are mass consumption of natural resources and the generation of waste. However, tourism emissions is also considered as a major environmental problem. According to Gössling et al. (2005), there is the necessity to reduce greenhouse gas emissions of tourism transport. Concern has to be regarded towards energy consumption in tourism transport, accommodation and tourism activities. In addition, water consumption have to be taken into consideration. Gössling (2013) points out that although tourists are minor users of water resources, they are often major users in water scarce countries. This means that water availability gets compromised between tourists and local residents. It can also be a problem in water abundant countries, as future climate change will limit safe water availability. Therefore, it is necessary to focus on water management in order to sustain its availability for future generations. UNWTO (2013) complements by arguing that safe water is vital for tourism as they are mostly the major sectors within countries including many businesses dependent on safe water, such as restaurants, hotels, recreation facilities, etc.

Carbon emissions, energy and water are natural resources (Ruz, 2011). In this thesis, these natural resources are included as separate objectives of EE; therefore, the objective of natural resources is not included.

The four following objectives are considered as EE objectives which will be used throughout this thesis. First, the reduction of water consumption. Second, reduction of energy consumption. Third, reduction of waste disposal. Fourth and final, reduction of CO₂ emissions. In addition, the same four main strategies for general businesses are also applicable for tourism businesses. These four main strategies are (1) re-engineer production processes, (2) re-value by-products, (3) re-design products and services, (4) re-think markets.

The tourism objectives of EE are different from the general business's objectives of EE. The objectives of EE regarding toxic materials and dematerialization are not included in the tourism objectives. However, the objectives regarding energy consumption, emissions and waste disposal are included in

the tourism objectives. In addition, the tourism objective regarding water consumption is added compared to the general business's objective.

The tourism goal of EE: maximize added value of a business's products and services while improving the environmental performance.

The tourism objectives of EE:

- 1. Reduction water consumption*
- 2. Reduction energy consumption*
- 3. Reduction waste disposal*
- 4. Reduction CO₂ emissions*

The four main strategies of EE:

- 1. Re-engineer production processes*
- 2. Re-value by-products*
- 3. Re-design products and services*
- 4. Re-think markets*

3.7.3 Success factors of integrating EE in tourism businesses

Limited information was found on success factors of integrating EE in tourism businesses. In this section assumptions are made on the applicability of the success factors in general businesses to tourism businesses:

1. *Organizational embedding*; Relevant for tourism businesses; EE should be embedded in the whole business. So, each department and every employee should be committed to achieve eco-efficient business practices. This commitment could be enhanced by motivating the employees and creating awareness by the employees, tourists and local residents of tourism destinations. For example, training and procedures can be established in order to ensure employee commitment. According to Bauer and Chan (2001), tourists and local residents of tourism destinations should be aware of the environmental impacts created by tourism activities.
2. *Embedding of daily operations*; Relevant for tourism businesses. A 'new' business routine has to be created based on EE. Furthermore, results should be monitored in order to evaluate on the effectiveness of EE strategies in tourism businesses.
3. *Collection of relevant information*; Relevant for tourism businesses. Tourism businesses must know how EE should be integrated in their type of business. Furthermore, Gill and Williams (1994) point out that including stakeholder dialogue, with different stakeholders and different perspectives, is required for integrating EE. This statement is mentioned in the journal article of Kelly et al. who researched EE in tourism destinations. Based on this, it can be assumed that collecting relevant information by means of stakeholder perspectives is also applicable by tourism businesses as an underlying success factor.
4. *Brainstorm sessions*; Relevant for tourism businesses. It can be assumed that brainstorm sessions are not only required for general business, but also for tourism businesses. Strategies should be continuously developed in order to keep track of improving EE in tourism businesses. For example, encouraging the use of the most efficient airline or flight schedule. In addition, tourism businesses should seek continuously for new ways to improve its environmental as well as economic performance.

The success factors of the integration of EE:

1. *Organizational embedding*
 - *Involvement of top management*
 - *Business commitment*
 - *Employee commitment*
 - *Creation of awareness*
 - *Motivation*
2. *Embedding of daily operations*
 - *Creation of "new" routine*
 - *Monitoring results*
3. *Collection of relevant information*
 - *EE integration*
 - *Stakeholders perspectives*
4. *Brainstorm sessions*

3.7.4 Benefits and limitations of EE in tourism businesses

Limited information was found on the benefits and limitations of EE in tourism businesses. In this section assumptions are made on the applicability of the benefits and limitations for general businesses to tourism businesses. From my perspective, the benefits and limitations of EE can be applicable for both, general businesses and tourism businesses. The applicability of the benefits and limitations of EE in tourism businesses is discussed. Furthermore, additional benefits and limitations of EE applicable for tourism businesses only are discussed.

3.7.4.1 Benefits of EE in tourism businesses

Benefits relevant for general businesses and tourism businesses; EE can give insights to tourism businesses on how to offer more environmentally friendly services while maintaining their added value. Currently, sustainable tourism is an upcoming trend within the tourism sector which deals with minimizing environmental impacts caused by the tourism services offered. Due to increasing awareness to reduce environmental impacts caused by tourism services, EE can be a useful tool to realize the minimization of environmental impacts. Besides being a useful tool, EE also contributes to reduction of natural resources consumption and thus also to reduction of costs, environmental impacts and risks. Furthermore, the reduction to costs gives (tourism) businesses the opportunity to be more innovative, more profitable and therefore to grow and expand (Travelmole, 2014). In short, all the benefits applicable for general businesses stated in section 3.4.1 are also applicable for tourism businesses.

Benefits relevant for tourism businesses; there is an additional benefit of EE for tourism businesses. Tourism businesses should create awareness and encourage both, tourists and local residents, to behave environmentally friendly (Bauer & Chan, 2001). This is a benefit because local residents will also contribute to sustainable development, which has significant value compared to the situation where tourists only contribute to sustainable development.

3.7.4.2 Limitations of EE in tourism businesses

Limitations relevant for general businesses and tourism businesses; It is assumed that the limitations discussed in section 3.4.2 are applicable for both general businesses and tourism businesses. This assumption is made, because the stated limitations in section 3.4.2 are general limitations on the concept of EE which does not depend on the type of business which integrates EE.

Limitations relevant for tourism businesses; there are additional limitations of EE for tourism businesses. First, approaches have been developed in order to accomplish maximum benefits from EE in the tourism sector. However, these approaches have not been evaluated. Second, different tourists' perspectives are required to evaluate the effectiveness of EE in tourism businesses. For example, tourists may not be interested in eco-trips. Using tourists' perspectives allow tourism businesses to respond better on tourist demand with alternative eco-efficient products and services. It has to be mentioned that tourists' perspectives are not always required, for instance when tourism products are changed where tourists does not always have to be aware of the differences. Tourists' perceptions on EE have not been researched yet (Kelly, et al., 2007). Thus, their influence on EE in tourism businesses is still unknown.

In appendix B, a table is provided which includes the application of EE in tourism businesses. As one can see, the definition of EE is similar for general businesses as well for tourism businesses. Tourism businesses should focus on different objectives compared with general businesses. However, the four main strategies are applicable for general businesses as well for tourism businesses. Furthermore, the success factors are applicable for both, general businesses and tourism businesses. As for the benefits and limitations, they are also applicable for both, general businesses and tourism businesses. However, additional benefits and limitations are included for tourism businesses. The additional benefit is that awareness is created by tourists and local residents of the environmental impacts. In addition, they are encouraged to behave environmentally friendly. Two additional limitations are included which are (1) the non-evaluated eco-efficient approaches in practice. (2) influence of tourists' perceptions on EE is still unknown.

3.8 Conclusion

In this chapter, the following two specific research questions were addressed: (1) *what does the concept of EE mean?* and (2) *how to integrate EE?*

For the first specific research question, definitions in academic literature were discussed in order to develop a definition which can be generalized throughout this thesis. Although, academics define EE in different words, they all include the link between the economic and environmental performance of a business in the definition. This link is also considered as the goal of EE, which is thus included in all the definitions of EE. However, EE can be defined in qualitative, as well as quantitative terms. Qualitatively, EE means that added value is created, while environmental impacts are minimized. Quantitatively an EE ratio is defined as $\frac{\text{added value of product or service}}{\text{environmental impact}}$. It is concluded that these definitions of EE are applicable to general businesses as well as to tourism businesses.

The second specific research question addressed how EE can be integrated in general businesses and tourism businesses. In order to come up with a proper answer, the goal, objectives and associated strategies are discussed. Furthermore, success factors and benefits and limitations are discussed. EE strives for the creation of economic value while minimizing environmental impacts; this goal is applicable for general businesses as well for tourism businesses. The following five measureable objectives are identified, for general businesses, to achieve this goal: (1) reduction of energy consumption, (2) reduction of emissions, (3) reduction of toxic materials, (4) dematerialization, (5) reduction of waste disposal. However, for tourism businesses five other objectives are identified due to the major contributions to environmental impacts caused by tourism businesses. These five objectives are: (1) reduction of waste disposal, (2) reduction of CO₂ emissions, (3) reduction of energy consumption, (4) reduction of water consumption.

Four main strategies are associated to the achievement of these five objectives. First, production processes can be re-engineered in order to prevent pollution. Second, by-products can be re-valored by recycling waste in such a way that zero waste units remain. Third, products and services can be re-designed by means of innovation in order to become eco-efficient. Fourth and final, re-thinking markets is an EE strategy by which (tourism) businesses meet consumer demands in eco-efficient ways.

The success factors of integrating EE identified in this chapter are categorized in four main categories (1) organizational embedding, (2) embedding of daily operations, (3) collection of relevant information, (4) brainstorm sessions. These four main categories include underlying success factors, which can be applied by general businesses as well as by tourism businesses.

Furthermore, a list of benefits and limitations of integrating EE is provided for general businesses and tourism businesses.

4. Results

In this chapter, the main findings of the desk-research about the five selected tourism businesses will be discussed. Furthermore, the main findings of the in-depth interviews will be discussed. These main findings of the desk-research and unstructured in-depth interviews will provide an answer on the following specific research question: *Why and how have tourism businesses integrated the concept of EE?*

4.1 Results of desk-research

Tourism sector	'Most popular' tourism business	'Best' tourism business
Accommodation	Fletcher Hotels	NH Hoteles
Attractions	Efteling	Efteling
Transportation	KLM Royal Dutch Airlines	Emirates

Table 3. Tourism businesses selected

These main findings are based on tourism business's annual reports, environmental reports and websites, as was already mentioned in section 3.1. Table two recapitulates the five selected tourism businesses. First, it was studied whether or not the five tourism businesses have integrated in EE. Second, it was studied whether or not their existing environmental policies can be considered as EE when they have not integrated EE. Third, it was studied whether or not their existing environmental policies fits EE in qualitative terms or quantitative terms.

A table is developed included in Appendix C that represents the main findings related to EE of the five tourism businesses. For each tourism business the goal, objectives, strategies, success factors and benefits are identified related to their existing environmental policies. Some of the studied businesses incorporate different objectives towards the achievement of EE. All the EE objectives will be discussed.

As one can notice from the table in appendix C, the column with the goal for integrating EE in ones business is not filled in. No main goal was found in either the annual and environmental reports or the websites. However, it was mentioned in these sources that the businesses strive towards the protection of the environment. In addition, it can be assumed that these businesses strive towards maximum creation of added value as they are commercial businesses. These two elements fits in the goal of EE. Thus, it is assumed that the goal of these five tourism businesses can be considered as the EE goal. Furthermore, no limitations for integrating EE in ones business are mentioned in the table, because this information was found in neither the annual and environmental reports nor the websites.

4.1.1 Fletcher Hotels

Fletcher Hotels distinguishes itself from other hotels by establishing authentic hotel-restaurants in historical buildings. In addition, the hotel-restaurants are established in the nicest and historical spots across the Netherlands (Fletcher Hotels, n.d.^b). Fletcher Hotels have not integrated EE, but CSR (Fletcher Hotels, n.d.^c). However, their objectives, strategies, success factors, and benefits fits in the application of EE as a policy discussed in chapter three. Therefore, it can be concluded that EE is not integrated as a ratio. Thus, their existing CSR policy fits EE in qualitative terms.

4.1.1.1 Objectives and strategies

As one can see in the table included in appendix C, Fletcher Hotels includes the following objectives: (1) Reduction of waste disposal, (2) Reduction of CO₂ emissions, (3) Reduction of energy consumption, (4) reduction of water consumption. In this section, each objective with its associated strategies are discussed. In addition, the strategies are linked to the four main strategies discussed in section 1.2.3.

4.1.1.1.1 Reduction of water consumption

Reduction of waste disposal is considered as an objective to become sustainable. Three strategies are developed in order to achieve this objective. First, water-saving strategies are adopted such as flow controllers in faucets and showers. Second, procedures are established for employees to be aware of their water consumption. In addition, they are taught to act sustainable with water by using minimum amount needed. Third, consumers are asked to use their towels and bed sheets for multiple days as this reduces water consumption by washing machines (Fletcher Hotels, n.d.^d), also known as 'green laundry'.

4.1.1.1.2 Reduction of energy consumption

Fletcher Hotels take energy-saving actions by the following three strategies. First, energy-saving lighting are places throughout the hotels, for instance LED lights and CFLs. Second, motion sensors are place in order to prevent unnecessary energy consumption and in order to use daylight. Third and final energy-efficient equipments are used, such as air-conditioning, vacuum cleaner, etc. (Fletcher Hotels, n.d.^d).

4.1.1.1.3 Reduction of waste disposal

Fletcher Hotels tries to minimize its waste disposal by incorporating three strategies. First, their products are recycled. Second, compostable materials are used in their products. Third and final, effort is put in segregating waste (Fletcher Hotels, n.d.^e).

4.1.1.1.4 Reduction of CO₂ emissions

Fletcher Hotels puts effort in managing CO₂ emissions. First, consumers are encouraged to travel with public transport. Second, consumers are encouraged to travel with bicycle by providing free indoor sheds where they can stall their bicycles. Third and final, consumers are able to rent electric bicycles and electric scooters during their stay. The electric scooters cause minimum environmental impacts as they do not cause direct emissions and they are energy efficient (Fletcher Hotels, n.d.^f).

4.1.1.2 Success factors

Fletcher Hotels identified and adapted six success factors of integrating CSR, which is assumed to play a role in the integration of EE. First, CSR is integrated in the whole business and within each business practice. Thus, business commitment is identified as a success factor. Second, the sustainable business practices are continuously monitored in order to identify successful strategies or pitfalls in strategies which then can be improved. Third, different stakeholders with their different perspectives are taken into consideration. It is aimed to meet every stakeholder's perspectives. However, most of the times this means that consensus has to be achieved. Fourth, consumer awareness is created in order to enhance sustainable business practices, for instance making their consumers aware of the environmental consequences of excessive water consumption, energy consumption, and waste generation, etc. Fifth, employee awareness is created in order to make them aware of the environmental consequences of their practices related to for instance water consumption. Sixth and final, Fletcher Hotels signed a sustainability statement with its suppliers that covers the requirements and agreements on the development of sustainable policy and sustainable cooperation (Fletcher Hotels, n.d.⁶).

4.1.1.3 Benefits

One benefit is mentioned on the website of Fletcher hotels, which is that environmental impacts are reduced due to the integration of CSR (Fletcher Hotels, n.d.⁶).

Below, the matrix is provided which shows the link between EE objectives and EE strategies focused on EE tourism businesses. Furthermore, it shows how the strategies have been executed, by means of plans of action, to achieve the objectives of EE.

Fletcher Hotels	Reduction of water consumption	Reduction of energy consumption	Reduction of waste disposal	Reduction of CO2 emissions
Re-engineer production processes	<ul style="list-style-type: none">- Flow controllers	<ul style="list-style-type: none">- Energy-saving lights- Motion sensors- Energy-efficient equipment		
Re-valorize by-products			<ul style="list-style-type: none">- Recycle- Composting- Segregate waste	

Re-design products and services				
Re-think markets	<ul style="list-style-type: none"> - Employee procedures - Green laundry 			<ul style="list-style-type: none"> - Encourage public transport - Provide indoor bicycle shed - Rent electric vehicles

Table 4. Link between EE objectives and EE strategies by means of plans of action

The matrix shows that although a number of strategies have been executed, there are still strategies which can be undertaken. For instance, plastic and paper can be reduced by re-engineering the production process in order to reduce waste disposal. Furthermore, one can notice that no strategies are executed by re-designing products and services. This means that there are still opportunities to execute strategies in order to reduce environmental impacts.

4.1.1.4 The link between added value and reducing environmental impacts

The author is aware that links should be studied whether or not the implemented strategies to reduce environmental impacts actually influences the added value of the tourism business. However, this information was not found in either the annual and environmental report or on the websites. It can be assumed that executing the strategies of Fletcher Hotels contributes to an increase in their added value. According to Kondoh et al. (2006), recycling products can lead to an increase in added value as they are used one more time. Furthermore, Fletcher Hotels is renting out electric vehicles. According to Kondoh et al., this strategy is identified as time sharing which contributes to an increased added value. The other plans of action executed by Fletcher hotels are identified as rules to reduce costs (Kondoh et al., 2006). It is possible that added value maintained the same or increased due to these savings.

4.1.2 NH Hoteles

NH Hoteles belongs to the top 25 hotels chains in the world. 400 hotels have been established across Europe, America and Africa. NH Hotel is taking responsibility for sustainable development (NH Hoteles, n.d.^a). Services are provided “which anticipate present and future needs of both our internal and external stakeholders” (NH Hoteles, n.d.^a, para. 5). NH Hoteles have not integrated EE, but CSR (NH Hoteles, 2012). However, their objectives, strategies, success factors, and benefits fits in the application of EE as a policy discussed in chapter 3. Therefore, it can be concluded that EE is not integrated as a ratio. Thus, their existing CSR policy fits EE in qualitative terms.

4.1.2.1 Objectives and strategies

4.1.2.1.1 Reduction of water consumption

Water consumption is managed by NH Hoteles using a number of strategies. First, water installations are maintained and checked on their working. Unnecessary loss is avoided by checking on leaks and faults in the water installations. Second, flow controllers and other devices are installed on faucets and showers in order to reduce water consumption. Third, rainwater is recovered and reused for irrigation. Fourth, consumers are asked to use their towels and bed sheets for multiple days as this reduces water consumption by washing machines – known as ‘green laundry’. Final, environmental training is offered to employees in order to learn them how they can deal with water efficiency. In addition, awareness is created for the importance of water consumption reduction (NH Hoteles, n.d.^b).

4.1.2.1.2 Reduction of energy consumption

NH Hoteles puts effort in reducing energy consumption. Seven sustainable strategies are developed and implemented in order to manage the energy consumption. First, energy consumption is monitored and evaluated in order to see whether or not the strategies achieve the intended outcome. In this way, conclusions can be made whether or not the strategies need to be improved. Second, the Relamping Project is integrated in the NH Hoteles. Energy-saving bulbs, such as LED lamps, are placed in the hotels which provide the same quality of light. Third, motion sensors are placed in order to avoid unnecessary energy use. Fourth, centralized energy and climate control systems are installed in order to ensure the right temperature in the hotel rooms, depending on the guest’s use. Fifth, eco lifts are developed and used in the hotels which saves energy (NH Hoteles, n.d.^c). Sixth, renewable energy is purchased – known as green energy. Final, 53 hotels installed solar panels in order to reduce energy consumption (NH Hoteles, 2012).

4.1.2.1.3 Reduction of waste disposal

“NH Hoteles tries to improve the quantity and quality of waste” (NH Hoteles, n.d.^d, para. 1). This is achieved by using the following six strategies. First, biodegradable products are bought and used, as these products are made of environmentally friendly materials by which they break down more quickly. Second, the use of plastic is reduced. For instance, plastic bags are replaced by environmentally friendly bags. Third, cork is reused as insulation material for future hotel buildings. Fourth, paper consumption is reduced by reusing it and by digitizing brochures. Fifth, waste is composted and used as fertilizers in the hotels’ gardens. Final, used kitchen oils is recycled and produces as biodiesel (NH Hoteles, n.d.^d).

4.1.2.1.4 Reduction of CO2 emissions

Four strategies are developed and implemented by NH Hoteles to reduce CO2 emissions. First, a carbon footprint calculator is provided to tourists. Tourists can calculate how much their carbon footprint is during their stay. The intention of the calculator is to create tourists' awareness of the level of carbon emissions emitted. Subsequently, they may behave more environmentally friendly by emitting less carbon emissions. Second, technologies are replaced and innovations are implemented in order to reduce CO2 emissions. Third, consumers are allowed to offset their emissions. They have the opportunity to collaborate in different projects, such as the project of providing efficient stove in Sudan (NH Hoteles, n.d.^e). Fourth and final, the use of electric vehicles is encouraged. Free recharge points are provided to consumers and suppliers. In addition, consumers have the opportunity to rent bicycles and electric vehicles such as electric scooters (NH Hoteles, 2012).

4.1.2.2 Success factors

NH Hoteles identified and adapted seven success factors of integrating CSR, which is assumed to play a role in the integration of EE. First, CSR is integrated in whole business, which means what the whole business is committed to CSR. This means that each department within the business incorporates CSR. Second, a responsible manager in each business department is appointed who coordinates and manages the integration of CSR. Third, as the whole business integrates CSR, employees should show commitment to CSR in order to ensure its integration. Fourth, employees are trained to deal with sustainability in CSR. In addition, awareness is created to the importance of CSR. Fifth, stakeholder dialogue is included in NH Hoteles business decisions. NH Hoteles is committed to its stakeholders and therefore they actively collaborate with their stakeholders. In addition, NH Hoteles believes that actively collaborating with stakeholders have significant value, as sustainable and innovative solutions are developed. Furthermore, NH Hoteles will be able to respond to the stakeholders' expectations and needs. Sixth, environmental commitment is identified as a success factor. NH Hoteles assesses its internal performance related to sustainability by means of questionnaires. In this way, they are committed to the environment as they ensure that their company and products are sustainable. Seventh and final, environmental reports are created to measure its environmental performance and show the outside world how well they perform environmentally friendly (NH Hoteles, 2012).

4.1.2.3 Benefits

Six benefits of integrating CSR have been identified by NH Hoteles. First, CSR allows to reduce environmental impacts. Second, CSR saves costs on for instance water and energy. Third, CSR creates opportunities to develop innovative products and services. Fourth, CSR allows to create a competitive advantage. Fifth, brand differentiation is created due to the sustainable focus of CSR. Sixth and final, CSR implies long-term planning due to the incorporation of a vision for a longer period of time (NH Hoteles, 2012).

Below, the matrix is provided which shows the link between EE objectives and EE strategies focused on EE tourism businesses. Furthermore, it shows how strategies have been executed to achieve the objectives of EE.

NH Hoteles	Reduction of water consumption	Reduction of energy consumption	Reduction of waste disposal	Reduction of CO2 emissions
Re-engineer production processes	<ul style="list-style-type: none"> - Check water facilities - Water reduction devices 	<ul style="list-style-type: none"> - Monitor and evaluate energy use - Relamping Project - Motion detectors - Centralized energy and climate control systems - Ecolifts - Solar power 	<ul style="list-style-type: none"> - Reduce plastic - Reduce paper 	<ul style="list-style-type: none"> - Technology replacement
Re-valorize by-products			<ul style="list-style-type: none"> - Reuse corks - Composting - Reuse oils - Segregate waste 	
Re-design products and services		<ul style="list-style-type: none"> - Green energy 	<ul style="list-style-type: none"> - Biodegradable products 	
Re-think markets	<ul style="list-style-type: none"> - Green laundry - Training and awareness 			<ul style="list-style-type: none"> - Carbon footprint calculator - Carbon offset - Encourage electric vehicles

Table 5. Link between EE objectives and EE strategies by means of plans of action

The matrix shows that although many strategies have been executed, there are still strategies which can be undertaken. For instance, markets can be re-thought by creating customer awareness on the reduction of energy consumption. Furthermore, one can notice that all strategies are executed in order to accomplish one or multiple objectives.

4.1.2.4 The link between added value and reducing environmental impacts

The author is aware that links should be studied whether or not the implemented strategies to reduce environmental impacts actually influences the added value of the tourism business. However, this information was not found in either the annual and environmental report or on the websites. NH Hoteles' added value has decreased in 2012 compared to the preceding year. Furthermore, water consumption, energy consumption, waste disposal and CO2 emissions has decreased globally due to the implementation of the strategies (NH Hoteles, 2012). However, the annual report does not show to what extent the reduction of environmental impacts influences the added value.

Kondoh et al. (2006) developed a number of general rules which increases added value. One of these general rules are that products should be used one more time. This is done by NH Hoteles; corks and oils are being reused. Another general rule is that cleaner methods should be applied, which is also done by NH Hoteles; Green energy is provided to their consumers. The other plans of action executed by NH Hoteles are identified by Kondoh et al (2006) as general rules of costs reduction. It can be assumed that these costs reducing plans of action contributes to the maintenance of added value or to an increase in added value.

4.1.3 Efteling

Efteling is a Dutch amusement park established in 1952 in Noord-Brabant. From 1952, Efteling has built a reputation as being a highly-professional, creative and efficient tourism business. Efteling is characterized with the fairytale theme. It is one of the international leaders of European amusement parks (Efteling, n.d.^a). Efteling have not integrated EE, but CSR (GoodCompany, n.d.). However, their existing CSR policy fits in the EE policy. The objectives, strategies, success factors, and benefits are similar in both policies. Furthermore, EE is not integrated as a ratio.

4.1.3.1 Objectives and strategies

4.1.3.1.1 Reduction of water consumption

Water has a vital role in the Efteling. There are lakes, many fountains and attractions which requires water. In order to consume water efficiently, three strategies have been developed and implemented. First, water is recycled. Second, waste water is purified. A helophyte filter is installed which purifies waste water. This purified waste water is used for irrigating the golf park, for the fountains and for the attractions. Third and final, cold/heat system is installed. Groundwater is used to support the heat of the 'Vogel Rok' attraction. During summer, this water is used to cool the attraction. After the groundwater is used, it is pumped back into the ground for later use. Compared to the initial cooling system, cold/heat system is 50% more efficient (Efteling, n.d.^b).

4.1.3.1.2 Reduction of energy consumption

Two strategies were implemented to reduce energy consumption. First, a combined heat and power system is installed to heat an indoor water playground. This system works energy-efficient. Second, indoor temperature is monitored in order to be energy-efficient (Efteling, n.d.^b).

4.1.3.1.3 Reduction of waste disposal

Only one waste reducing strategy was mentioned on the website, which is the paper-eating character. This character encourages people to dispose their paper in these characters where trash cans are hidden behind the mouth (Efteling, n.d.^b).

4.1.3.1.4 Reduction of CO2 emissions

CO2 reducing objective or strategies were mentioned in neither the annual report nor on the website.

4.1.3.2 Success factors

One of the success factors identified by Efteling is creating environmental awareness by visitors. Using the PandaDroom, a message is passed to visitors. This message includes environmental education and information using animation (Efteling, n.d.^b).

4.1.3.3 Benefits

One benefit is mentioned by the Efteling, which is that environmental impacts are reduced due to the integration of CSR (GoodCompany, n.d.).

Below, the matrix is provided which shows the link between EE objectives and EE strategies focused on EE tourism businesses. Furthermore, it presents the executed strategies to accomplish the objectives of EE.

Efteling	Reduction of water consumption	Reduction of energy consumption	Reduction of waste disposal	Reduction of CO2 emissions
Re-engineer production processes	- Cold/heat system	- Heat and power system - Monitor indoor temperature		
Re-value by-products	- Recycle - Purification waste water		- Paper eating character	
Re-design products and services				
Re-think markets				

Table 6. Link between EE objectives and EE strategies by means of plans of action

The matrix shows that a limited number of strategies have been executed; therefore there are still strategies which can be undertaken. No strategies have been executed by re-designing products and services and by re-thinking markets. Furthermore, no strategies are executed in order to reduce CO2 emissions.

4.1.3.4 The link between added value and reducing environmental impacts

The author is aware that links should be studied whether or not the implemented strategies to reduce environmental impacts actually influences the added value of the tourism business. However, this information was not found in either the annual and environmental report or on the websites. It can be assumed that the plans of action executed by Efteling contributes to an increase in added value as water is recycled; this plan of action fits in the general rule of increasing added value by using products one more time (Kondoh et al., 2006). Furthermore, both systems are applied as cleaner methods which is one of the general rules of increasing added value (Kondoh et al., 2006).

4.1.4 KLM Royal Dutch Airlines

KLM Royal Dutch Airlines (KLM) is established in 1919 for the Netherlands and its former colonies. In addition, it is the world's oldest airline still operating under its initial brand name. KLM is, with Air France, frontrunner of the European airline industry. KLM strives for profitable growth which contributes to business goals, and economic and social development (KLM, 2014). KLM have not integrated EE, but CSR (KLM Royal Dutch Airlines, 2013). However, the elements of CSR is similarly applied as the elements of EE can be applied as a policy. The objectives, strategies, success factors, and benefits fits in the application of EE as a policy. EE is not integrated as a ratio. Thus, their existing CSR policy fits EE in qualitative terms.

4.1.4.1 Objectives and strategies

4.1.4.1.1 Reduction of water consumption

Water consumption is controlled and manages in order to avoid unnecessary use. First, water consumption is monitored in order to implement effective strategies for water reduction. Second, flow controllers are installed on faucets in order to save water. Third, water is reused for maintenance (KLM, n.d.^a).

4.1.4.1.2 Reduction of energy consumption

KLM strive to reduce energy consumption. By achieving this, six strategies are developed and implemented. First, a sustainable building designed at Schiphol. The roof of the building "features a sun canopy and insulated glass with high reflection factor" (KLM, n.d.^b, para. 1). Second, energy-saving lamps are installed. Third, sensors are installed which reduces light when daylight increases. Fourth, heat recycle system is installed in the ventilation system. This requires less energy to heat air. In addition, hot air is reused in heating water. Fifth, geothermal exchange system is installed in order to store energy surplus in the ground for future use. Pumps are used to store and gain the energy from the ground. Sixth and final, solar power is used to gain energy and supply it to KLM's buildings (KLM, n.d.^b).

4.1.4.1.3 Reduction of waste disposal

Four strategies are incorporated in order to reduce waste disposal. First, waste is recycled. Second, waste is converted into energy. Third, waste is segregated. Fourth, waste is reused. Fifth, paper consumption is reduced (KLM, n.d.^c).

4.1.4.1.4 Reduction of CO2 emissions

As an airline business, KLM produces CO2 emissions as major contributor to environmental impacts. In order to reduce the CO2 emissions, KLM developed and implemented seven strategies. First, sustainable biofuel is used in aircrafts. Second, optimal flights are encouraged. Flight procedures and air space are optimized in order to reduce fuel consumption. Third, engine water wash is introduced. Aircraft engines interiors are washed "to ensure better performance and lower fuel consumption" (KLM, n.d.^d, para. 2). Fourth, fuel efficient fly is encouraged. The lighter the aircraft, the less fuel is used; therefore aircrafts are designed as light as possible in order to fly fuel efficient. Fifth, innovative aircrafts are introduced to reduce CO2 emissions. Aircrafts and engines are innovated in

order to contribute to this reduction. Sixth, the use of public transport and bicycles is encouraged. KLM have developed a special bicycle for its employees to move around the KLM and Schiphol buildings (KLM, n.d.^e). Seventh and final, passengers have the opportunity to offset their CO2 emissions by investing in sustainable projects (KLM, n.d.^f).

4.1.4.2 Success factors

KLM identified four success factors for integrating CSR in their business. First, stakeholder perspectives are included in their business decisions. Different stakeholders with their different perspectives are included in the stakeholder dialogue with KLM. Balances are found between the different perspectives in order to maintain good relationships with them. Second, KLM cooperates with other businesses and organizations, such as SkyNRG, in order to find sustainable solutions and strategies. In this way, they can effectively contribute to reducing environmental impacts while creating added value. Third, KLM motivates its employees to behave more environmentally friendly. Fourth and final, environmental reporting is done to report the developments in environmental performance (KLM Royal Dutch Airlines, 2013).

4.1.4.3 Benefits

According to KLM, integrating CSR has the following two benefits. First, it allows costs reduction. Second, it allows environmental impacts reduction (KLM Royal Dutch Airlines, 2013).

Below, the matrix is provided which shows the link between EE objectives and EE strategies focused on EE tourism businesses. Furthermore, it presents how strategies have been executed to achieve the objectives of EE.

KLM	Reduction of water consumption	Reduction of energy consumption	Reduction of waste disposal	Reduction of CO2 emissions
Re-engineer production processes	<ul style="list-style-type: none"> - Monitor water consumption - Saving faucets 	<ul style="list-style-type: none"> - Energy-saving lamps - Sensors - Geothermal exchange system - Solar power 	<ul style="list-style-type: none"> - Reduce paper 	<ul style="list-style-type: none"> - Biofuel - Optimal flights - Engine water wash - Fuel efficient fly
Re-valorize by-products	<ul style="list-style-type: none"> - Reuse 	<ul style="list-style-type: none"> - Heat recycle system 	<ul style="list-style-type: none"> - Recycle - Energy production - Segregate waste - Reuse 	

Re-design products and services		- Sustainable building		- Innovative aircrafts
Re-think markets				- Encourage public transport and bicycle - Carbon offset

Table 7. Link between EE objectives and EE strategies by means of plans of action

The matrix shows that although various strategies have been executed in order to accomplish all EE objectives. Furthermore, one can notice that effort is made to reduce environmental impacts by executing multiple strategies from the main categories.

4.1.4.4 The link between added value and reducing environmental impacts

The author is aware that links should be studied whether or not the implemented strategies to reduce environmental impacts actually influences the added value of the tourism business. However, this information was not found in either the annual and environmental report or on the websites. KLM's added value increased in 2013 compared to the preceding year. In 2013, €133 million was generated compared to 2012 where €98 million was generated (KLM Royal Dutch Airlines, 2013). However, it was not found whether or not the environmental impacts of KLM was decreased, increased or maintained the same. Furthermore, it was not found to what extent the reduction of environmental impacts influences added value. However, it can be assumed that the more environmentally performance of KLM contributes to an increase in added value. KLM executed plans of action which fit in the general rule for increasing added value by using products one more time, as waste is recycles and water is reused. Furthermore, waste is transformed into energy which is identified as one of the rules for increasing added value. Cleaner methods is applied by means of solar power which also leads to increased added value (Kondoh et al., 2006). As KLM's plans of action fits into the general rules for increasing added value of Kondoh et al. (2006), it can be assumed that the reduction of environmental impacts positively influences added value. The remaining plans of action do fit in the general rules of costs reduction developed by Kondoh et al. (2006). For instance, technological innovation is identified as one of the general rules of costs reduction. The plan of action of innovative aircrafts fits in this general rule of costs reduction. As costs are reduced, it can be assumed that this contributes to the maintenance or increase in added value.

4.1.5 Emirates

Emirates is a fast-growing international airline established in Dubai, United Arab Emirates. Emirates has a strong brand name in the airline industry. It has been recognized for service excellence and its explosive growth (Emirates, n.d.^a). Emirates have integrated EE (The Emirates Group, 2013-2014). Their objectives, strategies, success factors, and benefits fits in the application of EE as a policy. Therefore, it can be concluded that EE is not integrated as a ratio. Furthermore, it can be concluded that their existing EE policy fits EE in qualitative terms.

4.1.5.1 Objectives and strategies

4.1.5.1.1 Reduction of water consumption

According to the website of Emirates, it is planned to implement water-saving strategies in the coming year (Emirates, n.d.^b).

4.1.5.1.2 Reduction of energy consumption

According to the website of Emirates, it is planned to implement energy-saving strategies in the coming year (Emirates, n.d.^b).

4.1.5.1.3 Reduction of waste disposal

The Emirates developed an initiative to recover and recycle materials, including aircrafts' interior. Furthermore, the use of paper is reduced (The Emirates Group, 2013-2014).

4.1.5.1.4 Reduction of CO2 emissions

"For an airline, overwhelmingly it is the use of jet fuel that shapes its environmental footprint" (The Emirates Group, 2013-2014, p. 20). "Carbon dioxide emissions are directly related to jet fuel consumption" (The Emirates Group, 2013-2014, p. 28). Six strategies have been developed and integrated by The Emirates in order to reduce CO2 emissions. First, The Emirates tries to plan flights efficiently, for instance by having a flexible routing program. Second, efficient aircrafts are bought. These new young aircrafts include efficient technologies and weigh less, which increases the efficiency of the flights. Third, efficient engine technologies are incorporated. Fourth, electric vehicles are introduced, which is currently being trialed. Fifth, consumers have the opportunity to offset their emissions. Sixth and final, biofuel is used in the aircrafts (The Emirates Group, 2013-2014).

4.1.5.2 Success factors

Five success factors are identified for integrating CSR in their business. First, employee awareness is created for the environmental impacts by means of the environmental policy. In addition, this environmental policy is communicated to everyone internal and external to Emirates business, including employees, consumers and stakeholders (Emirates, n.d.^c). Second, employees are motivated. 'Environment Champions' is created where employees can show their passion for the environment. These employees must take an approach to protect the environment and be the example for many others. In addition, many other environmental projects and events are established

to create awareness among employees and to get employees motivated (Emirates, n.d.^d). Third, stakeholder dialogue is taken into consideration. Fourth, environmental reports are published every year that present Emirates' commitment to the environment and environmental developments. Fifth and final, partnerships are initiated with other businesses and institutions in order to develop environmental initiatives (The Emirates Group, 2013-2014).

4.1.5.3 Benefits

Emirates point out two benefits of integrating EE. First, it allows costs reduction. Second, it allows environmental impacts reduction (The Emirates Group, 2013-2014).

Below, the matrix is provided which shows the executed EE strategies implemented to accomplish EE objectives.

Emirates	Reduction of water consumption	Reduction of energy consumption	Reduction of waste disposal	Reduction of CO2 emissions
Re-engineer production processes			- Reduce paper	- Efficient flight planning - Biofuel
Re-valorize by-products			- Recycle	
Re-design products and services				- Efficient aircrafts - Efficient engine technologies
Re-think markets				- Encourage electric vehicles - Carbon offset

Table 8. Link between EE objectives and EE strategies by means of plans of action

The matrix shows that no strategies are executed in order to achieve the reduction of water and energy. It was earlier mentioned that Emirates is developing these strategies which will be implemented in the upcoming year. Furthermore, much effort is made to reduce CO2 emissions.

4.1.5.4 The link between added value and reducing environmental impacts

The author is aware that links should be studied whether or not the implemented strategies to reduce environmental impacts actually influences the added value of the tourism business. It is found in Emirates environmental report that CO2 emissions efficiency decreased with 0.98% change compared to the preceding year. Furthermore, it is found that fuel efficiency has increased with 0.79% change compared to the preceding year. This means that the strategies implemented to reduce CO2 emissions have not been effective. However, it is found that the operating profit and the operating margin has increased compared to the preceding year, due to more environmentally friendly

performance. The profit margin is increased compared to the preceding year with 1 point/% change (The Emirates Group, 2013-2014).

4.1.6 Overall results of desk-research

This chapter has tried to come up with an answer on the research question: *in what respect have tourism businesses integrated EE?* The most remarkable point of studying the five tourism businesses was that none of the tourism businesses have integrated EE either as policy or ratio. However, their practices fits with the definition, goal, objectives, strategies, success factors and benefits of EE as a policy. They do not acknowledge their business policy as EE, but as CSR (except for Emirates). Four out of the five tourism businesses claim that they integrated the principle of CSR in their business practices. This means that the concepts of CSR and EE is used interchangeable. However they are two different concepts, explained in section 2.6.2. The fifth tourism businesses, which is Emirates, claims to have integrated EE in their business practices. However, they speak of the triple bottom line which is people, planet, and profit. According to the definition of EE used in this thesis, the people aspect is not covered by the concept of EE (Emirates, n.d.⁶). This means that the concept of EE is used incorrectly. In spite of this incorrect use, it is argued that Emirates have also incorporated EE in their business based on their goal, objectives, strategies and success factors. These elements do fit within this thesis's application of EE. Thus, Emirates integrates EE in a correct way, but defines the concept of EE incorrectly.

Second, the five tourism businesses have not stated explicitly an eco-efficient goal on their websites or in their annual and environmental reports. However, the five tourism businesses are commercial businesses, which means that they aim to create maximum added value. Moreover, the five tourism businesses stated that they want to take responsibility for the environment by reducing environmental impacts, in order to sustain the world (The Emirates Group, 2013-2014; NH Hoteles, 2012; KLM Royal Dutch Airlines, 2013; Fletcher Hotels, n.d.⁶). Combining these two elements, added value and reduction of environmental impacts comes down to the goal of EE. The goal of EE is *maximize added value of a business's products and services while improving the environmental performance*. Thus, it is assumed that the five tourism businesses have an eco-efficient goal.

Third, EE strategies have been unconsciously implemented to achieve EE objectives. It is found that production processes are re-engineered and markets are re-thought, in order to achieve the objective of reduction of water consumption. In addition, Efteling and KLM re-valorizes by-products in order to achieve the reduction of water consumption. Production processes are re-engineered, and products and services are re-designed, in order to achieve the reduction of energy consumption. In addition, KLM re-valorizes by-products in order to achieve a reduction in energy consumption. In order to achieve a reduction of waste disposal, all tourism businesses re-valorize by-products. NH Hoteles, KLM and Emirates also re-engineers production processes. Furthermore, NH Hoteles also re-designs products and services. Markets are re-thought in order to achieve the reduction of CO2 emissions. Furthermore, NH Hoteles re-engineers production processes. In addition, KLM re-designs products and services to reduce CO2 emissions. Emirates adopts all EE strategies except re-valorizing by-products, in order to reduce CO2 emissions.

For water consumption, tourism businesses have not integrated the EE strategy of re-designing products and services. For energy consumption, tourism businesses have not integrated the EE strategy of re-thinking markets. Furthermore, the strategy of re-valorizing by-products is only adopted by KLM. For waste disposal, none of the tourism businesses implemented re-think markets as a EE strategy. Furthermore, only one re-designs products and services in order to reduce waste disposal. For CO₂ emissions, all tourism businesses have implemented the strategy of re-think markets, except for Efteling. Only the strategy of re-valorizing products is not implemented by any of the tourism businesses. It can be concluded that although all EE strategies are implemented to achieve multiple EE objectives, there are still opportunities for tourism businesses to implement EE strategies. For instance, re-think markets is not implemented by the tourism businesses to reduce energy consumption and waste disposal. Furthermore, none of the tourism businesses have implemented the EE strategy of re-designing products and services in order to achieve a reduction in water consumption. Overall, attention is paid to all EE strategies in order to achieve one or multiple EE objectives.

It is assumed that the plans of action executed by the five tourism businesses do have an positive influence on added value. Most of the plans of action fit in the general rules for increasing added value developed by Kondoh et al. (2006). Furthermore, Müller and Sturm (2001) argue that businesses who have perform environmentally friendly above average, has in all probability an increased added value.

In short, tourism businesses have not integrated EE consciously. However, some elements of EE as a policy are applied by accident such as reducing water consumption. The EE ratio is not integrated.

4.2 Results of in-depth interviews

The results of the in-depth interviews are based on the conducted in-depth interviews included in appendix D.

4.2.1 Definition of EE

None of the interviewees were familiar with the concept of EE, except for Mrs. Griep. She already had experiences with the concept. The interviewer had to explain in each of the three interviews what EE is.

4.2.2 Relevance of EE in tourism businesses

There are different perspectives on the relevance of EE in tourism.

First perspective, three out of four interviewees are positive about the EE. The fourth Koning Aap is not positive about EE as it is too complex. According to the three interviewees, EE is about reducing environmental impacts; that is what all tourism businesses should work on. In fact, many tourism businesses are already taking responsibility for the environmental by reducing environmental impacts of their business practices. SNP points out that being environmentally friendly while maintaining added value is having the best of both worlds. Furthermore, Mrs. Griep argues that nowadays tourism businesses are almost required to perform eco-efficiently. Transparency is already demanded by society on the environmental impacts caused by products and services. However, Mrs. Griep argues that tourism is still behind in this development. According to academic literature, EE is an upcoming concept as it is related to sustainable development (Glavič & Lukman, 2007; Gössling et al., 2005), which still need to find its place in tourism businesses.

On the contrary, BookDifferent, Koning Aap and SNP argue that EE is an abstract concept; therefore tourism businesses are hesitant to integrate EE. Many businesses do not know what the concept means and how it can be dealt with. In addition, Mrs. Griep points out that tourism businesses are hesitant to integrate EE as the urge is not that high since consumers do not demand from a tour operator to be eco-efficient. BookDifferent argues that EE can be valuable when labels can be attached to the outcome of the measurement, only then EE is relevant in tourism businesses. According to all four interviewees, it is most important that EE should become more concrete and clear. According to Koning Aap, sustainability concepts such as CSR and EE are abstract concepts which is difficult to explain to consumers; therefore it is necessary to clarify these concepts. In academic literature it is already discussed that there is a lack of clarity concerning the EE concept as the definition is not clear and the required conditions to integrate EE is not clear (Kondoh, Kurakwa, Kato, Umeda & Takata, 2006).

In addition, SNP argues that EE is a limited concept as it does not cover the social aspect of sustainability. Therefore, the interviewee argued that tourism businesses should rather choose to integrate the concepts of sustainable tourism or CSR as they include the three aspects: (1) economic, (2) environmental, (3) social. Thus, sustainable tourism and CSR are the broader versions of EE. Therefore, SNP argues that EE does not have significant value in practice. In addition, SNP states that it does not matter what name is given ones principle, whether or not it is EE, sustainability or CSR. According to SNP and Koning Aap, the main point is that environmental impacts is reduced at no cost

of added value. However, BookDifferent and Mrs. Griep argue that when EE is integrated in existing business policies, it does not matter that EE excludes the social aspect. According to them, most of the times, existing business policies do include the social aspect; therefore it will be integrated anyway.

Third, according to BookDifferent, SNP and Mrs. Griep, EE can be relevant as a ratio for tourism businesses. Mrs. Griep adds to this that the EE ratio measures the effectiveness of environmentally friendly strategies. Other sustainability concepts establishes procedures to reduce environmental impacts without actually measuring the effectiveness. However, Koning Aap argues that the EE ratio is too complex. Two reasons are mentioned for the relevance of EE ratio by the three positive interviewees. First, BookDifferent points out that when an EE ratio is integrated in hotel, small hotels will have equal opportunity to show how eco-efficient they perform. Nowadays, large hotels have the financial means to afford eco-certificates. However, small hotels are not able to afford eco-certificates; therefore, they lose the opportunity to be recognized as eco-hotels. When an EE ratio is integrated, large and small hotels will be able to show the outside world how eco-efficient they perform. In this way, an objective perspective of eco-efficient performances of hotels is provided by the EE ratio. For example, a small hotel performs 79% eco-efficient compared to a large hotel which performs 50% eco-efficient. So BookDifferent argued. Thus, the EE ratio gives insight in the eco-efficient performance of tourism businesses. Second, the EE ratio is added value of product or service divided by environmental impact. According to Mrs. Griep and SNP, this ratio can be used to reconsider the products and services offered by tour operators. For instance, when trip A is highly profitable and causes less environmental impacts, it could be considered to promote and offer that trip more to the consumers. However, when trip B is less profitable and causes more environmental impacts, it could be considered to not offer that trip. In this way, the EE ratio is used as an internal tool to improve the EE of the product portfolio. So the interviewees said.

However, there are a number of pitfalls pointed out by the interviewees. First, BookDifferent points out that the EE ratio should be applicable to every element of EE, such as water, energy, waste, and CO₂. Although it will be easier to include all those elements in one ratio and thus one value, it will be too complex and not feasible. Second, according to BookDifferent, SNP and Mrs. Griep the ratio needs to be clear. Tourism businesses need to know how this ratio has to be conducted and applied within tourism businesses. Furthermore, tourism businesses need to know which variables are included in this EE ratio as there are many factors. In addition, the relevance of the outcome for consumers need to be explored. Third, BookDifferent and SNP argue that the EE ratio outcome needs to be clear for consumers. For instance, what EE means, how consumers can deal with it, and what the EE outcome means, etc. The EE ratio is only relevant for tourism businesses when it is clear for both, tourism businesses and consumers. For example, when a tourism business states that it is 75% eco-efficient, consumers need to know what this number means. However, Mrs. Griep points out that the EE ratio should be used internally; consumers should not be bothered with it as it is irrelevant for them and too difficult. It should rather be used for product marketing. Fourth, BookDifferent argues that the EE ratio will only be effective when significant number of businesses integrate it, otherwise there will be no effect on the intended outcome to achieve sustainable development. As already mentioned earlier, no in-depth explanations are provided in academic literature related to the EE ratio. Thus, clarity of the EE ratio lacks in academic literature.

Fourth, Koning Aap argues that EE is a complicated tool for tour operators compared to airlines and hotels. Tour operators find it difficult and too complex to apply EE to all the tourism trips offered. In addition, Koning Aap argues that applying EE to all the tourism trips is too much work. Tour operators can apply the element of CO₂ in tourism trips, this is what the CARMATOP project is working on. For instance, encourage consumers to travel by train rather than aircraft when it is more CO₂ efficient. Furthermore, EE can be applied in tour operators internal. Employees should perform eco-efficient. However, Mrs. Griep points out whether or not this will have significant value, because initially it is about offering eco-efficient products or services. Furthermore, she argues that the outcome of minimizing environmental impacts internally is minimal. According to Koning Aap and Mrs. Griep, EE is more relevant for tourism businesses such as airlines and hotels than for tour operators. In addition, Mrs. Griep argues that tour operators will not be able to earn money with the integration of EE. Replacing an indirect flight with a direct flight is often expensive. It is even expensive in most of Asian countries to travel by train than to travel by domestic flight. This outcome is not mentioned in academic literature.

Overall, EE is more relevant as an internal tool than as a self-contained concept.

4.2.4 How EE should be integrated in tourism businesses

According to the interviewees, EE can be integrated in tourism businesses in four ways.

First, according to BookDifferent, SNP and Mrs. Griep EE can and should be used as a tool within CSR. CSR is supported by many businesses in the Netherlands. CSR is integrated by businesses as a policy. However, businesses want to measure everything in order to evaluate its usefulness and effectiveness. Therefore, EE should be integrated as a ratio within CSR to calculate the effectiveness of EE strategies. This means that business practices are measured how eco-efficient they are. Mrs. Griep adds that EE needs to be integrated within existing general business policies. For example, a product manager should take EE into account when designing new tourism trips. When EE will be integrated as a self-contained concept, tourism businesses will not be willing to integrate EE at all. Thus, EE should be included as an aspect or tool within the general business operations, as these are intertwined. EE is about measuring environmental impacts by means of numbers. CSR, for instance, is about establishing procedures to reduce environmental impacts by means of words.

According to BookDifferent, values should be associated to the different elements of EE, such as waste management, water management, energy management, and CO₂ management, in order to communicate it to consumers. Subsequently, these values should represent the level of EE of hotels, trips, and other goods and services provided. Based on these values EE strategies should be able to monitored and evaluated for possible improvements in order to become even more eco-efficient. In addition, these eco-efficient values should be labeled, for instance with the colors red, orange and green, to indicate the level of EE. When the eco-efficient performance of a tourism trip is low, it will be labeled red. For example: when the EE performance of tourism trip is high, it will be labeled green. This provides a clear picture of the eco-efficient performance of tourism businesses.

BookDifferent, SNP and Mrs. Griep point out that EE is relevant in tourism businesses when integrated as a ratio. The ratio provides insight on the effectiveness of environmentally friendly

strategies. Furthermore, it provides insight on the eco-efficient performance of tourism businesses to improve the product portfolio. However, they point out that the ratio should be clear and simple to integrate by tourism businesses.

Furthermore, according to all the interviewees the EE ratio can be integrated internally. For instance, measuring how much water is consumed in year 1 compared to year 2. In this way, one can evaluate how much water consumption has been reduced. As already mentioned by Koning Aap and Mrs. Griep, integrating EE in tour operators is different from integrating EE in airlines and hotels. For airlines and hotels it is easier to keep track of the EE values as water consumption, CO₂ emissions, energy consumption and waste consumption is easier to track. For tour operators it is not easy to keep track of all these elements. Tour operators provide tourism trips. So, the only thing they can keep track of is the CO₂ emissions of each tourism trip by means of the CO₂ calculating tool, which is currently being developed in the CARMATOP project. In addition, they can offer eco-hotels. However, according to Mrs. Griep this does not add value to the tour operator's eco-efficient performance.

Second, BookDifferent points out that EE can be integrated in tourism businesses by means of an eco-certificate. In addition, BookDifferent raises the idea that EE can be used as a tool within large certifying businesses such as ISO. In this way, EE will be integrated as a tool in the ISO-certificate. The point of EE is that it should be recognizable and clear to consumers what the added value is of businesses which perform eco-efficient. Consumers should know when a business integrates EE, what it means and what its value is, in order to choose for eco-efficient businesses than general businesses. However, all interviewees point out that consumers do not know what eco-certificates mean since eco-certificate is a business-to-business concept. In addition, they argue that most tourism businesses do already have multiple eco-certificates; therefore, they are not willing to have an additional one based on EE. Furthermore, eco-certificates are expensive as various numbers of regulations and requirements have to be met. Integrating these strategies is expensive. In short, EE by means of an eco-certificate is too complex for consumers. In addition, eco-certified businesses are not willing to an additional eco-certificate. The main point is that consumers should know which tourism businesses perform eco-efficient. Making this clear to the consumers should be kept as simple as possible. Thus, an alternative approach should be taken into consideration; the EE ratio for instance.

4.2.5 Success factors for integrating EE in tourism businesses

- *Top management:* According to Mrs. Griep, EE should be integrated taking account of top management as a success factor. She argues that top management is necessary to emphasize the importance of EE principles. When top management is not committed to EE, other business departments will also not be committed to EE.
- *Business commitment:* According to Koning Aap, EE should be integrated taking account of business commitment. Mrs. Griep adds to this that EE should be integrated in all business' operations.
- *Employee commitment:* According to Koning Aap and Mrs. Griep, employee awareness should be an EE success factor. Employees should be committed to use EE in order to achieve eco-efficient business practices, and tourism products and services. Employees should behave environmentally friendly in order to contribute to the business' level of EE. According

to this thesis' author this success factor can be integrated within employee commitment. SNP adds to this that it is also important that all the employees gain greater understanding about the concept of EE in order to commit themselves to eco-efficient business practices. It should be clear what the concept means, how value can be created to the business by means of it, and how it should be used.

- *Employee training:* Koning Aap identified employee training as an EE success factor. Employees should be trained how to perform eco-efficient. In addition, employees should be trained how and what information should be provided to consumers. Consumers should be informed how they can change their behavior in order to reduce environmental impacts.
- *Creating consumer awareness:* According to BookDifferent, Koning Aap and SNP, creating consumer awareness should be a success factor of EE. It is important to create consumer awareness of environmental impacts when it comes to EE as a policy. Consumers should change their behavior in order to achieve sustainable development. For example, when consumers demand a high polluting flight to for instance New Zealand, tour operators will keep providing it. Another example, when consumers demand paper brochures instead of digital brochures, tour operators are required to offer paper brochures. Creating consumers awareness of environmental impacts might cause a change in consumer behavior. It must be noted that when EE is integrated as a ratio, the creation of customer awareness is not necessary. However, Mrs. Griep did not identify creating consumer awareness as a success factor as she argues that integrating EE should not be communicated to consumers.
- *General support:* BookDifferent identified general support as a success factor of EE. Other businesses should support EE in order to make EE effective.

4.2.5 Benefits of integrating EE in tourism businesses

The following benefits of integrating EE in tourism businesses were mentioned by the interviewees.

- *Reduction of environmental impacts:* All four interviewees point out that tourism businesses are able to reduce environmental impacts when EE is integrated. In particular, SNP adds to this that tourism businesses are able to protect and sustain the environment.
- *Improvement of tourism businesses' image:* Koning Aap argues that tourism businesses that integrate EE benefit as it improves the business image. Eco-efficient tourism businesses show the outside world that they take care of the environment.
- *Increased added value:* BookDifferent, SNP and Mrs. Griep point out that integrating EE contributes to the generation of increased added value.
- *Reduction of costs:* All four interviewees argue that integrating EE allows tourism businesses to reduce costs.
- *Attraction of consumers:* Koning Aap argue that integrating EE allows tourism businesses to attract consumers to more environmentally friendly products and services.
- *Enhancement of tourism business's competitive position:* BookDifferent argues that businesses who integrate EE are able to distinguish itself from other businesses due to the creation of competitive advantage. Koning Aap complements on this success factor arguing that integrating EE leads to an enhance competitive position.
- *Insight in EE performance:* Bookdifferent identified the benefit that EE provides insight on the level of eco-efficient performance. Mrs. Griep adds to this by arguing that EE measures elements such as CO2 by which a change in consumer behavior can be achieved.

4.2.6 Limitations of EE in tourism businesses

The following limitations of integrating EE in tourism businesses were mentioned by the interviewees.

1. *EE is an abstract concept*: According to BookDifferent, Koning Aap and SNP, EE is a complex and abstract concept; therefore tourism businesses are hesitant to integrate EE.
2. *EE is difficult to integrate*: Koning Aap argues that the difficulty to integrate EE is a limitation. She argues that tour operators do not know how EE should be integrated on the tourism trips. Mrs. Griep points out that it is almost impossible to measure all elements of EE in all different products and services. Furthermore, the EE ratio should be able to measure all elements of EE, which makes it complex. However, SNP and BookDifferent did not identify this limitation as they already argued that the concept is too complex and abstract.
3. *EE is a limited concept*: SNP argues that EE is a limited concept as it excludes the social aspect.

A table is created, included in appendix E, which provides an overview of the discussed interview results. This table includes the objectives, strategies, success factors, benefits and limitations of the integration of EE mentioned by the interviewees.

In this chapter, it was researched why and how tourism businesses have integrated the concept of EE; which is the third specific research question of this thesis. In short, tourism businesses integrate EE when they can gain from it, which is logical. However, currently tourism businesses do not integrate EE. They are even not familiar with the concept. When a tourism business does not gain from a new situation, such as integrating EE, it is likely that they will hang on to the existing situation. Furthermore, the outcome of the desk-research was that tourism businesses have integrated elements of EE unconsciously by means of an environmental policy. Many strategies have been developed and implemented to reduce environmental impacts. These strategies are able to achieve EE objectives, such as reducing water consumption. Empirically, tourism businesses argue that EE should be integrated by means of a ratio. In this way, EE strategies are evaluated on their effectiveness. In addition, profitable and eco-efficient products and services can be promoted more and provided to consumers compared to products and services that are less profitable and less eco-efficient.

5. Discussion

In this chapter, the findings are discussed and checked for possible significant confirmations or significant innovative additions to existing literature. The applicability of EE in general businesses is compared to the applicability in tourism businesses. Three tables, included in appendix A, B and E are compared as they give insight in the applicability of EE to tourism businesses.

Discussion on EE concept versus EE tool

There are two perspectives on the integration of EE. EE can be integrated by means of a policy and by means of a ratio.

EE as a policy

As was already seen in the results of tourism businesses, EE is unconsciously used in existing business policies. For instance, EE strategies are implemented to achieve EE objectives which subsequently strive towards accomplishing EE goal. It must be noted that not all EE strategies are used by tourism businesses which means that EE can be better integrated in tourism businesses. Thus, what they miss is using EE to select the most effective strategies and instruments to improve EE.

Furthermore, the idea was raised to integrate EE in tourism businesses by means of eco-certificates. According to one of the interviewees, eco-certificates raise reliability towards businesses and consumers. However, many tourism businesses already have a number of eco-certificates and thus are not willing to have an additional one. In addition, it assumes that tourism businesses which do not have eco-certificates do not provide quality products or services. This is often not the case. For instance, local hotels can also deliver high quality products and services, even though they might not have an eco-certificate. Thus, according to this thesis' author, integrating EE by means of an eco-certificate is not a good idea.

EE as a ratio

It is argued in the interviews that EE will be more relevant for tourism businesses as a ratio. The author points out that although EE can be defined in qualitative terms, it should be integrated in tourism businesses in quantitative terms. EE is more relevant to integrate as a tool in existing business policies. An important remark is that EE has to be supported by other tool as EE alone does not ensure sustainable development. The author is aware of the fact that EE as a ratio is not clear and still too complex. However, effort should be made to clarify this ratio in order to integrate it. No evidence was found that tourism businesses integrated EE in quantitative terms.

Furthermore, EE ratio is an internal tool and should not be communicated to consumers as it will not impress consumers. Consumers do not even know what EE means and how it should be dealt with, so making them aware that you integrated EE in your business will not make sense to consumers.

Overall, this thesis' author argues that EE can better be integrated as a ratio, rather than as a policy. EE is more useful for general businesses as well as tourism businesses as ratio, because it provides insight whether or not the environmental performance compromises the business' added value. In addition, this ratio provides insight on products and services which allow general businesses as well as tourism businesses to reconsider their product and service offerings. According to Saling et al. (2002), EE ratio is a tool for internal decision-makers and also for "placing new accents in product

marketing''. When EE is integrated as a ratio, it will be easier to integrate it in existing business policies, for instance within CSR. CSR provides strategies to reduce environmental impacts and EE measures the effectiveness of these strategies on environmental impacts reduction associated to the business' added value. When CSR and EE are both used within a business policy, all three aspects of sustainable development will be covered in a business' policy. According to van Swigchem and de Haan (2001), EE is an powerful tool when integrated quantitatively. The ratio allows both types of businesses to prioritize more environmentally friendly initiatives, to set clear visions and to compare businesses' eco-efficient performances.

EE integration in tourism businesses

It is argued that EE is more difficult to integrate by tour operators compared to other tourism businesses such as airlines and hotels. According to the interviewees, tour operators provide many different tourism trips. Applying EE to these tourism trips is difficult and takes too much effort. Furthermore, some elements of EE cannot be measured by tour operators related to tourism trips. For instance, tour operators are not aware how much water their consumers consume in tourism destinations. This means that tour operators cannot keep track of these records. It seems that only CO₂ can be measured by tour operators as they have access to numbers of CO₂ emissions per travel caused by for instance aircrafts or trains. According to this thesis' author, the above mentioned arguments regarding the difficulty for tour operators to integrate EE are justified.

Exclusion of social aspect

It is argued in academic literature as well as by interviewees that EE is a limited concept as it does not cover the social aspect of sustainable development. Therefore, it is argued to integrate sustainable development concepts, such as CSR, which covers all three aspects of CSR. Furthermore, it is argued that the exclusion of the social aspect also limits EE as a tool, ratio in particular, since it does not measure social development.

According this thesis' author, it is not necessary for EE as a concept and as a ratio to cover the social aspect. There are other instruments and other ways which includes the social aspect such as CSR. EE is established to measure the environmental impacts associated to added value. The author thinks it is good that EE has this particular focus on added value and environmental impacts as it provide insight which is meaningful for both, general businesses as well as tourism businesses. A concept or tool cannot always include all aspects as it makes it more complex. In order to support the argument of the author an example is provided. For a carpenter, he or she cannot make a table by using a hammer to paint it. However, that does not make the hammer an useful tool as it is still needed to create the table (P. Peeters, personal communication, June 17, 2014). Thus, the fact that EE excludes the social aspect of sustainable development should not be seen as limitation or as a negative issue of EE. However, it must be noted that due to the exclusion of the social aspect, it is necessary that EE is supported by other tools which do include the social aspect.

Discussion on the application of EE in general businesses versus tourism businesses

Elements of EE were discussed in desk-research on the application of EE to general businesses and tourism businesses. The author will discuss each element and its applicability to general businesses and tourism businesses.

Applicability of EE as a policy to general businesses and tourism businesses

- *Definition of EE:* EE can be defined in qualitative terms as well as quantitative terms. Both definitions are applicable to general businesses as well as tourism businesses as both types of businesses are able to create added value while minimizing environmental impacts.
- *Goal of EE:* The goal of EE is defined as maximize added value of a business's products and services while improving the environmental performance. Both types of businesses aim to reduce environmental impacts without compromising its added value.
- *Strategies of EE:* Four main strategies were identified to achieve the above mentioned objectives. Even though the objectives of tourism businesses are different from that of general businesses, these four main strategies are applicable to both, tourism businesses as well as general businesses.
- *Success factors of EE:* All success factors are applicable to general businesses and tourism businesses. However, four additional success factors were identified. Three of them were identified based on the annual and environmental reports of the five tourism businesses, which are environmental reporting, environmental commitment and cooperation with other businesses and institutions. The other one was identified by the interviewees, which is general support.

According to the author, environmental reporting is justified as a success factor of EE as this give tourism businesses the extra push to perform more environmentally friendly. Besides the environmental report will be available to public, so they have to report significant positive environmental measures based on environmental impacts reduction. In this way, the environmental report can be used as a mean of communication and as a marketing tool. Furthermore, the environmental report will motivate tourism businesses to perform eco-efficient when their report presents that reducing environmental reports has a positive effect on their added value. Environmental reporting can be included in the main success factor of collection of relevant information as the environmental reports covers all relevant information concerning the environmental impacts caused by a business related to ones added value.

According to the author, environmental commitment can be considered as a success factor of EE as it ensures that tourism businesses perform more environmentally friendly since they have to assess their business performance. However, it is the same as business commitment; therefore it is better to integrate environmental commitment into the success factor business commitment. The business as a whole seeks to ensure a more environmentally friendly business performance; this is also what environmental commitment seeks to ensure. Cooperation with other businesses and institutions can also be considered as a success factor of EE as this helps tourism businesses to come up with more environmentally friendly solutions to reduce environmental impacts. Cooperation with other businesses and institutions can be included in the main success factor of brainstorm sessions as partnerships

are created to develop sustainable initiatives. Therefore, development of sustainable initiatives can be an underlying success factor of brainstorm sessions. General support is not justified as a success factor. According to the author, it is not necessary to gain general support from other businesses and consumers when EE ratio is integrated internally. It contributes to a competitive advantage when other businesses do not integrate EE. Thus, general support is no success factor according to the author. Although these four additional success factors are identified by tourism businesses, the author argues that they are also success factors of EE as they ensure that added value is created while environmental impacts are reduced. Furthermore, all success factors applicable to general businesses for the same reasons as it is applicable to tourism businesses. According to the author, general businesses will also be able to apply these additional success factors in their business.

- *Benefits of EE:* Seven benefits were identified in literature, which are applicable to general businesses and tourism businesses. Five additional benefits were identified by the tourism businesses and in-depth interviews. The author argues that they are also applicable to general businesses for the same reasons as it is applicable to tourism businesses. Furthermore, theoretical data identified an eighth benefit of EE applicable for tourism businesses only, which is creating awareness to tourists and local residents. According to this thesis' author, this benefit can be considered as a benefit of EE as it helps to make both tourists and local residents aware of environmental impacts. When both will change their behavior and behave more environmentally friendly, it will have a significant positive impact on the environment. Moreover, one of the success factors is create awareness which fits with this benefit. The author argues these benefits are justified benefits of EE as they ensure that added value is created while environmental impacts are reduced.

Applicability of EE as a policy to tourism businesses

- *Objectives of EE*
The following five objectives were identified for general businesses in order to accomplish the EE goal: (1) reduction of energy consumption, (2) reduction of CO₂ emissions, (3) reduction of toxic materials, (4) dematerialization, (5) reduction of waste disposal. However, the following four objectives were identified for tourism businesses in order to accomplish the EE goal: (1) reduction of water consumption, (2) reduction of energy consumption, (3) reduction of waste disposal, (4) reduction of CO₂ emissions. The tourism objectives of EE are different from the general business's objectives of EE. The objectives of EE regarding toxic materials and dematerialization are not included in the tourism objectives as they are not considered as major factors causing environmental impacts by the tourism sector. However, the objectives regarding energy consumption, waste disposal and CO₂ emissions are included in the tourism objectives as they are considered as major causes of environmental problems (Kelly et al., 2007; Gössling et al., 2005). Furthermore, the tourism objective regarding water consumption is added compared to the general business's objective as water consumption in tourism destinations is often a problem, in water scarce as well as water abundant tourism destinations. For water scarce tourism destinations, there is the problem that availability of water resources gets compromised between tourists and local residents. For water abundant tourism destinations, there is the problem that future climate change will limit safe water resources (Gössling, 2013).

Although the objectives of EE for tourism businesses can be applied by general businesses, it is not sure whether or not these are significantly relevant for general businesses; this also works the other way around.

- *Limitations of EE:* The following three limitations were identified by general businesses: (1) lack of information and lack of certainty limit valuable performance, (2) contribution to rebound effect, (3) insufficient concept. As was already discussed before, there are authors who have doubt that the rebound effect is no limitation of EE. According to this thesis' author, the rebound effect is still a limitation of EE. Even though, the reduction of environmental impacts remains positive but less, it still limits the intended outcome of EE. Theoretical data based on the application of EE tourism businesses identified the following three additional limitations of EE: (1) lacks boundaries, (2) eco-efficient approaches are not evaluated in practice, (3) influence of tourists' perceptions is still unknown. The first additional limitation can be applicable for both, general businesses and tourism businesses as for instance the social and cultural aspects lack in the definition of EE. The other two additional limitations are only applicable to tourism businesses as EE approaches implemented in tourism businesses are not evaluated in practice, since most of the tourism businesses have not implemented EE yet. Furthermore, tourists' perceptions refers to the tourism sector, thus has nothing to do with general businesses. According to the author, the above mentioned limitations are justified limitations of EE as they limit the valuable performance of EE.

Again three additional limitations were identified, but this time by the interviewees. These are the following: (1) abstract concept, (2) difficult to integrate, (3) limited concept. According to the author, EE is indeed an abstract concept as it is still unknown by many tourism businesses. Furthermore, the concept is difficult to explain what the concept is and what elements the concept covers. EE is difficult to integrate in tourism businesses, especially by tour operators as there are no guidelines for tourism businesses to integrate EE. In addition, it takes too much effort. However, the effort depends on the willingness of tourism businesses to integrate EE. When tourism businesses do not feel the need to integrate EE, they will not be willing to spend much effort in the integration. But, when they are willing to integrate EE, they will often be willing to spend much effort in the integration. It is also possible that EE is difficult to integrate in tourism businesses as the concept is still not clear for them. It was argued by one of the interviewees that tour operators are not able to earn money with EE, because most of the times replacing existing travels with more environmentally friendly travels is more expensive. According to this thesis' author can be possible. However, the author argues that tour operators will earn money when EE is integrated internally. When internally employees perform efficiently they will be able to save costs which leads to more earnings. Furthermore, when tour operators cannot earn money with EE, can it still be called EE then. EE is about creating added value while minimizing environmental impacts. However, tour operators cannot create added value according to the interviewee, thus it will not be EE for tour operators. Therefore, the author argues that this limitation is not justified. Furthermore, according to the author EE is argued as limited concept for the wrong reasons. The author discussed this already in more detail in section of exclusion of social aspect.

The author argues that the identified limitations by interviewees are not applicable to general businesses, except for the limitation of abstractness of the concept. EE in general businesses is applied on the production process of products and services. There are many guidelines and learning modules established that explain how EE can be integrated in such production processes of general businesses. Therefore, EE does not always have to be an abstract concept for general businesses, but there is still a small possibility. No guidelines and learning modules are established that explain how EE can be integrated on consumption of products and services. Therefore, it is difficult for tourism businesses to integrate EE.

To a large extent, EE can be applicable for general businesses as well as tourism businesses in the same way. The definition, goal, strategies, success factors and benefits are applicable for general businesses as well as tourism businesses. Thus, there is confirmatory in these elements. Furthermore, there are also significant innovative additions to existing literature as the additional identified success factors and benefits are applicable for tourism businesses as well as general businesses. The objectives and limitations of EE were not all similar for general businesses as well as tourism businesses. Other significantly relevant objectives of EE for tourism businesses were identified. Furthermore, additional limitations were identified which are only applicable for tourism businesses. Thus, there is a slight difference between the applications of EE in general businesses and tourism businesses.

Recommendations

The findings of this research gave insight on the issues concerning EE. It is found that there is a necessity to make tourism businesses aware of EE, as it is still unknown. In addition, there is the necessity to clarify EE for tourism businesses in qualitative terms and quantitative terms. For quantitative terms in particular it is necessary to clarify how the EE ratio works in practice. Especially for tour operators it is necessary to clarify how tour operators are able to integrate EE and apply it to all the different tourism trips. Guidelines should be established on how consumption of products and services can be made more eco-efficient, as currently there are only guidelines focused on eco-efficient production of products and services; this will also help to clarify EE. Furthermore, EE should be integrated as a tool by means of a ratio within existing business policies. The ratio will measure the business' eco-efficient performance. Furthermore, eco-efficient products and services will be identified by means of the ratio. In this way, eco-efficient products and services can be marketed. When tourism businesses integrate EE, it is important to be aware of the success factors of integrating EE as they will help by the integration process.

Contribution to desk-research

EE in tourism businesses has been limitedly researched; therefore this research has a contribution to literature as the application of EE as a policy and ratio in tourism businesses is researched. This research clarifies the definition, application and integration of EE as a policy for tourism businesses. Furthermore, it clarifies the definition and integration of EE as a ratio for tourism businesses.

6. Final conclusion

The present thesis theoretically and empirically researched the concept of EE and its potential in tourism businesses. In particular, the thesis analyzed the success factors for integrating EE by tourism businesses. The main research question of this thesis is: *under what conditions is it possible for tourism businesses to integrate EE?* Four specific research questions are developed to answer the main research question.

The first specific research question is: *what does the concept of EE mean?* In this research was found that EE can be defined and integrated in qualitative and quantitative terms. Qualitatively, EE is defined as creating added value while minimizing environmental impacts. Quantitatively, EE is defined as
$$\frac{\text{added value of product or service}}{\text{environmental impact}}.$$

Second specific research question is: *how to integrate EE?* In this research was found that EE can be integrated in general businesses and tourism businesses by identifying goal, objectives, strategies, success factors, benefits, and limitations. It was found that there is a slight difference between the application of EE by tourism businesses and general businesses. However, the integration of EE in tourism businesses, tour operators in particular is more difficult as EE has to be applied on the consumption of tourism products and services.

Third specific research question is: *in what respect have tourism businesses integrated EE?* Research has shown that tourism businesses lack integrating EE. It is found that EE is relevant for tourism businesses and thus has potential in tourism businesses. However, EE has not been integrated in tourism businesses so far as EE is still unknown, unclear and complex.

Fourth specific research question is: *Why and how have tourism businesses integrated the concept of EE?* In this thesis the presented outcome is that EE should be integrated as a sustainable development tool within existing business policies of tourism businesses. In particular, this tool should be integrated as a ratio to measure the level of EE of business practices; this is the business' environmental impacts associated with its added value. So, it has to be emphasized that EE should not be integrated as a self-contained concept, but as a ratio. The EE ratio has the benefit that: (1) EE strategies can be evaluated on the eco-efficient performance of tourism businesses. (2) eco-efficient products and services can be marketed. These two benefits are also the reasons why tourism businesses should and are willing to integrate EE.

Based on the specific research questions, conditions are found which make it possible for tourism businesses to integrate EE. Success factors have been studied which refers to the conditions for integrating EE. It is found that the same success factors identified for general businesses are applicable to tourism businesses. Thus, the following conditions make it possible for tourism businesses to integrate EE: (1) organizational embedding including involvement of top management; business commitment; employee commitment; creation of awareness; motivation, (2) embedding of daily operations including creation of 'new' routine; monitoring results, (3) collection of relevant information including EE integration; stakeholders perspectives, (4) brainstorm sessions, (5) environmental reporting, (6) cooperation with other businesses and institutions.

EE as a tool within existing business policies by means of a ratio has significant potential for tourism businesses. In the end, EE leads us a way to sustainable development.

7. Limitations and recommendations

7.1 Limitations of this research

Recent sources have been used to research EE in tourism businesses, such as recent annual and environmental reports. Furthermore, different types of tourism businesses have been studied in order to ensure that the results of EE in tourism businesses can be generalized for the whole tourism sector. However, there are limitations concerning this research. First, unstructured in-depth interviews are conducted with tour operators only. The author should have interviewed other types of tourism businesses such as hotels in order to explore their perspectives regarding EE. It could be found that hotels find it easier to integrate EE, which was already assumed in this research. However, additional information might have been explored concerning the integration of EE in tourism businesses. This limits the reliability of this research.

Second, the five tourism businesses analyzed based on desk-research are not interviewed. So, there might be a bias based on the reliability of their annual and environmental reports and their websites. The question might arise whether or not these tourism businesses actually do perform environmental friendly in practice. Furthermore, no information was found to what extent the reduction of environmental impacts influences the tourism businesses' added value. Therefore, assumptions are made on the effect of the environmental impacts on their added value. When the five tourism businesses would have been interviewed, these assumptions might not have been necessary to make if this information was gained in the interviews. Thus, the assumptions can be non-accurate. Third and final, more literature could have been reviewed. However, this was not reviewed due to limited time.

7.2 Future research

Although this research has a significant contribution to existing literature, future research is recommended to gain more insight on the integration of EE in tourism businesses in quantitative terms. The integration of EE has to be compared between tour operators and other types of tourism businesses, because it is assumed that EE is easier to integrate in airlines and hotels. Furthermore, future research on solely EE in quantitative terms should be done in order to gain more insight on the execution of the EE ratio in tourism businesses. The conditions that are required in order to integrate EE is researched in this thesis. However, future research should be done on the significant influence of each of these conditions. It might be the case that success factor A has only significant influence when combined with success factor B.

The author proposes to conduct focus group discussions with tourism businesses as participants, in order to increase awareness, and explore multiple and different perspectives on EE. Conducting focus group discussions, positive perspectives might convince others with negative perspectives to become open-minded concerning EE integration. Furthermore, different types of tourism businesses should be interviewed in order to avoid bias. For instance, by using different selection criteria to select tourism businesses.

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Appendices

Appendix A – Application of EE in general businesses

Definitions	<p>Qualitative terms: Creating added value while minimizing environmental impacts.</p> <p>Quantitative terms: $\frac{\text{added value of product or service}}{\text{environmental impact}}$</p>
Goal	Maximize added value of a business's products and services while improving the environmental performance.
Objectives	<ol style="list-style-type: none"> 1. Reduction of energy consumption 2. Reduction of emissions 3. Reduction of toxic materials 4. Dematerialization 5. Reduction of waste disposal
Strategies	<ol style="list-style-type: none"> 1. Re-engineer production processes 2. Re-value by-products 3. Re-design products and services 4. Re-think markets
Success factors	<ol style="list-style-type: none"> 1. Organizational embedding <ul style="list-style-type: none"> • Involvement of top management • Business commitment • Employee commitment • Creation of awareness • Motivation 2. Embedding of daily operations <ul style="list-style-type: none"> • Creation of 'new' routine • Monitoring results 3. Collection of relevant information <ul style="list-style-type: none"> • EE integration • Stakeholders perspectives 4. Brainstorm sessions
Benefits	<ol style="list-style-type: none"> 1. Insight in efficiency practices of businesses 2. Creation of business opportunities <ul style="list-style-type: none"> ○ Innovation ○ Enhancement of competitive position 3. More added value <ul style="list-style-type: none"> ○ Reduction of costs ○ Opportunity to grow and expand 4. Reduction of (natural) resources consumption 5. Reduction of environmental impacts 6. Limitation of risks 7. Contribution to sustainable development
Limitations	<ol style="list-style-type: none"> 1. Lack of information and certainty limit valuable performance 2. Contribution to rebound effect

	3. Insufficient concept
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Appendix B – Application of EE in tourism businesses

Definitions	<p>Qualitative terms: Creating added value while minimizing environmental impacts.</p> <p>Quantitative terms: $\frac{\text{added value of product or service}}{\text{environmental impact}}$</p>
Goal	Maximize added value of a business's products and services while improving the environmental performance.
Objectives	<ol style="list-style-type: none"> 1. Reduction water consumption 2. Reduction energy consumption 3. Reduction waste disposal 4. Reduction CO2 emissions
Strategies	<ol style="list-style-type: none"> 1. Re-engineer production processes 2. Re-value by-products 3. Re-design products and services 4. Re-think markets
Success factors	<ol style="list-style-type: none"> 1. Organizational embedding <ul style="list-style-type: none"> • Involvement of top management • Business commitment • Employee commitment • Creation of awareness • Motivation 2. Embedding of daily operations <ul style="list-style-type: none"> • Creation of 'new' routine • Monitoring results 3. Collection of relevant information <ul style="list-style-type: none"> • EE integration • Stakeholders' perspectives 4. Brainstorm sessions
Benefits	<ol style="list-style-type: none"> 1. Insight in efficiency practices of businesses 2. Creation of business opportunities <ul style="list-style-type: none"> ○ Innovation ○ Enhancement of competitive position 3. More added value <ul style="list-style-type: none"> ○ Reduction of costs ○ Opportunity to grow and expand 4. Reduction of (natural) resources consumption 5. Reduction of environmental impacts 6. Limitation of risks 7. Contribution to sustainable development 8. Create awareness to tourists and local residents.
Limitations	<ol style="list-style-type: none"> 1. Lack of information and lack of certainty limit valuable performance 2. Contribution to rebound effect 3. Insufficient concept

	<ul style="list-style-type: none"> 4. Lacks boundaries 5. Eco-efficient approaches are not evaluated in practice 6. Influence of tourists' perceptions is still unknown
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Appendix C – Tourism businesses table

Tourism business	Goal	Objectives	Strategies	Success factors	Benefits and limitations of integrating EE
Fletcher Hotels		1. Reduce water consumption	1. Flow controllers 2. Employee procedures 3. Green laundry	1. Business commitment 2. Monitor and evaluate on eco-efficient processes 3. Include stakeholder perspectives 4. Create consumer awareness 5. Create employee awareness 6. Environmental reporting	+ Environmental impacts reduction
		2. Reduce energy consumption	1. Energy-saving lights 2. Motion sensors 3. Energy-efficient equipment		
		3. Reduce waste disposal	1. Recycle 2. Composting 3. Segregate waste		
		4. Reduce CO2 emissions	1. Encourage public transport 2. Provide indoor bicycle shed 3. Rent electric bicycles and electric scooters		
NH Hoteles		1. Reduce water consumption	1. Check water facilities 2. Water reduction devices 3. Recovery and reuse 4. Green laundry 5. Training and awareness	1. Business commitment 2. Responsible management 3. Employee commitment 4. Employee training and awareness 5. Include stakeholder dialogue 6. Environmental commitment 7. Environmental reporting	+ Environmental impacts reduction + Costs reduction + Innovation + Competitive advantage + Brand differentiation + Long-term planning
		2. Reduce energy consumption	1. Monitor and evaluate energy use 2. Relamping Project 3. Motion detectors 4. Centralized energy and climate control systems 5. Eco lifts 6. Green energy 7. Solar power		
		3. Reduce waste disposal	1. Biodegradable products 2. Reduce plastic 3. Reuse corks 4. Reduce paper 5. Composting 6. Reuse oils		
		4. Reduce CO2 emissions	1. Carbon footprint calculator 2. Technology replacement 3. Carbon offset		

			4. Encourage electric vehicles		
Efteling		1. Reduce water consumption	1. Recycle 2. Purification waste water 3. Cold/heat system	1. Create consumer awareness	+ Environmental impacts reduction
		2. Reduce energy consumption	1. Heat and power system 2. Monitor indoor temperature		
		3. Reduce waste disposal	1. Paper-eating character		
KLM Royal Dutch airlines		1. Reduce water consumption	1. Monitor water consumption 2. Saving faucets 3. Reuse	1. Include stakeholder dialogue 2. Cooperation 3. Motivate employees 4. Environmental reporting	+ Costs reduction + Environmental impacts reduction
		2. Reduce energy consumption	1. Sustainable building 2. Energy-saving lamps 3. Sensors 4. Heat recycle system 5. geothermal exchange system 6. Solar power		
		3. Reduce waste disposal	1. Recycle 2. Energy production 3. Segregate waste 4. Reuse 5. Reduce paper		
		4. Reduce CO2 emissions	1. Biofuel 2. Optimal flights 3. Engine water wash 4. Fuel efficient fly 5. Innovative aircrafts 6. Encourage public transport and bicycle 7. Carbon offset		
Emirates		1. Reduce water consumption		1. Create awareness 2. Employee motivation 3. Include stakeholder dialogue 4. Environmental reporting 5. Partnerships	+ Costs reduction + Environmental impacts reduction
		2. Reduce energy consumption			
		3. Reduce waste disposal	1. Recycle 2. Reduce paper		
		4. Reduce CO2 emissions	1. Efficient flight planning 2. Efficient aircraft		

			<div>3. Efficient engine technologies</div> <div>4. Electric vehicles</div> <div>5. Carbon offset</div> <div>6. Biofuel</div>	<div>with other businesses and institutions</div>	
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Appendix D – In-depth interviews

Below, detailed summaries are included of the unstructured in-depth interviews. The summaries are written from the perspectives of the interviewee. When the interviewer herself said anything relevant, it is mentioned that it comes from the interviewer. Thus, everything else written in the summaries comes from the perspectives of the interviewee. It must be mentioned that none of the interviewed tourism businesses have integrated EE.

1. Interview – BookDifferent

Definition of EE

The interviewee did not know the exact definition of the concept EE. According to the interviewee, EE is reducing the environmental impacts of business practices. The interviewer explained the exact definition of EE, which is the creation of added value of a product or service, while reducing the environmental impacts.

Relevance of EE in tourism businesses

According to the interviewee, EE is an abstract concept. Therefore, businesses, including tourism businesses, are hesitant to integrate EE in their business. Many businesses do not know what the concept of EE is and how they can deal with it. However, when EE can be measured in business practices and when a label can be attached to the outcome of the measurement, then EE is relevant in businesses including tourism businesses. Thus, the most important point is that EE should become more concrete and clear.

The interviewee argues that the EE ratio is highly relevant since nowadays large hotels have the means to have an eco-certificate. Small local hotels do not have these means to afford an eco-certificate, even though they might be more eco-efficient than those large hotels. This means that small local hotels do not get the opportunity to be recognized as eco-hotels, since most of them do not have an eco-certificate. It is also the case that these large hotels are highly ranked based on EE and small hotels are ranked lower even though they might be more eco-efficient. Therefore it is highly relevant that there will be some sort of EE ratio which measures the level of EE of hotels. In this way, small local eco-hotels will get the opportunity to show how eco-efficient they are, independent of eco-certificates. Small local eco-hotels will get the opportunity to attract consumers. Tourists may find it more joyful to stay in these small local eco-hotels, because they are eco-efficient from the heart. Compared to these small local eco-hotels, large hotels are eco-efficient because they have to. In short, it is necessary to have a value associated to eco-hotels which shows how eco-efficient they are so that small local eco-hotels get the same shot as large hotels. Thus, EE will be a useful tool as a ratio which provides an objective perspective of sustainable performances of hotels. This ratio should however be applicable to every element included in EE, for example water, energy, waste, CO₂, etc. It is of course more easier if all those elements are included in one value; however that will be too complex and not feasible.

The next concern is that this ratio should be clear for both, businesses and consumers. Currently, consumers have limited knowledge on the concept of EE and the concept of sustainability; therefore it is necessary to make these concepts clear towards the consumers, for instance what it is, what is its

value, how should they deal with it, etc. For businesses it is necessary to know how this ratio can be executed, what variables are included, what does the value mean, etc. If this ratio is clear for both, businesses and consumers, EE is relevant for tourism businesses.

In the end, EE will only be effective when many businesses use it and when they use it in the same way. When EE is not generally supported by businesses, there will be no effect on the intended outcome, namely sustainable development. Therefore, it is necessary to attract general support for EE within businesses. However, it is not necessary to give it the name 'EE'. If CSR supports the same principles, objectives and strategies of EE, it will not make sense to change the concept of CSR in the concept of EE. EE is more relevant as a tool than as a completely new self-contained concept. Unless, there is an alternative way to make EE a comprehensive concept which incorporates principles of that support sustainable development, such as CSR.

How EE should be integrated in tourism businesses

It might be helpful to make EE more concrete by making it a tool within the concept of CSR. Most of the businesses in the Netherlands have integrated the principle of CSR in their businesses, since CSR also includes the social aspect of sustainability. Businesses have the perspective that everything within the businesses should be measurable in order to make it useful and effective. Including the variables of EE into CSR will make the concept of EE more concrete as EE will become a ratio. Thus, from the perspective of the interviewee, EE should be considered as an aspect of CSR by means of a ratio.

The interviewee points out that EE should be a ratio which measures how eco-efficient a business practice is. However, EE includes much more elements such as water management, waste management, etc. This means that for each elements included in EE, a separate ratio have to be developed. For example, in the production process of product X, A% waste is reduced and B% water is reduced, etc. However, it is necessary to have a guideline which explains how EE can be measured. In addition, it is necessary for businesses to know how the outcome of EE ratio can be meaningful to its consumers. When the results of EE as a ratio is positive, the fact that EE does not cover the social aspect of sustainable development does not matter. Including the social aspect of sustainability in the concept EE will only make the concept more difficult to understand. In addition, calculating EE will be more difficult when too many variables must be included. Furthermore, it will be difficult to explain the outcome of EE to others, either in the internal or external business environment. Nowadays, the concept of sustainability is not understood by many people. So, how are we going to understand the concept of EE? It is too difficult to explain it properly.

According to the interviewer, EE can be integrated in tourism businesses by means of an eco-certificate. The question to the interviewee was asked whether or not an eco-certificate based on EE was useful for tourism businesses. Responding to this question, the interviewee argues that BookDifferent is not aiming to get an additional eco-certificate. BookDifferent has already a number of eco-certificates, so having another one will not have significant value. Eco-certificate is a business-to-business concept, and thus do not make any sense to consumers. Businesses do know what an eco-certificate is. However, consumers do not have a clue what an eco-certificate is and what it stands for. In addition, having an eco-certificate costs a huge amount of money. Regulations and

requirements have to be met. Furthermore, results have to be monitored and evaluated frequently. The point of EE is that it should be recognizable and clear to consumers what the value of EE is. Consumers should know when a business integrates EE, what it means and what its value is, in order to choose for eco-efficient businesses than general businesses. Thus, integrating EE by means of an eco-certificate is too complex for consumers. In addition, businesses that already have a number of eco-certificates are not willing to have an additional one. There should be rather looked for an alternative approach. This might also be the perspectives of many other businesses.

BookDifferent does not want to have another eco-certificate in order to integrate EE. They would rather combine all the eco-certificates they have into one eco-certificate. The eco-hotels with this one eco-certificate would then be represented as being a sustainable hotel. In addition, consumers should be encouraged by this eco-certificate to book their stay in the eco-hotels. In short, the name of the eco-certificate does not have added value as consumers do not know where it stands for. The main point is that consumers should know which hotels perform sustainably well. Making this clear to the consumers should be kept as simple as possible.

However, integrating EE by means of a ratio would be more useful. Having a ratio will give small local eco-hotels an equal opportunity to show consumers that they perform sustainable. Especially for sustainable trips, this equal opportunity is important as small local eco-hotels are trying to perform as sustainable as possible. Thus, values should be associated to the different elements of EE, such as waste management, water management, etc. Subsequently, these values should represent the level of EE of hotels, trips, and other goods and services provided. Based on these values EE strategies should be able to be monitored and evaluated for possible improvements. Furthermore, the ratio should be checked by independent organizations for biases and faults. Many tourism businesses should be willing to incorporate this ratio in order to have a significant contribution for tourism businesses.

Currently, BookDifferent is trying to make sustainable trips recognizable to consumers by means of red, orange, and green labels. These labels represent the level of sustainability of a trip. BookDifferent shows on their website <http://www.bookdifferent.com> how sustainable or green a tourism destination is. For instance, Venice is 34% sustainable. This percentage is not that high which means that it is labeled red. These percentages are based on the data of Global Sustainable Tourism Review. However, this method is still not clear for consumers. Therefore, an additional method is developed. The planning is to distinguish this sustainability percentage of tourism destinations into three major categories: (1) nature, (2) sea, (3) culture. These three categories are again labeled with the colors red, orange, and green depending on its sustainable performance. In this way, consumers can easily recognize the level of sustainability of tourism destinations and tourism activities. For instance, if a consumer likes to be surrounded with nature and they choose Venice, they can easily see that Venice's nature scores relatively low with regards to sustainability. So, they can then choose for other tourism destinations that score relatively high on the aspect of nature.

This method represents the sustainable performance of tourism destinations very easy and clear. Although, it is not a certificate, it still represents what your intention is and what you want to achieve. We want to encourage consumers to go on a sustainable trip. This method helps to make consumers aware of the level of sustainability of different tourism destinations. From the interviewee's

perspective, a certificate is not needed when there is a useful tool which shows the exact same thing, namely the sustainable performance. The most important thing is that, this tool will be used. Sustainability is only performed when it comes from the bottom or from the top, when everyone is committed to sustainability. Consumers must know and see that everything goes or will go better when attention is paid towards sustainable development. In addition, businesses should take the responsibility to work towards sustainable developments. Besides, we want to work towards sustainable development. In order to achieve sustainable development, a change in consumer and business behavior should be realized with the emphasis on sustainability.

An alternative approach to integrate EE in businesses is to cooperate with large organizations, such as ISO, and use EE as a tool within ISO. So, it will not be necessary to come up with a new eco-certificate. Instead, EE will be integrated in the ISO model as a ratio, by which businesses indirectly integrate EE in their business practices. In this way, EE can be labeled using the ISO-certificate. It will be more useful to combine sustainable concepts such as EE and CSR since their goal is to achieve sustainability.

In short, there are three ways to integrate EE in tourism businesses. First, replace CSR with EE, as CSR covers the same principles and objectives as EE. So, EE will be the comprehensive concept where CSR is integrated in. Second, add EE as a tool in eco-certificates. Businesses have the opportunity to improve their EE in order to meet one of the requirements of an eco-certificate. However, the concern is whether or not eco-certificates will have significant value as many tourism businesses already have a number of eco-certificates. Third, the question should be asked whether or not EE is relevant or useful. Does EE in the first place have significant value? How can EE be integrated in such a way that businesses can optimally benefit from it? Only then EE can be integrated as a self-contained concept by businesses.

Success factors of EE

First success factor of integrating EE in tourism businesses is that awareness of EE and its consequences should be created by both, businesses and consumers. The intention is to create a change in behavior to act (more) eco-efficient. Second, general support for EE within businesses should be attracted from for example other businesses.

Benefits of EE

The interviewee mentioned a number of benefits of EE. First main benefit is that environmental impacts are reduced. Second, integrating EE shows how well eco-efficient tourism businesses perform. Third, tourism businesses who integrate EE are able to distinguish itself from other businesses due to its competitive advantage; therefore EE is used as marketing strategy. Fourth, tourism businesses often integrate EE to benefit by means of generating profit and therefore are able to reduce costs.

Limitations of EE

First and only limitation of EE is that it is an abstract concept. Therefore, businesses, including tourism businesses, are hesitant to integrate EE in their business. Many businesses do not know what the concept of EE is and how they can deal with it. Thus, the most important point is that EE should become more concrete and clear.

2. Interview – Koning Aap

Definition of EE

The concept of EE was not clear to the interviewee. The interviewer explained the exact definition of EE, which is the added value creation of a product of service, while reducing the environmental impacts. In addition, EE can be defined in qualitative terms by means of dividing added value by environmental impacts.

Relevance of EE in tourism businesses

Koning Aap integrated sustainability in their business. However, they want to let go on that concept, because consumers do not clearly understand what it means. In fact, even employees do not get a clear picture of sustainability. EE is an unclear concept for consumers. Idem for the concept of CSR. Consumers do not know what the concepts mean and how they can deal with it. Koning Aap does not want to use the concepts of sustainability, EE and CSR, because its meanings are difficult to explain consumers and employees. Instead, Koning Aap wants to promote sustainable tourism by convincing people that sustainable trips are more authentic and more enjoyable. From the interviewee's perspective, people should really consider their language when using difficult concepts such as sustainability, EE and CSR. It should be clear to the outside world how you are doing business (sustainably), when you want consumers to be a part of it.

EE seems to be a complicated tool for tourism businesses. The interviewee can imagine that an airline or one hotel is able to easily integrate EE in their business. However, for a tour operator which offers many tourism trips across the world it is difficult and not clear how EE can be integrated. When the CARMATOP CO2 calculations works out for tour operators, it might be easier to integrate EE in a similar way. It is the question whether or not EE is potential within the tourism sector. It might be relevant for airlines and hotels, but not for tour operators. In addition, EE can be a useful tool internally, but not for consumers. EE has to be understood by consumers; therefore, explaining EE to consumers is necessary.

How EE should be integrated in tourism businesses

According to the interviewee, EE as a ratio can be useful. However, a significant number of businesses should integrate the EE ratio, otherwise it says nothing. The pitfall is that this ratio should be well explained to businesses. Furthermore, it should be supported which variables are taken into consideration in this ratio as there are many factors. The ratio might be integrated more easily internally. However, how will this ratio be applied to all the different tourism trips provided by tour operators. It is too complex to apply this ratio to the tourism trips. It will be too much work to integrate this ratio for all the provided tourism trips. For instance, the CO2 calculation of the CARMATOP project might also be too much work. The interviewee is skeptic about that calculation as it have to be applied to thousands of hotels. This skepticism has to do with the reliability of the calculation. The same holds for the EE ratio. The interviewee points out that the EE ratio needs to be solid and useful. When not, businesses will lose their consumers. Developing the EE ratio will be complicated and requires discussions. However, labeling the eco-efficient outcomes will make it more clear. Labels such as red, orange and green can be used to grade the level of EE. An additional eco-certificates based on EE should not be developed, since businesses do already have many eco-certificates.

The interviewee was asked whether or not EE should be integrated as a self-contained concept or as a tool within CSR. According to the interviewee, EE should be integrated within CSR as they are intertwined. EE can be considered as an additional tool within CSR to calculate the effectiveness of EE strategies. In this way, businesses can calculate what they are actually doing, such as the amount of environmental impacts caused. EE is an element within CSR.

According to the interviewee, there are internal success factors incorporated to integrate sustainability. These success factors might also be applicable for integrating EE. Tour guides in tourism destinations are trained to act sustainable and to inform consumers about sustainability and how to deal with it. Internally, employees see added value in incorporating sustainability in the business. Employees consider performing sustainable as a good thing; therefore, they are enthusiastic about it. Furthermore, a team is established with five people from different business departments. In this way, the principles of sustainability are incorporated in all the different business departments. However, some consider the principles as more important compared to others.

EE can be integrated internally. For instance, measuring how much water is consumed in year 1 compared to year 2. In this way, one can evaluate how much water consumption has been reduced. Since 2014, Koning Aap is busy with monitoring and evaluating water consumption, waste disposal, and energy consumption. This is done by means of a questionnaire where tourism businesses can track their consumption of water, waste and energy. So, internal elements get a value how much this year is used compared to last year. Thus, EE can be integrated internally. However, applying EE to the offered tourism trips is complicated. Tourism businesses should understand how EE can be applied to the tourism trips.

Success factors of EE

According to the interviewee, there are internal success factors to integrate EE. First success factor of EE integration is the creation of consumer awareness. Consumers do not take responsibility for the environment. Although consumers may consider the environment as important, they do not demand a sustainable product. So, consumers see added value in a sustainable product, but they will base their choice on a sustainable product. For instance, when consumers want an all inclusive trip they will buy it, regardless of the (un)sustainability of the trip. Businesses do take actions concerning environmental impacts. Thus, the awareness creation has the intention to change consumer behavior. Second, not only consumer awareness has to be created, but also employee awareness of EE needs to be created. It is important that employees also act eco-efficient by reducing environmental impacts. Internally, employees see added value in incorporating sustainability in the tourism business. Employees consider performing sustainable as a good thing; therefore, they are enthusiastic about it. Third, tour guides in tourism destinations are trained to act sustainable and to inform consumers about sustainability and how to deal with it. Fourth and final, team is established with five people from different business departments. In this way, the principles of sustainability are incorporated in all the different business departments. Thus, businesses commitment is created. However, some consider the principles as more important compared to others.

Benefits of EE

First, the main benefit of EE that it reduces environmental impacts. Second, integrating EE reduces costs for businesses, such as such as energy costs and waste disposal costs. Third, businesses are able to enhance their competitive position by integrating EE. Fourth, performing eco-efficiently improves a business's image as this business concerns the sustainability of the environment. Last, EE will be integrated to attract consumers.

Limitations of EE

First limitation of EE is that it is an unclear concept. Second, EE is difficult to integrate for a tour operator which offers many tourism trips across the world. Tour operators do not know how to deal with EE

3. Interview – SNP

Definition of EE

The interviewee did not know the exact definition of the concept EE. According to the interviewee, EE is providing tourism trips based on the principle of minimizing environmental impacts while enhance the positive impacts. The interviewer explained the exact definition of EE, which is the added value creation of a product of service, while reducing the environmental impacts.

Relevance of EE in tourism businesses

The interviewee is positive about EE in tourism businesses. Since recent years, SNP is aware of the environmental impacts of their business practices. In addition, they are also aware of the impacts on culture in tourism destinations. They are trying to minimize these impacts by means of a developed formula. In recent years, they are emphatically working on the reduction of environmental impacts. First, SNP moved to a full sustainable designed office building in order to reduce their environmental footprint. In addition, they established a sustainable tourism team within the business at different levels in order to evaluate whether or not they are doing business as sustainable as possible. Besides performing sustainably, another principle of SNP is having a profitable economic performance as they are a commercial business.

The interviewee argues that he never saw sustainability separately of earning profit. From the interviewee's perspective, the whole sustainable approach is always about the three Ps: people, planet and profit. SNP does not integrate EE, but they integrated sustainability and CSR. All three concepts include profit as an aspect, which is logical. SNP is a commercial business and their goal is to earn profit. However, it is about the way you are earning profit. It should not be at the cost of the environment. Thus, it does not matter how you name your principle, whether or not it is sustainability, CSR or EE. The interviewee does not see the difference.

The interviewer made clear again that EE does not cover the social aspects of sustainable development. From the interviewee's perspective EE is a limited concept. The interviewee would rather choose to use the concepts of sustainable tourism or CSR as they include the three Ps. So, the concepts of sustainable tourism and CSR do cover the social aspect. EE is more an additional concept without added value compared to the concepts of sustainable tourism and CSR. Sustainable tourism and CSR are actually the broader versions of the concept of EE, because the two concepts do cover the social aspect. Therefore, EE does not have significant added value in practice.

According to the interviewer, EE can be integrated either as policy or as a ratio. Related to this ratio, the question was asked whether or not EE would be relevant for tourism businesses as a ratio. The interviewee argued that it is hard to imagine what kind of ratio this will be. In addition, does this have significant added value for SNP? The CARMATOP project calculator is about calculating the CO₂ per trip, which is the footprint. This CO₂ calculator is one of the tools used in SNP's sustainable travel policy. The intention is that consumers are able to see how much CO₂ is emitted by their trip. The outcomes of this CO₂ calculator will get a label ranged from red to green. The higher the outcome, the unsustainable the trip which means it will have a red label. SNP provides their consumers with transparent information, so that consumers have an idea how much CO₂ is emitted by a trip, such as by train or by aircraft. The intention is to make consumers aware of the level of CO₂ so that they

rather go by train, because trains emit less CO₂. Profit is earned on business level anyway, whether or not consumers go by train or by aircraft. If one says that he is 19% eco-efficient, the interviewer would be wondering how one gets to that outcome and which variables are included.

The interviewee argues that the EE ratio is not useful. However, he is interested in the different elements of EE. According to the interviewee, it is interesting to know how much profit is earned per trip. In addition, it is good for the consumer to be aware of the environmental impacts caused by a particular trip. In this way, consumers will be aware of the environmental impacts and may rather choose for a more sustainable trip. However, dividing profit by environmental impacts does not say anything. In fact, we sell trips that have higher CO₂ emissions. For instance, if you want to go to New Zealand, you can know beforehand that the trip will get a dark red label. The trip to New Zealand will have a high CO₂ level as this is the farthest flight one can make. In addition, these flights emit 80-90% of total CO₂ emissions. In spite of the high level of CO₂ emissions, the trip is still provided because we are a tour operator. Therefore, the EE percentage or factor will not change anything in SNP's policy. Thus, dividing the elements of profit and environmental impacts by each other is not relevant. It sounds like EE is more a paper concept. It is interesting for scientists, but for a tour operator in practice is EE not important. However, the elements are important. Profit is important and from the perspective of sustainable tourism is it also important to know the CO₂ emissions emitted by tourism trips. But dividing these two elements will not make sense.

How EE should be integrated in tourism businesses

According to the interviewer, it would be an option to integrate EE by means of labels. For instance, a green label when a business performs eco-efficient and a red label when a business performs non-eco-efficient. The question was asked to the interviewee whether or not this would be an idea to integrate EE in tourism businesses. The interviewee points out that this would not be a good idea, because one will involve the profit of a trip in something which is shown to consumers. In addition, this is not relevant for consumers. Besides, SNP has already enough labels. The good thing about a calculator is that it provides a clearer picture of the footprint for a trip. Until now, the focus was set on the return trip. However, the CO₂ calculator takes all aspects of the trip into consideration, for instance what you do and where you go. It is a more accurate way. It is a benefit and then a CO₂ label can be associated to this outcome. Consumers recognize this; therefore it is a powerful tool in your communication.

EE strategies in tourism businesses

The interviewee points out that effort have been put in creating environmental awareness by its employees. This effort was made when SNP moved to the new sustainable designed office building. Meetings were hold where the employees where instructed about the new lifestyle where emphasis is put on sustainability. Furthermore, there are green plants in the building, there is a green roof garden, and solar panels are placed. Waste is segregated by everyone in the building. Organic waste is composted in the roof garden and used as growth factor for vegetation. The travel expenses for employees have been preserved. When employees use their cars to come to work, they get a small amount of fee. However, when employees use public transport to come to work, the whole amount spent on tickets is compensated. In addition, the use of bicycles is encouraged. All employees are

aware of the sustainability tips where for instance the optimal and efficient use of the air-conditioning is explained.

Success factors of EE

The interviewee points out that effort have been put in creating environmental awareness by its employees, which is the first identified success factor. This effort was made when SNP moved to the new sustainable designed office building. Meetings were hold where the employees where instructed about the new lifestyle where emphasis is put on sustainability. Furthermore, there are green plants in the building, there is a green roof garden, and solar panels are placed. Waste is segregated by everyone in the building. Organic waste is composted in the roof garden and used as growth factor for vegetation. The travel expenses for employees have been preserved. When employees use their cars to come to work, they get a small amount of fee. However, when employees use public transport to come to work, the whole amount spent on tickets is compensated. In addition, the use of bicycles is encouraged. All employees are aware of the sustainability tips where for instance the optimal and efficient use of the air-conditioning is explained. Second, consumer awareness of environmental impacts has to be created in order to create a change in consumer behavior.

Benefits of EE

First, EE principles aim to protect the environment. Businesses which integrate EE are able to protect and sustain the environment by reducing environmental impacts. Second, costs are reduced by reducing environmental impacts. Third, profit is generated from the reduction of environmental impacts and costs.

Limitations of EE

Two limitations were identified by the interviewee. First, EE is an unclear concept with an unclear ratio. Second, EE is a limited concept as it does not cover the social aspect of sustainability.

However, obstacles where mentioned for performing eco-efficient. These obstacles are not included as limitations of EE as is the obstacles considered as a limitation of tour operators' practices. However, they are important to mention. One of the obstacles for integrating a sustainable approach such as EE is that as a tour operator you always influence the tourism destination. When you want to be completely sustainable, you have to stay at home. There is always a tension in organizing tourism trips and causing environmental impacts. However, there is a way to minimize these negative environmental impacts. Sometimes, you have no other option than flying with a polluting flight to a certain tourism destination. For instance, flying from the Netherlands to New Zealand will always be a polluting flight, because of the flight time and there are no alternative transport modes. If people want or need to go to New Zealand, there is no other option than just providing that trip. These are the contrasts what we are working on.

There is another obstacle related to consumer demand. The interviewee used an example of paper consumption. Tour operators use brochures to promote their trips. Although we would like to make

them digitally, there still are consumers who want them on paper. Making and delivering the brochures digitally will not have negative environmental impacts. However, when we will not deliver the brochures on paper as consumers desire, we will lose sales. Therefore, we let the consumer decide how they want the brochure, on paper or digitally. Thus we offer both on paper and digitally, but it is in the hands of the consumer.

4. Interview – Mrs. Griep

Definition of EE

According to the interviewee, EE is about allowing businesses to generate profit and to reduce their environmental impacts.

Relevance of EE in tourism businesses

According to the interviewee, tourism businesses are almost required to perform eco-efficiently. It can already be seen in other business sectors that people ask about their environmental impacts. Transparency is demanded, also from consumers. However, it seems that traveling is standing behind. Currently, reducing environmental impacts is more important in the food sector and car industry. Reducing environmental impacts is still a blind spot for traveling. People go on vacation to clear their heads. All the things which they account for in their daily lives do not count when people are on vacation. Thus, people often do not want to behave sustainable on vacation. However, currently many approaches are undertaken in the tourism sector, hotels and airlines in particular, to reduce environmental impacts. Therefore, the interviewee thinks that there is a development to reduce environmental impacts in the tourism sector. However, this development is still not coming from consumers. A change in consumer behavior, but also knowledge on caused environmental impacts are necessary. Many people use energy-saving lights, own an electric car and eat biologic food. However, these approaches will not be effective when they go twice a year on a long-haul trip.

EE is not integrated in the tourism sector, because consumers do not demand from a tour operator to be eco-efficient. However, there is a development. In about ten years, consumers will demand this from tour operators, then tour operators will be obligated to adapt otherwise it will compromise their profit. From the interviewee's perspective, it is helpful when consumers will demand tourism business's products or services which cause less impact to the environment.

The interviewee points out that although there are other sustainability concepts which are related to EE, EE is still relevant for tourism businesses. EE measures the environmental impacts associated to economic value, which provides insight in the effectiveness of strategies implemented to reduce environmental impacts. Most other sustainability concepts establishes procedures to reduce environmental impacts without actually measuring the effectiveness. Thus, EE is relevant as a ratio in tourism businesses. However, the EE ratio should be more simple as it is currently too complex. Furthermore, the EE ratio is necessary to measure every element of EE. This is difficult and takes too much effort. According to the interviewee, it is almost impossible to apply all elements of EE to all different products and services provided by tour operators. Unless, hotels for instance are able to apply the elements such as water consumption. With this information, tour operators will be able to measure their own EE performance. However, it should be questioned whether or not it is relevant for tour operators to make that much effort. An alternative is that tour operators can tell their consumers that eco-hotels are provided; this is often enough for consumers to know.

EE is not a tool where tour operators can earn money from. However, hotels can earn money from integrating EE. Hotels are able to be more efficient; therefore, they are able to reduce costs. However, it might be the case for tour operators that integrating EE increases costs. Replacing an indirect flight with a direct flight is often expensive. It is even expensive in most of Asian countries to

travel by train than to travel by domestic flight. These things make it difficult for tour operators to consider the integration of EE. Thus, it is important that EE should be simple in order to convince tourism businesses, tour operators in particular, to integrate EE.

According to the interviewee, including profit as an aspect of the EE ratio is relevant because a business cares about his profit. However, it is complex for a tour operator. Although, it is useful to use EE to promote a tourism trip which emits less CO₂ and which has a high profit margin. Then, it could be considered by the tour operator to promote that trip more. However, when a tourism trip emits much CO₂ and generates less profit, it could be considered not to offer that trip anymore. Thus, it is easy to consider product and services when a tourism business know how well it scores on cause environmental impacts and on profit generation. This means that EE is used as tool internally and is not mentioned to consumers. However, tourism businesses can promote their eco-efficient tourism trip and take non-eco-efficient tourism trips out of their offers. Tour operators should emphasize benefits of eco-efficient tourism trips, instead of saying that those trips cause less environmental impacts. According to the interviewee, consumers will not change their demand when tour operators say that their trips cause less environmental impacts. Thus, an alternative approach should be applied in order to attract consumers to eco-efficient trips, for example by emphasizing its benefits. Furthermore, environmentally friendly products and services should be easily available for consumers. It should not be something where consumers have to put make much effort for in order to buy it, otherwise they will not be willing to buy such products and services.

How EE should be integrated in tourism businesses

A number of approaches were mentioned by the interviewee to integrate EE in tourism businesses. First, EE can be integrated as a ratio. When EE is integrated as a ratio, tour operators are able to replace a domestic flight with a train travel or, an indirect flight with a direct flight. This has something to do with awareness. In addition, when people within a tour operator are not aware of the EE of these new products, they will not be willing to change these offers. However, even when people are aware of the EE, it is still not simple to adapt. Sometimes it is too much effort adapt these changes in their offers. Furthermore, the urge to adapt is currently not high.

Second, EE needs to be integrated within existing general business operations. EE should be integrated in all the business operations. For example, a product manager should take EE into account when designing new tourism trips. When EE will be integrated as a self-contained concept, tourism businesses will not be willing to integrate EE at all. Thus, EE should be included as an aspect or tool within the general business operations, as these are intertwined. It covers the quality of a business's operations. According to the interviewee, EE has added value compared to other sustainability related concepts. EE is about measuring environmental impacts by means of numbers. CSR, for instance, is about establishing procedures to reduce environmental impacts by means of words.

Third, tourism businesses can integrate EE internally. Employees will be needed to perform more efficiently and thus more environmentally friendly. This will contribute to costs reduction. For instance, hotels have much influence on their consumers' water consumptions. Therefore, multiple strategies are implemented to ensure the reduction of water consumption to a minimum level, which

reduces costs and environmental impacts. However, as was already mentioned tour operators do not have this influence. They have only influence on CO₂ emissions of their consumers. When tour operators are integrating EE to minimize environmental impacts of internal business operations, the improvements are minimal. It should be questioned whether or not it is useful to make that effort for such small improvements. In addition, EE in tour operators should be about reducing environmental impacts of the tourism trips not of internal business operations.

Success factors of EE

Businesses commitment is one of the success factors mentioned by the interviewee. EE should be integrated in all tourism business's operations. Second, all employees within the tourism business should be committed to EE. Third, the top management should be convinced about the importance of EE. When the top management is not convinced about the importance, other employees within the tourism businesses will not be willing to commit to EE. Thus, everyone should believe in EE in order to commit to the tourism business's eco-efficient business operations.

Benefits of EE

A number of benefits was mentioned by the interviewee. First, EE measures the emissions of a tourism trip. With this information a change in behavior can be achieved. For instance, tour operators can encourage their consumers to go by train when this is more efficient. Second, integrating EE contribute to costs reduction and therefore an increase in added value. Third, integrating EE contributes to environmental impacts reduction.

Limitations of EE

According to the interviewee, there are a number of limitations concerning EE. First, it is almost impossible to measure all the elements of EE to all the different products and services provided by a tour operator. As a tour operator you do not control all these elements of EE on the products and services one provides. For example, tour operators are not able to measure the water consumption of tourists in hotels provided by the tour operator. Unless, these hotels themselves are able to measure these elements. Hotels are in general able to measure these elements since they have more influence on it. For example, hotels can implement strategies to minimize consumers' water consumption. With this information, tour operator will be able to measure their own EE. However, is it relevant for tour operator to put effort in the acquiring EE information of their hotels. Tour operators can just communicate to their consumers that they provide eco-hotels, which is already enough information for consumers. Second, the EE ratio is complex. The EE ratio is necessary for every element of EE. This is difficult and takes too much effort. Furthermore, EE is not a tool where tour operators can earn money from.

Appendix E – Tourism businesses' perspectives table

Tourism business	Relevance of EE	How to integrate EE	Success factors of EE	Benefits and limitations of EE
Book-Different	<ol style="list-style-type: none"> 1. EE measures 2. Objective perspective 3. EE must be clear and simple 	<ol style="list-style-type: none"> 1. Integrate EE within CSR 2. EE as a tool in eco-certificates 3. EE as a tool in large organizations (ISO) 4. EE as a self-contained concept 	<ol style="list-style-type: none"> 1. Business and consumer awareness 2. General support for EE 	<ul style="list-style-type: none"> + Environmental impacts reduction + Insight in EE performance + Competitive advantage + Profit generation + Costs reduction – EE is abstract concept
Koning Aap	<ol style="list-style-type: none"> 1. EE must be a simple tool 	<ol style="list-style-type: none"> 1. EE ratio 2. EE labels 3. Integrate EE within CSR 4. Integrate EE internal 	<ol style="list-style-type: none"> 1. Create consumer awareness 2. Create employee awareness 3. Employee training 4. Business commitment 	<ul style="list-style-type: none"> + Environmental impacts reduction + Costs reduction + Enhance competitive position + Improvement of business image + Attract consumers – EE is unclear concept – EE integration difficult for tour operators
SNP	<ol style="list-style-type: none"> 1. EE measures 2. EE gives value to profit and environmental impacts 	<ol style="list-style-type: none"> 1. EE as a policy 2. EE as a ratio 3. EE labels 	<ol style="list-style-type: none"> 1. Create employee awareness 2. Create consumer awareness 	<ul style="list-style-type: none"> + Environmental impacts reduction + Costs reduction + Profit generation – EE is unclear – EE is limited concept
Mrs. Griep	<ol style="list-style-type: none"> 1. Pressure to perform eco-efficient 2. EE measures 3. EE covers profit 	<ol style="list-style-type: none"> 1. EE as a ratio 2. EE within existing general business operations 3. Integrate EE internal 	<ol style="list-style-type: none"> 1. Business commitment 2. Employee commitment 3. Top management involvement 4. Create consumer awareness 	<ul style="list-style-type: none"> + Insight in EE performance + Costs reduction + Increased added value + Environmental impacts reduction – EE is too complex – EE takes too much effort – Tour operators cannot earn money