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Environmental Sustainability in Hotel Facilities

A Case Study: Original Sokos Hotel Villa

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Abstract

The purpose of the thesis was to study the environmental sustainability of hotel facilities and the options for the best practices for a hotel to use in order to be environmentally sustainable. The thesis was assigned by Original Sokos Hotel Villa. The hotel is a medium-sized central hotel in Tampere, Finland. The aim of the thesis was to research the environmental impacts of Original Sokos Hotel Villa and which practices should Original Sokos Hotel Villa implement in order to improve environmental sustainability on the premises to decrease their impact on the environment.

The theoretical framework is based on the definitions of sustainable development and the environmental impacts of hospitality facilities. The field of study was determined according to criteria of the most common eco labels used when assessing how ecological enterprises are. Each field was analyzed in order to find out the practices with the least impact on the environment. To answer the research questions, a qualitative research method was used in interviews and observations. These were used as the primary data. The interviewees were chosen by using judgmental sampling, where the author identified the key representatives of the stakeholders to best answer the research questions. The interviews were a combination of structured and semi-structured interviews. Some of the questions included ready- made answers for the respondents to choose whereas they answered some other questions in their own words.

The results imply that Original Sokos Hotel Villa is already implementing a considerable number of environmentally sustainable practices. Their operations follow the guidelines of the Nordic Ecolabel. For recommendations, the researcher suggests developing an own environmental management system which would enable monitoring the consumption and benchmarking. Further research could be implemented with the main focus on social sustainability.

Keywords
Environmental sustainability, accommodation industry,

Miscellaneous

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Tiivistelmä

Opinnäytetyön tarkoituksena oli tutkia hotellitilojen ekologista kestävyyttä ja mitkä ovat parhaimpia käytäntöjä hotellin ollakseen ekologisesti kestävä. Opinnäytetyön toimeksiantaja oli Original Sokos Hotel Villa. Hotelli on keskisuuri keskustahotelli, joka sijaitsee Tampereella. Opinnäytetyön tavoitteena oli tutkia Original Sokos Hotel Villan ympäristövaikutukset ja mitä käytäntöjä Original Sokos Hotel Villan pitäisi tehdä parantaakseen ekologista kestävyyttään ja vähentääkseen ympäristövaikutuksiaan.

Tietoperusta pohjautui kestävän kehityksen määritelmiin ja hotellien ympäristövaikutuksiin. Tutkittavat aihealueet määräytyivät yleisimpien ympäristömerkkien kriteereiden mukaisesti, joita käytetään yritysten ekologisuuden arviointiin. Joka aihealueessa käytiin läpi vähiten ympäristöä kuormittavat käytänteet. Tutkimuskysymysten vastaamiseen käytettiin kvalitatiivisia haastatteluita ja omaa havainnointia. Haastateltavat valittiin käyttämällä otannassa omaa harkintaa, jossa tekijä todensi sidosryhmien avainedustajat, jotka pystyivät parhaiten vastaamaan tutkimuskysymyksiin. Haastattelukysymykset olivat yhdistelmä strukturoituja ja puolistrukturoituja haastatteluja. Joissain kysymyksissä vastaukset olivat annettu etukäteen ja osassa heidän piti vastata käyttäen omia sanojaan.

Tuloksista ilmeni, että Original Sokos Hotel Villa toteuttaa jo valtaosaa ekologisen kestävyyden käytännöistä. Toiminnat ohjautuvat Joutsenmerkin suositusten mukaisesti. Kehitysideaksi tekijä ehdotti oman ympäristönhallintajärjestelmän kehittämistä, joka mahdollistaisi kulutuksen seurannan ja vertailukehittämisen. Jatkotutkimuksia voisi toteuttaa sosiaalisen kestävyyden näkökulmasta.

Avainsanat (asiasanat)
Ekologinen kestävyys, majoitusala,

Muut tiedot

Contents

1 Introduction

The hazards of not pursuing sustainable development have been known for a long time. O'Callaghan (1996, 3.) states that the greenhouse effect leads to global warming and climate changes. The depletion of the ozone layer will increase the ultra-violet radiation on earth. There is water pollution, depletion of world's resources, destruction of the biological diversity and population growth that leads to famine. Luckily this has alarmed people to take action toward sustainability. The impact on the environment has been regulated by legislations and directives. People's concern of future generations and the environment has put a demand on companies to pursue more sustainable actions.

According to the World Tourism Organization, UNWTO, tourism accounts for five percent of the whole world's carbon emissions. One percent of that comes from the accommodation sector. (Tourism and Climate Change. 2011.) 1 percent might not sound a lot, but on the contrary it does. Each company has to carry out their corporate responsibility to be more sustainable. We have the possibility to show with our actions, even the smallest ones, in which direction the society is heading. With the right attitude and tools, sustainability is achievable.

The thesis gives tangible examples of what can be done to benefit sustainability in the accommodation industry. This will be explored in the form of a case study of the environmental sustainability at Original Sokos Hotel Villa, Tampere. In the case study the author will use a mixed method approach, which is a combination of qualitative and quantitative research, in interviews and observation as preliminary data, to see how each section of sustainability is shown at Original Sokos Hotel Villa.

In a study of the most trustworthy hotel chain in Finland implemented by Valitut Palat in 2010, Sokos Hotels were chosen as the number one hotel chain, with over 50 % of the votes. (Suomen luotetuimmat merkit vuonna 2010. 2010.) It will be interesting to see just how reliable Sokos Hotels are in implementing their corporate responsibility to benefit sustainable development.

2 Research Problem and Background

The bachelor's thesis was assigned by Original Sokos Hotel Villa. Sustainability was both the author's and the hotel representative's interest, and the topic felt current and appropriate to this time. The interest was to solve how well was Original Sokos Hotel Villa doing in terms of sustainability, and how well it would rank among competing hotels. Therefore these following research questions were composed:

1. What are the environmental impacts of Original Sokos Hotel Villa?
2. Which practices should Original Sokos Hotel Villa implement in order to improve the environmental sustainability in the hotel and to decrease their impact on the environment?

Sustainability in hospitality facilities is a very extensive topic, which divides into multiple sections. Therefore from the three main realms of sustainability, environmental, social and economic, the environmental was chosen. Sustainability is something that customers, organizations, government and legislation require from companies. There are many positive results from converting into more sustainable operations from cost savings to employment efficiency and the list goes on and on.

The focus will be on the internal operations of a hotel. Various environmental certification programs will be compared, and the criteria that most of them have in common will be evaluated separately. The criteria categorizes into environmental management, energy efficiency, water management, waste management, resources and purchasing, housekeeping and cleaning. Each category will include the practices that create the least impact on the environment. The chosen practices were something that already existing hotel facilities could implement. So the most innovative green building methods have been left out, as well as some of the practices that are implemented during the construction phase of a building. These practices are then compared to Original Sokos Hotel Villa's operations in order to give recommendations in what could be improved to minimize the environmental impact.

Despite that Original Sokos Hotel Villa has a Nordic Ecolabel, it is interesting to see their level of commitment to sustainable actions. Even if a hotel has an ecloabel, it does not tell what has been done or which areas are taken into consideration. This research gives the opportunity to examine the key areas of environmental sustainability in Original Sokos Hotel Villa and the improvement possibilities.

Original Sokos Hotel Villa

Original Sokos Hotel Villa is a part of the Sokos Hotels chain, the most well-known and most extensive hotel chain in Finland. Original Sokos Hotel Villa is one of the 60 hotels located in Finland. (S-ryhmän rakenne. N.d.) Sokos Hotels are owned by Sokotel Oy, a subsidiary of the SOK group, which provides restaurant and accommodation services. Sokos Hotels in Tampere had a revenue of 30 million with 110 employees in 2010.

Sokos Hotels divide their hotels into three categories; solo, break or original. That is how each hotel can provide more targeted services for different customer segments. The Original Sokos Hotels are heartfelt and suitable for Finnish customers, since the facilities and service are delivered in a manner that reflects the Finnish mindset. Solo hotels are more unique. The buildings usually have more historical value or have some special stories to tell. Break hotels provide services for active leisure travelers. Usually the facilities include for instance a spa, skiing center or a shopping mall. Original Sokos Hotel Villa is part of the original concept. (About Sokos Hotels. N.d.)

Original Sokos Hotel Villa used to be an old grain storage. The hotel was opened in 1991 and after that it was completely renovated in 2011. The hotel was ranked number six in an international hotel design contest. Villa is a unique boutique hotel, simple and approachable. The hotel is conveniently located in the center of Tampere close to all services, only 200 m from the railway station, yet in a peaceful area. (Tampereen Sokos hotelleiden vastaanottojen Tervetuloa töihin – opas. 2012). It is therefore cathecorized as a central hotel, due to its location. (Asunta, Brännare-Sorsa, Kairamo, & Matero. 2003, 12.)

Original Sokos Hotel Villa has 12 standard single rooms, 55 standard twin rooms, 12 standard twin rooms, with the possibility of extra beds, 11 superior twin rooms, four suites with sauna and one Torni suite, which is a two-story suite, with living room and sauna. Only superior rooms include a minibar as well as other additional equipment and products. The hotel is categorized as a medium sized hotel, with 50 to 300 rooms. Original Sokos Hotel Villa has 99 rooms. (Asunta et al. 2003, 12.)

The hotel has a 24 hour coffee bar in the lobby and a lobby bar. The sauna is located in the second floor. The hotel co-operates with Lounasravintola Eetvartti, which offers breakfast, lunch and conference facilities. Lounasravintola Eetvartti is not part of the S-group as restaurants would typically be in other Sokos Hotels. Parking is provided by Finnpark. The hotel does not have a gym or a pool.

The customers of Sokos Hotels' are business travelers, but also leisure travelers, especially in the weekends and holiday seasons. (Asunta et al. 2003, 19). 40 percent travel for business and 56 for leisure. Of all the visitors 70 percent were domestic travelers and 30 percent from outside Finland. In Sokos Hotel Villa the leisure travelers consist usually of culture enthusiasts, such as theaters or concerts goers, female groups, party groups, members of the S-group. They usually look for affordable prices and are long-term visitors. They might work close by. (Tampereen Sokos hotelleiden vastaanottojen Tervetuloa töihin – opas. 2012)

3 Theoretical and Knowledge base for the research

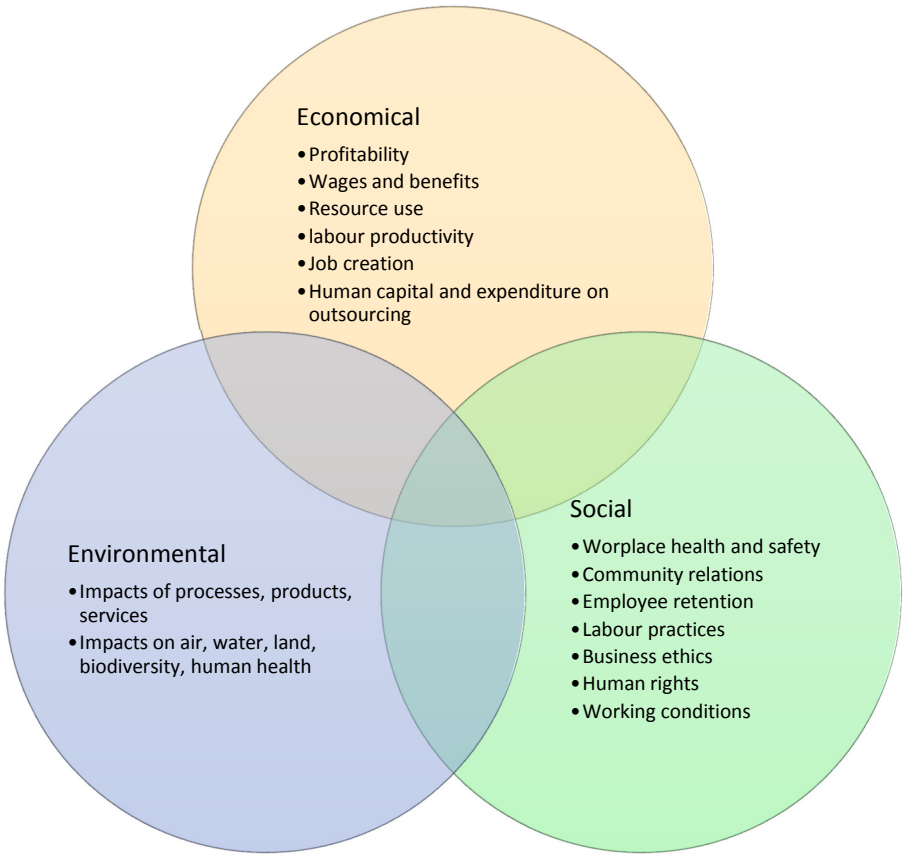
3.1 Sustainable Development

"Sustainable development is the development that meet the needs of the present without compromising the ability of the future generations to meet their own needs." This is the most well-known definition of sustainability by World Commission on Environment and Development's (WCED) Brundtland report. The definition

comprises three parts; development, needs and future generations. The part *development* reviews the compatibility of sustainable development and economic growth, where the Brundtland commission sees a paradox between the two. *Needs* focus on equity and the use of resources. *Future generations* should not earn less income than the current generations, and the current generations have the responsibility to tend social and natural resources. The commission has been pioneers in sustainable thinking and its report has shaped the agenda. (Cooper. 2012, 123.)

The common consensus is that sustainable development is divided into three sections, called the triple bottom line. It consists of economic, social and environmental realms. These three are very much intertwined with each other, especially in the long-term you cannot have one without the other. (Cooper. 2012, 122-123; Hitchcock & Willard. 2009, 9.) The environmental dimension regards the environmental footprint of the company's operations, facilities and finished products. The aim is to avoid damage to the ecosystem, reduce the use of natural resources, while promoting natural diversity. In the long term, while pursuing environmental sustainability it will have a cost reducing effect on the economic part of sustainability. The economic dimension is vital, since without making profit the company will seize to exist. By practicing environmental sustainability in the operations the company will notice the benefits in their profits as well. A sustainable hospitality company contributes to the development of local economy by using local employment and business linkages. This leads to the social dimension. The aim is to positively contribute to the lives of local people in the present and future. This encompasses the well-being of employees, human rights, labor rights, working conditions while promoting social and cultural diversity. It involves the employees, communities and stakeholders. For the hospitality company it is important to train and educate their staff about the environmental sustainability practices. (Chen, Legrand & Sloan. 2009, 8-9.)

Figure 1: Triple bottom line of sustainability



There are various benefits from sustainability. It is a wide misconception that sustainability requires considerable investments. According to Stern report, which the most well-known report about climate change's impacts on the economics made for the UK's government, if we do not act to change climate change it will have 5 % decrease on the GDP each year and might rise up to 20 % if wider risks and impacts are taken into consideration. (Stern Review: The Economics of Climate Change. N.d) When constructing green buildings, the costs are still higher when compared to traditional buildings. However, the savings that green buildings bring are tenfold compared to a traditional one. (Shah. 2007, 174.) By reducing the consumption of energy, waste and water, you also save in the costs. Sustainability gives the opportunity to stand out, to differentiate oneself from the other companies as well as give competitive value. As the regulations get stricter and move towards sustainability, it gives your company a change to be ahead of the change and be prepared for it. It gives the change to innovative new services, products or processes that benefit sustainability. It can open new markets, as the costs go down it enables

the company to provide their product to a wider population. There are 3 billion consumers in the less industrialized nations that are willing to buy if they can afford it. Sustainability improves the image, in the eyes of the stakeholder as well as the customers. Sustainability attracts employees with the same values. Employees feel their work is more meaningful and therefore they perform better at work. (Hitchcock & Willard. 2009, 3-6.)

3.1.1 Sustainable Tourism

World Tourism Organization, UNWTO, has researched, that 1 billion people have travelled internationally in the year 2012. This number is expected to increase to 1.5 billion in the year 2020. On average tourists spent approximately 700 US dollars, which converts to over 500 euros. Tourism industry represents 10 percent of the world's GDP. (UNWTO Annual report 2013. 2013; International Tourism Receipts. 2006.)

Sustainable tourism, by the definition of World Wildlife Fund, WWF;

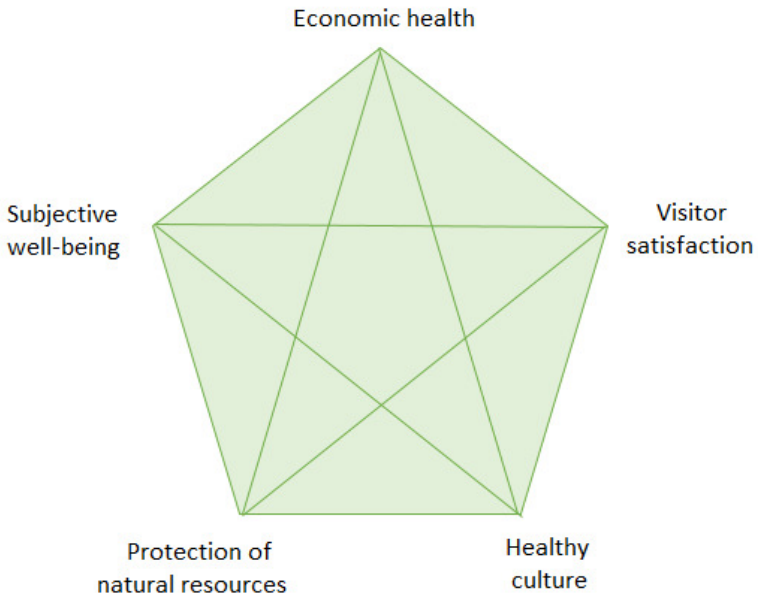
1. Operates within natural capacities for the regeneration and future productivity of natural resources.
2. Recognizes the contribution that people and communities, customs and lifestyles account to the tourism experience, so consequently
3. accepts that these people must have equitable share in the economic benefits of tourism
4. is guided by wishes of local people and communities in the local area

In addition to WWF's list, there are also;

5. tourism as a sector is sustainable at the given destination, so the destination is able to absorb its development without unfavorable social and physical changes
6. Tourism does not squeeze out other economic activities that also complete for the same limited resources. (Puczko & Rátz. 2002, 292.)

In addition to triple bottom line of sustainability, the tourism industry often refers to Muller's (1994) sustainability pentagon. The content is much related to the WWF's definition of sustainable tourism, but is illustrated as a figure. The environmental, social and economic aspects have been extended to five, which harmoniously

Figure 2: Muller's sustainability pentagon



balance in the middle of the pentagon. (Cooper. 2012, 122.)

3.2 Environmental impacts of the accommodation industry

Accommodation is one of the five integral tourism products. It has major influence on the volume of customers and the customer segments that the destination attracts. The physical appearance of an accommodation company affects on the visitors' opinions about the destination environment and the quality of it. Since different customer segments include different levels of economic and social impact, the products and services accommodation companies provide for them influences directly to the local community and the environmental impact. (Middleton. 1998, 145.)

According to Puczko and Ratz (2002) the major environmental impacts caused by the accommodation industry are resource depletion, pollution and degradation. The use of fossil fuels as a source of energy causes resource depletion, as well as the use of non-renewable natural resources (such as oil, coal, and natural gas) for heating or the production of manufactured goods. Water consumption is another major cause of resource depletion.

Middleton (1998, 148.) adds that he accommodation industry contributes to global warming, acid rain, low-level smog, and ozone depletion through the consumption of energy, transportation of visitors and goods. Watercourses are polluted by the discharge of water from laundries, kitchens, guest rooms and swimming pools. Landfill site is filled with solid waste. The use of CFCs and halons are serious cause for ozone depletion.

Cultures, heritage sites and local footpath are degrading due to a large number of visitors. Infrastructure development through building or landscape modification cause the reduction of diverse species ruin the quality of landscapes. Traditional ceremonies and rituals become commercialized for the entertainment of tourists. (Middleton. 1998, 149.)

For analyzing the environmental impact, the most frequently used tools are the Environmental Audit, EA, or The Environment Impact Assessment, EIA. The EIA evaluates the effects of proposed development projects. It includes such phases as construction, operations and after use. After EIA follows environmental statement, ES. EIA is compulsory in the USA and Europe for tourist projects, for instance if a hotel is doing a reconstruction. While EIA is preparing for the future consequences the EA analyses the current situation. (Puczko & Rátz. 2002, 246, 251-252; Shah. 2007, 168-169.)

3.3 Eco Certification Programs

Ecolabels are trademarks or logos which have been developed to indicate environmental credentials of a company, product or a service. (Middleton. 1998,

240.) They were established to prevent companies self-righteously calling themselves ecological just for marketing purposes. According to O'Callaghan (1996, 83.) the objectives set for eco labels by the Ministers of the EC Environment Council are to promote the design, production, marketing, and the use of products have a minimum environmental impact during their life-cycle and to provide consumers with better information on the environmental impacts of products. A reliable eco-label should have validation of a third party.

In this chapter we will identify the most common and popular eco certification programs. The chosen programs were Green Key Global, Green Globe, LEED, Green Seal, Green tourism and Nordic Ecolabel. These ecolabels were selected due to their popularity in the accommodation industry and they all certify globally, apart from Nordic Ecolabel, which only certifies in Nordic countries. Green Key was originally launched in Canada, but has since then expanded globally. They implement environmental online audit, and based on the answers, hotels are rewarded with 1-5 green keys. Green Globe is one of the first and the most widely recognized initiative within the tourism industry. It was launched in 1994 after the Earth Summit in Rio in 1992, and is based on Agenda 21 and ISO type standards. LEED's expertise is on constructing green buildings in the USA, however hotels have become their clientele for their innovativeness. Green Seal has been operating since 1995 and does not only certify hotel and buildings, but also products. Nordic Ecolabel widely known ecolabel in the Nordic countries. It provides certification for services and products. (Certified green: what's that? 2013; Green Hotel Certification Programs Snowball, Sparks Confusion. N.d; The Nordic Ecolabel - the official Ecolabel in the Nordic countries. N.d.)

The points that these labels have under inspection are whether the company have environmental management system, created emissions, energy consumption, water management, waste management and reduction, the use of resources and whether the life cycle of the products have been taken into consideration. Most of the eco labels also require hazardous waste management and inspect the indoor air quality. In table 1: Ecolabels' criteria comparison the author has compared the criteria of each eco label. As we can see, there are similarities in each label. Table has been gathered reviewing through each of the ecolabel's website and their criteria. (Green

Key Eco-Rating Program. 2014; GS-33 Green Seal™ Environmental Leadership Standard for Lodging Properties, 5th Edition. N.d; Practical Strategies in Green Building – Hotels. 2009; Standard criteria and indicators. 2014.) The details vary but the entireties follow the same pattern.

Table 1: Ecolabels' criteria comparison

	Green Key Global	Green Globe	LEED	Green Seal	Green tourism	Nordic Ecolabel
						
Environmental Management	x	x	x	x	x	x
Emissions	x	x	x	x	x	x
Energy Management	x	x	x	x	x	x
Water Management	x	x	x	x	x	x
Waste Management	x	x	x	x	x	x
Hazardous waste management	x	x	x	x		
Resources	x	x	x	x	x	x
Indoor Air Quality	x	x	x			
Purchasing/Life cycle of products	x	x	x	x	x	x

Since the focus is on the environmental aspect of sustainability, the aspects of social and economic sustainability criteria have been left out of the table. These parts would usually include criteria such as local employment, employee training and awareness, employee protection, respect local community and natural and cultural heritage.

3.4 Green Operations in Hotel Facilities

The following chapters are based on the criteria that most sustainable certification programs traditionally require for sustainable buildings or hotels. The criteria was elaborated in Table 1 in the previous chapter. The focus is on the internal operations of the hotel. The fields of study have been divided into environmental management, energy efficiency, water management, waste management, resources and purchasing, and housekeeping and cleaning. In each chapter the practices that create the least impact on the environment have been identified. Also, the general green guideline, the 10 Rs, is introduced. It can be applied to all hotel operations.

In analyzing the ecology in Original Sokos Hotel Villa we will leave out the restaurant facilities, since Villa does not have their own restaurant. In the same building there is Lounasravintola Eetvartti, which takes care of the serving of breakfast and lunch, but it is not part of the S-group chain.

3.4.1 The 10 Rs

The general guideline for sustaining minimum environmental impact, is to follow Middleton's (1998) management practice, the 10 Rs. It is a tool, which can be used to shift the negative aspects to more sustainable ones. To achieve environmental sustainability within a company the 10 Rs is to be incorporated to the environmental management systems, EMS, which will be reviewed in the following chapter. The 10 Rs are;

1. Recognize
2. Refuse
3. Replace
4. Reduce
5. Re-use
6. Recycle
7. Re-engineer
8. Retrain
9. Reward
10. Re-educate

In able to know what to improve, we need to know our current situation. Therefore we need to 1) recognize, the current situation. This can be done by implementing environmental assessments and audits. After recognizing the damaging operations

the company can 2) refuse from engaging in these activities as soon as possible. Those activities that cannot be refused can be 3) replaced with more efficient alternative. 4) Reducing the use of resources according to the level of usage will save the costs. 5) Re-use whenever possible, for instance avoid disposable items and prefer re-usable ones. Where re-use is not an option, comes 6) recycling. The resources that cannot be utilized in the company can be recycled for further use for something else. 7) Re-engineering means changing the traditional corporate structures and operations to even more cost-reducing and growth achieving in ever more competitive conditions. It especially applies to new design and purchases. 8) Train the staff to adopt to the environmental mind setting and to pursue environmental operations. It has been researched that practicing sustainable operations generates job satisfaction for many employees. 9) Rewarding employees can help to motivate them. 10) Re-educating is about changing behavior. Corporates have a special responsibility to inform, interest and enthusiasm about environmental awareness to their customers. (ibid. 134-140.)

3.4.2 Environmental management

As stated by Shah (2007) Environmental management systems (EMS) are mainly divided into four categories; an internal EMS without certification, step-by-step systems to develop EMS, certification to ISO 14001 and certification to eco-management audit scheme (EMAS). The internal EMS is the most cost saving, since it does not require certification fees. It allows the focus be on the part that benefit the company the most, but on the downfall might leave out other important elements. Therefore it is recommended for the EMS to follow the principles of ISO 14001 to cover risk assessment and legal compliances. (ibid., 113.)

The step-by-step EMS, is mainly for small and medium sized enterprise. This enables the enterprise to slowly move towards the possibility of certification, implementing environmental practices step-by-step into their operations. Before moving on to the next step audits are required. (ibid., 114-115.)

ISO 14001 is an internationally recognized environmental management system. They provide standardized methodology for delivering environmental practices within the company. The system helps to identify, manage, audit and reduce the environmental risks. ISO 14001 is part of ISO 14000 series documentation. External certification gives the company reliability in the eyes of the stakeholders. They can rely on the system meeting recognized requirements and standards. (ibid., 115-116.)

EMAS uses the ISO 14001 as a basis of environmental management. It can be used to show the development compared to a prior audit. In addition it offers targeted information for the stakeholder groups. (ibid., 116.)

3.4.3 Energy efficiency

According to Chen, Legrand and Sloan (2009) the use of a hotel is typically divided into; the guest room area, the public area and the service area. Depending on the area, the energy consumption varies. The guest room, which is the bedrooms, bathrooms, toilets, other individual places, uses varying energy loads. The public area consists of reception, lobby, bars, restaurants, meeting rooms, gym, swimming pools, sauna etc. These spaces often have a high heat exchange with the outdoor environment, which causes thermal losses. The third area is the service area, which includes kitchens, offices, staff facilities, store rooms and machines rooms and technical areas. These areas use intensive energy and often require an advanced heating, ventilation and air conditioning. (ibid. 20.)

According to the US Environmental Protection Agency, the distribution of energy at a hotel is divided as follows: 50 % for space conditioning purposes, 20 % on lighting, 15 % on water and a small percentage on operating elevators, pumps and other additional equipment. (Chen et al. 2009, 20.)

If energy accounts for a quarter of all the operation costs, then 20-percent saving in energy can increase the overall profit by 5%. (Sustainability Toolkit - Hospitality. 2009.) The majority of energy used in hotels is based on fossil fuel or nuclear reactors. If a business aims to be more sustainable it should consider exploiting

renewable energy sources. Renewable energy sources encompass wind energy, solar energy, wood or other biomass, fusion and hydropower. To ensure the reliability of the energy source, the energy purchaser should refer to ecolabels, such as European Green Electricity Network, EUGENE, label. This label guarantees the authenticity of a renewable energy source. (Chen et al. 2009, 17.)

Energy auditing maps the energy saving opportunities in the structures of an establishment. First the current status of each fuel and energy consuming system is systematically reviewed with statistics. After that the results are compared to other similar establishments and target assessments. After benchmarking proposals are made concerning usage, repair, maintenance or renovation. An energy audit can be conducted annually to measure the past and current energy balance. (Chen J., Legrand W., Sloan P. 2009, 21. Myyryläinen L. 2008, 48.)

Energy efficiency is indicated by the energy efficiency number, which is calculated by dividing the building's required amount of energy with the building's gross area a number is received in the unit kWh/brm^2. Different facilities have different classifications for their energy efficiency. Classifications are ranked from A to G. In order for an accommodation facility to reach class A for the energy certificate, the consumption of energy is to be less than 141 kWh/brm^2. For class G the equivalent amount is over 440 kWh/brm^2. (Myyryläinen. 2008, 54-56.) Other good indicators for a hotel is to use the consumption of energy per annum, consumption of energy per habitational unit – UH, consumption of energy per guest, consumption of energy per type of energy consumed. (Adamires, Jurema Márcia Dantas da, Marli de Fátima Ferraz da Silva & Sergio. N.d.)

It is a wide misconception that only by installing advanced, high maintenance and expensive technologies energy reductions is achievable. They can help, but in most cases common sense is widely recommended. Energy audits reveal how much energy is used and in which ways. (Chen et al. 2009, 18.)

Guest and employee education significantly contribute to energy saving. By finding creative ways to educate them just by informing, without entireties or making them feel guilty, is an efficient strategy. (Hitchcock & Willard. 2009, 160.)

When choosing electrical appliances of equipment, the ones chosen should have high efficiency ratings. (Mumovic & Santamouris. 2009, 64.) Electrical equipment should be switched off when not needed. With intelligent room functions, the electrical appliances switch off, apart from the refrigerator, no matter whether the guest is in the room or not. (Chen et al. 2009, 23.)

3.4.3.1 Heating, ventilation and air conditioning (HVAC)

HVAC systems can account up to 50 percent of the total utility costs in a hotel. The geographical location is the major influence. By investing in latest equipment the hotel can save up to 30% energy in air conditioning, compared to those air conditioners manufactured 20 years ago. Chiller units today do not only save energy, but they also recover the heat they produce during the process. The heat that would before expel to the atmosphere can now be used to heat other features, such as swimming pools or laundry. (Chen et al. 2009.)

Heat pumps can supply hot and cool air. Geothermal function similarly to heat pumps, but provide heat from the ground. Since it uses the earth's natural heat it is the most efficient technology available. Combined heat and power systems are effective and comprehensive, since they convert gas into electricity, heat and hot water. The production of carbon dioxide is reduced since it runs on gas. (Chen et al. 2009, 23.)

With careful design in the building façade a hotel will be able to reduce energy consumption in heating. Means for energy reductions are to optimize glazing ratios for heat gains, daylight and artificial lighting. U-values measure the effectiveness of a material as an insulator in buildings. The lower the U-value the better for the building insulation. To optimize the insulation detail junctions between the fabric components in order to prevent unwanted air from penetrating the building. (Mumovic & Santamouris. 2009, 63).

The recommended indoor air temperature is between 22-24 degrees Celsius, whereas humidity is to be maintained at 50% plus or minus 5%. (Booty. 2010, 318.) Air volume systems should vary according to the customer demands. With low

occupancy, less air is required. However, caution is advised to avoid air stagnation and moisture build-up. (Mumovic & Santamouris. 2009, 64.)

The indoor air quality pertains to health and well-being as well as productivity. The quality of air constitutes from temperature, humidity, cleanliness, air-flow, ventilation and air-conditioning equipment and maintenance. However, there is no legislation or EU directives for air quality. To save energy and improve indoor air quality The Heating, Ventilating and Air Conditioning Manufacturers Association (HEVAC) suggests equipment, which controls itself according the level of usage, by going to sleep mode when equipment is not used. These equipment should have ozone filters installed, and they should be maintained and cleaned regularly. Furniture and carpet material is to be chosen by assessing the impact of indoor air quality. They should also have low emissions of volatile organic compounds. (Booty. 2010, 315.)

By intelligent room functions electricity is adjusted according to the guest's presence in the room. When the rooms are not occupied heating and cooling should be switched off. Make sure that heating and cooling cannot be provided simultaneously. (Chen et al. 2009, 23-24.)

3.4.3.2 Lighting

Using daylight is the most energy saving option for lighting. There are other positive features in using daylight, such as increase in workplace productivity and improved learning. (Hitchcock & Willard. 2009, 156.) As stated by Ward (Mumovic & Santamouris. 2009, 63-64) to optimize the use of daylight, windows should be placed with a view to sky zenith. This placement generates three times more brightness compared to the horizon. Windows above eye level, or roof glazing will also allow more daylight. The material selection in the interior, floors, ceiling and walls, should be light to reflect the daylight. The bulbs and reflecting surfaces should be cleaned regularly to optimize the efficiency. Artificial lighting can be planned so that the lighting systems switches off progressively according the distance further from the windows. A lighting system can correspond to the available daylight level. Also, time

and motion sensors are beneficial for turning off the lights when appropriate. (Chen et al 2009, 24; Mumovic & Santamouris. 2009, 64.)

For artificial lighting compact fluorescent light (CFL) use 75 % less energy than standard incandescent bulbs. In addition they last 10 times longer. This lighting is suitable for those areas that require lighting most of the time. If a colorful option is desired then light emitting diode, LED lighting is preferable. LEDs are bright and provide more color rendition. The life span of LED is between 100 00 and 1 000 000 hours, when comparing to compact fluorescent light which is 30 000 hours. (Chen et al. 2009, 24.)

3.4.4 Water management

Water management is another important part of EMS and criteria for ecolabel certification. Water is a crucial resource in the hospitality industry, since it is used for bathing, cooking, washing, kitchen, laundry, pool and HVAC. Half of water is consumed in guest rooms. It is used for showers, toilets and sinks. The rest of the use goes to kitchen operations, laundry and public areas. Some hotels have even estimated that only small percentage is consumed in the guest rooms and the rest is used by the chambermaids during cleaning. By implementing environmental awareness the consumption of water can be highly reduced. The purchasing of water and water disposal are becoming increasingly cost consuming, since there is water scarcity. Metering water consumption gives clear image of how much is consumed, what consumes it the most. It helps to identify areas for savings. The KPIs to measure water consumption could be consumption of water per guest or amount of water reused in the hotel. This enables benchmarking. (Chen et al. 2009, 41-43; Shah. 2007, 272-274.)

Also in water management, the principle of three Rs is to be implemented; reduce, reuse and recycle. In the hospitality industry water conservation should not however compromise guest satisfaction. Adequate water comfort should be maintained when planning water management. (Chen et al. 2009, 41.)

The practices for a hotel to implement in order to conserve water is to install flow-controllers of low-flow fixtures. This is best implemented in the areas that require less water pressure, for instance kitchens and public toilets. Infrared sensor in the taps and showers allows water usage only when the object is underneath them or until the allotted quantity of wash has been delivered. It can reduce water consumption by 70%. Another way of encouraging guests to spent minimum time in the shower is to place a timer in the shower to monitor the time spent. When designing water management what needs to be taken into consideration is whether these methods are suitable for guest rooms or if there is another alternative. (Chen et al. 2009, 41-43; O'Callaghan. 1996, 252.)

Toilet flushes account up to 40 % of domestic water use. One flush usually consumes around 9 liter of water. Alternative toilets that use less water are dual flush toilets, with the option of lower (4 l/flush) and standard flushes; gravity toilets, that is purely based on gravity; pressure assisted toilets, which combine gravity and compressed air. (Chen et al. 2009, 43; O'Callaghan. 1996, 250.)

Identifying water leaks in supply pipes can save up to 20 % water. A single dripping tab can consume about 12 l in an hour. If leaks are unidentified it can lead to structural problems in the building. (O'Callaghan. 1996, 248; Shah. 2007, 273.)

3.4.5 Waste management

The amount of waste has increased significantly over the past few years. The consumption habits have changed to favor the easiest exploitation. For instance the popularity with fast food and disposable product is growing. The life cycle of long term products has also shortened. Electrical equipment rapidly produce new models that appeal to the customers. Therefore products are taken out of use because of the lacking technical features and changing trends. (Boström, Linnanen & Miettinen. 1994, 195.)

The core for waste reduction is reuse, reduce and recycle. By following these steps can allow a company even zero waste to landfill. By following eco-procurement the

purchaser looks for the traditional qualities, such as price, delivery, convenience, but also takes into consideration the packaging, and the dispose of it and the design for disassembly (DFD). DFD is a principle used by the manufactures. Products are designed in a way that it can be dismantled in the end of its life, or the reuse is optimized, or recycling of materials is possible. (Chen et al. 2009, 29-30.)

The minimization of packaging and waste is to be required from suppliers as well. Product can be purchased in bulks or cleaning detergents can be purchased in a concentrated form which reduces waste. Shampoos and soaps can be provided from a refillable container.

By doing a waste audit, you can see what is being thrown away, and when doing a purchase audit, you have an idea what is being bought. Always consider the necessity, sourcing, recyclability and longevity. This mindset allows even zero waste to landfill. (Booty. 2010, 324; Hitchcock & Willard. 2009, 161.)

3.4.6 Resources and purchasing

Things to consider about purchasing is the life cycle of the product; where the materials come from, how they are transported, how they are manufactured, how they are then transported, how the product is used, what happens after usage. Life cycle assessment, LCA, evaluates the environmental impact of all of these phases. (Hitchcock & Willard. 2009, 61-62.) A lot of the purchasing is linked to the previous section, waste management, such as considering packaging and how the product is disposed, can it be reused or recycled. Companies should encourage and demand their suppliers to commit themselves to sustainable activities.

The best thing for sustainability is that the product is built to last and built simple. What should be noted is that the lowest price of a product does not guarantee the ‘best value’. The characteristics to look for in a product are ecolabels, domesticity and quality. What should be avoided in the purchasing are toxic materials, unnecessary packaging, disposable and unnecessary products, irreparable items, high

energy consuming devices and polluting items. (O'Callaghan. 1996, 256; Shah. 2007, 262.)

3.4.7 Housekeeping and cleaning

The main responsibilities of housekeeping are to maintain the cleanliness, attractiveness and aesthetics by cleaning the rooms. This includes changing and folding linen, dusting, cleaning the bathroom facilities, vacuuming, restocking the supplies and such. (Asunta et al. 2003, 57)

When choosing detergents, their whole life cycle has to be taken into consideration, how to product is manufactured and where, whether there are any environmental hazards, what the transportation methods are, what does the detergent induce and how it decomposes. (Asunta et al. 2003, 48.)

Traditionally cleaning products are loaded with dangerous chemicals, which can trigger respiratory problems. For the detergent to be green, it must not contain petroleum based chemicals or harsh synthetic compounds. The ideal is for the cleaning products to be pH neutral, with fewer toxic chemicals. (Chen et al. 2009, 46; Hitchcock & Willard. 2009, 162.) As for other qualities of the detergents, they ought to be in a concentrated form and stored in large packages in order to minimize waste. (Shah. 2007, 236.) Guests should be reminded of the possibility that linen does not have to be washed every day. This will reduce the water consumption.

For the hotels' to be green we have introduced now the most common environmental management systems, EMS. To support the EMS a management tool of 10 Rs was reviewed. The main sections that most ecolabels asses are environmental management, energy efficiency, water management, waste management, resources and purchasing. Housekeeping and cleaning was added due to the contribution it has on hotel operations and its environmental impact. We have review the methods of each section that can implemented in order to produce minimum impact on the environment. For energy efficiency, companies should opt

for renewable energy sources. By executing an energy audit, an entirety of the overall energy consumption is formed. This helps to identify those areas which need improvement. The use of electricity in a hotel room should be regulated according to the level of usage. For water and waste management the policy of three Rs are to be implemented; reduce, reuse and recycle. When selecting products and equipment the whole life cycle of the product is to be taken into consideration. The characteristics to favor in products are ecolabels, high energy efficiency, quality and domesticity. The following chapter reviews the how the key performance indicators KPIs of each section can be compared to other hotels through benchmarking.

3.5 Benchmarking

Before benchmarking, audits from the required field must be performed. This would include for instance electricity, water and waste. In a report studying sustainability and benchmarking in hotels by Bohdanowicz, Simanic and Martinac (2005) there is a definition according to Wöber (2001) "*benchmarking is a systematic procedure of comparative measurement with the objective to achieve continuous improvement*". This is executed by comparing the results from the audits with facilities with similar characteristics. Benchmarking can be internal, which would be comparison between different departments or sections, or external, comparison with different organizations. The external benchmarking can be divided to *competitive benchmarking,* which is benchmarking with competitors in the same industry, *best practice benchmarking*, which in non-competitive benchmarking, and *sector benchmarking,* which compares the specific sectors or industries. Benchmarking can be highly motivational tool to achieve sustainability within a company. (Bohdanowicz, Simanic & Martinac. 2005.)

Bohdanowicz (edited by Gössling, Hall & Weaver. 2009.) explicates that the information that is usually required for benchmarking include energy, water, chemicals consumption, waste generation, turnover, number of customers, outdoor and indoor temperatures and humidity. The key performance indicators, KPIs, are usually performed in a normalized form, such as consumption per guest per night or

per square meter. Not just that, but there needs to be a collection of pro-environmental measures, attitudes of employees and management. These can be obtained by interviewing the employees, management and stakeholders. Benchmarking is provided by global organizations, branch associations and hotel corporations. (Gössling, Hall & Weaver. 2009, 103.) The researcher has gathered some benchmarks for comparison. They include the typical consumption of energy and water, and the best practice consumption.

According to Green Tourism, their average hotel visitor spent 19.73 kg CO_2 per night in 2011. In the year 2011 their average hotel spent energy total 277.66 KWh/m^2/year. Chartered Institute of building Service Engineers (CIBSE) created an energy consumption yardstick for different sized hotels, which can be seen in Table 2. (Green Tourism's Carbon Footprint. 2011.)

Table 2: Chartered Institute of Building Service Engineers' energy performance yardstick, kWh/m2/yr

	GOOD	FAIR	POOR
SMALL HOTELS	<240	240-330	>330
MEDIUM SIZE HOTELS	<310	310-420	>420
LARGE HOTELS	<290	290-420	>420

International Tourism Partnership, ITP, has prepared benchmarks in cooperation with Green Tourism. The Table 3 indicates energy benchmarks in temperate climate. (Green Tourism's Carbon Footprint. 2011.)

Table 3: International Tourism Partnership's Benchmarks. KWh Consumption / Bedroom

	ELECTRICITY	GAS/OTHER	TOTAL
EXCELLENT	135	150	285
SATISFACTORY	145	200	345
HIGH	170	240	410

Edensave Limited's report suggests the sufficient use of energy as follows in the Table 4. This is for hotels in the United Kingdom. (Edensave Energy Intelligence Brochure. 2009.)

Table 4: Edensave Limited's benchmarks for hotels. KWh/m2

	ELECTRICITY	GAS
ECXELLENT	<260	<80
GOOD OR TYPICAL	260-400	80-190
POOR	>400	>190

Another estimate states that a typical hotel releases 160-200 kg CO_2/m^2/year, depending on the fuel being used. (Bohdanowicz, Simanic & Martinac. 2005.)

According to benchmarkhotels the water consumption is excellent if it is under 0.48 m^3/guest/night, satisfactory is between 0.48 and 0.54 m^3/guest/night, and high id over 0.54 m^3/guest/night. (Bohdanowicz, Simanic & Martinac. 2005.) According to Edensave in the UK, water consumption less than 300 liters/guest/night was considered good and above was considered fair to poor. (Edensave Energy Intelligence Brochure. 2009.)

An estimation according to The International Hotels Environment Initiative, IHEI, an average hotel visitor produces around one kilo of waste per night. This estimation means that hotels produce tons of waste in a month. (Bohdanowicz, Simanic & Martinac. 2005.)

In this chapter we have introduced the basic benchmarks that a hotel can use for comparison. The use energy has been evaluated in what is considered good, fair and poor in a medium sized hotel. The KPI is usually kWh per m2 per year. The water consumption is evaluated the same way and the KPI is usually liters per guest per night. These are the major areas that are measured and that have the most influence on environmental impacts. The next chapter, methodology, will be explain how the environmental impacts of Original Sokos Hotel Villa were researched.

4 Methodology

4.1 Research methods

The thesis was conducted by using the case study method. The abbreviated definition of a case study by Yin (2009) is “an empirical inquiry about contemporary phenomenon, set within its real-world context – especially when the boundaries between the phenomenon and the context are not clearly evident.” The objective of a case study is understanding in-depth the real-world context of a single case or a small-number of cases. (Yin. 2012, 4-6.) Polonsky and Waller state (2011, 156.), that according to Travers (2001) a case can be an event, an organization or an aspect of organizational function. In this thesis the case is the environmental sustainability at Original Sokos Hotel Villa. Only one case was chosen, since it enables the research to be more thorough in all the aspects of environmental sustainability in this particular hotel facility. Also, there will not be an overflow of information, but the research will remain compact. Case studies are pertinent when the question is descriptive “What is happening?” or explanatory “How or why did something happen?”. The question in this case is what the environmental impact of Original Sokos Hotel Villa is. The purpose of a case study is to use empirical data as basis and not proving already conceived ideas or ideologies. (Gummesson. 1993, 7.)

In order to gain data about environmental impacts and the sustainability of Original Sokos Hotel Villa a mixed method approach is conducted for data generation. Mixed method is a research that utilizes the quantitative and qualitative data, where the both research methods supplement each other. According to Hirsjärvi and colleagues (1997, 127-128.) quantitative and qualitative methods are used concurrently, rather than placed against each other. This enables sensible presentation of results. It is said that quantitative research present numbers and so called “hard facts” whereas qualitative researches meanings and attitudes. These numbers and meanings can be mutually depended on each other. The thesis follows mostly qualitative research methods and the composition of research questions have some quantitative qualities.

Qualitative research in general includes numerous different traditions, approaches, data analysis and methods. The objective is to understand the interpretation, which

occur in various ways. Qualitative research is based on previous researches and theories, empirical material and on the writer's own empirical observations. The data was gathered through interviews and observation. (Hirsjärvi et al. 1997, 155; Räsänen. N.d.)

This thesis is a theory based study according to Puusniekka and Saaranen-Kauppinen (2006), since the analysis is based on already existing theories. The analysis is therefore guided by a pattern and the purpose is to implement it in a new context. The theory was based on literature on sustainability, sustainable tourism, sustainable facility management practices and environmental management, which was considered the best material to answer the research questions.

The purpose of a study is usually divided into four categories; exploratory research, descriptive research, causal research and definitional research. The method of the thesis was a combination of exploratory and descriptive research. Exploratory research gives an insight into the research problem. It explores new perspectives and investigates little known phenomena. Descriptive research describes the characteristics or functions that the management would most likely interested in. It documents the essential or interesting characteristics of the phenomena. (Hirsjärvi et al. 1997, 129; Polonsky & Waller. 2011, 94.)

4.2 Collection of data

The two main sources for data are primary data and secondary data. As stated by Polonsky and Waller (2011, 95.) primary data is originated by the researcher for specific purpose concerning the research problem, whereas secondary data is already existing data, for some other purpose than the current problem. Secondary data is important background information, which helps to define research problem and objectives and generate the most appropriate methodology. Secondary data for this research consisted of written sources about sustainability, tourism, sustainable facility management practices and environmental management.

To create primary data in this research, a combination of quantitative and qualitative research is conducted. The methods for qualitative research is to interview a small number of respondents who provide information about the research question. Typical features for qualitative research are comprehensive data gathering in the natural and real circumstances. Each case is unique and the material is interpreted accordingly. Acquired data is gathered through own observations and discussions with the research related people. The sampling method is likely to be probability sampling rather than nonprobability sampling. (Hirsjärvi, Remes & Sajavaara. 1997, 155.)

The sampling method for gathering the primary data can be chosen from nonprobability sampling or probability sampling. For this research a nonprobability sampling is conducted. The members of the sampling are purposively selected by the judgment of researcher. This is called judgmental sampling. (Polonsky & Waller. 2011, 140.) The author has identified the key stakeholders of the organization with the best knowledge to answer the research questions. Those are the Original Sokos Hotel Villa's hotel manager and service manager, and the rest of the interviewees come from outsourced companies, that are maintenance and cleaning.

Hirsjärvi and colleagues (1997, 190-191.) have stated that interview questions can be structured, unstructured or semi-structured. In structured interview the questions and answers are predetermined. Unstructured interviews are only roughly predetermined, therefore there are no predetermined answers. In the thesis we will be using structured and semi-structured interviews. Semi-structured interviews is the combination of structured and unstructured interviews. Questions in the interview are predetermined but the interviewees can reply to them by using their own words. When composing the questionnaire, it is important to keep it simple. Questions were specific in order to avoid mistakes in interpretation. The multiple choice questions help the interviewee to identify the case, without remembering various parts of it. Open questions that do not have answers in beforehand indicate the interviewees' knowledge about the matter. They also support the answers that multiple answers cannot provide. (Hirsjärvi et al. 1997, 190-191.)

According to Cresswell (2014, 9.), a mixed method approach is the combination of qualitative and quantitative research. In the questionnaire this helps us to ask

quantitative questions that qualitative research cannot provide answer for and vice versa. For instance in the Appendix 1: Questionnaire, there are quantitative questions such as “Does the building have energy management system?” and qualitative questions “What have you done in your operations to reduce energy consumption?”. The questions dealt each part of the environmental sustainability that ecolabels require.

According to Räsänen (n.d.) the communication does not always have to happen face to face, but can also be performed via mail, phone or e-mail. A questionnaire was sent to the selected interviewees via e-mail. This would give the interviewees some time to acquire the information that was asked in the questionnaire. Some of the questions were structured, so they had answers from which to choose one or several options, and to some they had to answer by their own words. After sending the questionnaire, an interview was conducted. The interview was a structured interview, also known as questionnaire interview, which followed the outline of the composed questionnaire that the interviewees had already received. (Hirsjärvi et al. 1997, 197.)

First an interview was conducted with the service manager of Original Sokos Hotel Villa in the hotel. This gave an employee perspective how sustainability is carried out within the company for instance the lighting and recycling. Notes were written down to the questionnaire according to the answers. The interview proceeded with no interferences. The second interview was agreed with the hotel manager in Original Sokos Hotel Ilves and followed the same pattern as the first one. The interview gave a clear picture of how a renovation was conducted according to the standards of Nordic Ecolabel. The details of energy, water and waste management was carefully reviewed. Details about the cleaning was sent via e-mail to the researcher on behalf of the cleaning department. After composing the research results they were sent for the interviewees to confirm that the answers were accurate and fixed accordingly.

Hirsjärvi and colleagues (1997, 201-202.) state that through observation information will be obtained whether people really act like they say they do. The benefits of observation is that it helps to gain direct information about the individuals, groups or organizations actions and behavior. It is the real world study. The disadvantage is that the observer might get emotionally attached to the studied group of situation.

Therefore the objectivity suffers. Sometimes researches must rely on memory if the information if difficult to obtain instantly. (ibid.)

According to Polonsky and Waller (2011, 142-143.) the errors that occur in data gathering are divided into two parts; random sampling error and nonsampling error. A random sampling error occurs when the sample members do not represent the group whom the researcher really wants to research. The possibility of random sampling error has been left out of the research since the interviewees were selected carefully on the researcher's behalf. Nonsampling errors consist of response errors and nonresponse errors. Response errors affect on how people respond to the questions, if their answers are inaccurate or the answers are misrecorded or misanalysed, and nonresponse errors mean the people that did not respond to the questionnaire. To avoid response errors the researcher needs to ask the right questions, that best answer the research question. (Polonsky & Waller. 2011, 142-143.)

5 Research results

The research results are based on own observations and the interviews conducted with the hotel manager and service manager of Original Sokos Hotel Villa. Results from cleaning are based on the answers received by e-mail from cleaning manager in Original Sokos Hotel Villa and own observations. Maintenance provided Original Sokos Hotel Villa's results on energy and water consumption. The secondary data consists of internal data on Original Sokos Hotel Villa's website and the S-group's sustainability overview.

The S-group has published their sustainability overview for 2012. The S-group includes a network of companies in the retail and service trades, which is more than 1 600 outlets. In the sustainability overview, the S-group has reviewed the sustainability of their operations. It shows how much they have saved electricity,

water and waste compared to last year. The results include all the S-group's outlets, with some notions about the Sokos Hotels chain in general. There is no specific information there about Original Sokos Hotel Villa, so the results are more directional about the sustainability of their actions.

Environmental management: Sokos Hotels do not have an environmental management system. The ecological principles follow the guidelines that Nordic Ecolabel has set. Original Sokos Hotel Villa had a major renovation in order to receive the label, so everything was renovated according to the criteria that Nordic Ecolabel has set. Sokos Hotels do not implement environmental awareness or programmes for their staff. It was brought forth that Sokos Hotel chain mostly dictates the operations, so it is hard for one person to try to change something that they would see fit. Information about energy and water consumption is available from the whole building.

Original Sokos Hotel Villa has received Allergy label that's purpose is to enhance the quality of indoor air, selection of surface material and methods of cleaning and cleaning products. More about the allergy label can be read further ahead in chapter 9.3.

Energy efficiency: For the first time a new reporting system was used to measure the facilities area and energy consumption. Energy consumption was 3.9 % more efficient in 2012 than in 2011 in the whole S-group. The whole energy consumption of S-group was 1 157 GWh. S-group is part of Society's Commitment to Sustainability concept. This means that more emphasis will be put on energy efficiency and the use of renewable energy sources. They commit to setting individual goals for energy consumption for each S-group location. By the year 2016, half the S-group shops will be operating on wind power. (S-ryhmä mukaan kestävän kehityksen yhteiskuntasitoumukseen. 2013.) However it remains to be seen whether Original Sokos Hotel Villas is going to be one of the companies operating on wind power. Currently electricity is provided by Tampereen Sähkölaitos Oy. Their source of

electricity is 69.7 % renewable energy, 14.1 % fossil energy and 16.2 % nuclear power. (Sähkön alkuperä. 2012.)

Energy consumption is regulated in the rooms with key cards. When the keycard is inserted in a slot in the wall, the electrical appliances and heating and ventilation switch on, and when key card is off the slot the appliances switch off. Refrigerators are the only appliances that remain on at all times. However, Original Sokos Hotel Villa has removed refrigerators from all the rooms, except from superior class rooms and suites, in order to save electricity. This is a highly energy efficient method.

HVAC: Original Sokos Hotel Villa uses district heating as a source of heating. It is provided by Tampereen Sähkölaitos Oy. The fuel being used in Tampereen Sähkölaitos divides accordingly: natural gas 65 %, peat 22 %, wood 11 % and oil 2 %. The energy source divides to 78 % fossil fuels and 22 % renewable energy. (Kaukolämmön alkuperä. 2013.)

The room temperature in the hotel is 21.5 degrees of Celsius. It can be adjusted in each room by 3 degrees in both ways. The room temperatures of all rooms can be seen from a computer and monitored from there. At night time the ventilation is dropped by half in order to save electricity. If a window is opened in a room, a magnet in the window frame will set off causing the ventilation to shut down in order to prevent the simultaneous use.

The façade of the building is a 70 cm thick brick wall. Brick absorbs heat from the sun, and releases the heat during the night time. According to Rytilä (1994) it has been estimated that massive brick structures can save 3-10 % of heating energy. Burnt brick regulates automatically the moisture in the air, which adds guest comfort. (Tiili rakennusmateriaalina. N.d.)

Lighting: At Original Sokos Hotel Villa, one room usually has one very small window, which does not allow much daylight to enter the room. In Finland it is practically impossible to utilize daylight in the winter time, since daylight lasts for couple of

hours at its best. However to maximize the use of daylight light colors have been chosen for the interior surfaces, which will reflect the daylight.

All the lights in the hotel are LEDs. Lighting in the lobby is usually dimmed or switched off at the night. In the corridors lights are on 24/7. In the rooms lighting and electrical equipment only work if a key card is inserted in a slot on a wall, which is a highly energy saving alternative. Areas that are not used that often, such as basement and storage rooms, have lights switched off when not used.

Water management: A new reporting system was implemented to measure the gross area and water consumption. Water consumption was decreased by 13.6 % between 2011 and 2012 in the whole S-group chain. Hotels and ABC-service stations are the major consumers of water in the S-group chain.

Water consumption has been measured. It is provided by Tampereen Vesi. Tampereen Vesi, which operates according to the ISO 14 001 environmental standards. Flow limitations were installed during the renovation to shower handles and taps according to the Nordic Ecolabel criteria. The hotel no longer has tubs (except for one in the tower suite), but they were replaced with showers, which are less water consuming. However, the hotel manager remarked whether the flow limitations are actually saving water (Nieminen, 2014.). Due to the low pressure, people tend to spend longer period of times in the showers. There is no collection of rainwater or use of grey-water on Original Sokos Hotel Villa's behalf. In public toilets water consumption is regulated by infra-red sensors.

Waste management: S-group's landfill waste was reduced by 7 % from 2011 to 2012. However the complete waste amount was increased by 3.9 %. Reused or recycled waste was 85 %. Water consumption in the S-group was 1.76 million m^3.

All the waste go through a scale before they end up in the landfill. The waste company informs the amount of waste in kilos and the hotel is charged according to how many kilos of waste has been consumed. Original Sokos Hotel Villa and Lounasravintola Eetvartti cooperate together, and their waste is collected at the

same time by Lassila & Tikanoja. The following recycling bins are located in the hotel; mixed waste, bio waste, glass, metal, paper, paperboard and cardboard and hazardous waste. However, very little of hazardous waste is produced, mostly it consists of batteries.

Amount of paper has been reduced significantly after the renovation. Brochures are only in display next to reception.

Resources and purchasing: Hotel lobby has a Coffee Bar, which sells cafeteria products and snacks. At least one item in the hotel selection is fair trade. (S-ryhmän Vastuullisuuskatsaus 2012. 2012.) In Original Sokos Hotel Villa that is exemplified by the tea selection. Baked rolls from Lounasravintola Eetvartti, and is therefore local food. Breads and salads come from Original Sokos Hotel Ilves. The origin of the ingredients of the breads and salads was unsure. Therefore this could be an area that could be improved, by having either local or organic products. The rest of the products is provided by Meira Nova Oy, which is a supplier and logistics company. They require commitment from their transportation companies to pursue improvements in their environmental impacts. The sales volumes are quite small, so therefore are the orders too.

The supplies in the hotel rooms has been kept to the minimum in order to avoid waste. Standard class rooms have refillable soap dispensers. For the time being superior class rooms have little disposable soap bottles. However, they are soon to be replaced with little sheets, which have the amount of soap for just one wash. The package size is reduced as well as the amount of soap.

Housekeeping and cleaning: Part of the cleaning products are ecolabelled with the Nordic ecolabel. However cleaning products that were used periodically did not have this certification. The pH values of the cleaning products vary, depending on the purposes of usage. The detergents are concentrates that are mixed with water. The packages of cleaning products are 5 liter canisters in order to minimize waste. Long-term residents' sheets are washed every third day. According to the representative

of the cleaning department the recycling of waste functions well, except in the case of bio waste, which can be challenging due to the small amounts of it. Information about environmental awareness has not been distributed among the housekeeping staff. Water consumption has been minimized by using damp wipes. The cleaning equipment must not be wet, except in the bathrooms.

Allergy Label

The Allergy and Asthma Federation granted Sokos Hotels as the first accommodation company in Finland to have Allergy label. The Allergy and Asthma Federation is a health organization, whose mission is to improve the life quality of Finnish people, especially those with asthma and allergies. In Finland up to 50 percent of people have permanent or temporary allergies. The co-operation with The Allergy and Asthma Federation and Sokos Hotels began in the year 2006. Currently 30 hotels have Allergy label, and the goal is to implement it to all Sokos Hotels in Finland. (Allergia. 2014; Allergy Label. n.d.)

The main issues that have been focused on are to improve the quality of indoor air, which materials have been used in the surface and interior decoration, what are the cleaning methods and detergents. What is important is that the material selection is based on quality and user friendliness. The detergents are odor-free, as well as the personal hygiene products provided. A separate floor is designed for those with pets and smokers. Original Sokos Hotel Vilas is completely smoke-free. One of the goals of this co-operation has been to demolish the use of the term ‘allergy room’ from the accommodation industry, and spread awareness about allergies in the tourism sector, by improving the quality of accommodation services. Cleaner air makes the customers feel happy, and as if they were home.

Hotels can apply Allergy Label to the entire hotel or specific rooms or floors. The criteria for the Allergy Label focus on ventilation, interior decoration and surface material, cleaning, odor-free products and specific rooms for pet owners. For the ventilation the room temperature must be between 21.5 degrees Celsius and 27

degrees Celsius, depending on the season. F7 classification for the filtered incoming air. Incoming and exhaust air flow must follow the guide values, which are 1010l/s per person and 1l/s per square meter. For the interior decoration and surface material, those materials and surfaces must be chosen which do not gather much dust and are easy to wash. Bed linen is washed in 60 degrees and is in good condition. Cleaning, such as damp wiping, must be implemented daily. Others, such as textiles in the interior decoration are vacuumed or washed are performed annually. Detergents are odor-free and stored in a separate room from other spaces with other cleaning equipment. Vacuum cleaners are central vacuum cleaners or alternatively one with HEPA filter. Rooms for pets are cleaned with separate equipment from the normal rooms. (Allergy Label, n.d.)

6 Conclusions

The purpose of the study was to research the environmental sustainability and impacts of Original Sokos Hotel Villa, and how to decrease the impacts. This was conducted by first collecting primary data about sustainability and about the best practices in a hotel that create a minimum impact on the environment. The operations that cause the biggest impact were divided to environmental management, energy efficiency, water management, waste management, resources and purchasing and housekeeping and cleaning. The researcher used a mixed method approach as the most suitable method for answering the research question. Questions were a combination of structured and semi-structured interview questions. A questionnaire was created using the primary data as a basis of the questionnaire. The key stakeholders were identified to best answer he research questions by using judgmental sampling. The stakeholders were the hotel manager, service manager, housekeeping and maintenance representative. They were first contacted via e-mail, when the questionnaire was sent also. This would enable the interviewees to obtain the information required, such as energy and water

consumption. Housekeeping replied to the questionnaire via e-mail but an interview was scheduled with the service manager and hotel manager. The interview was a structured interview that followed the outline of the questionnaire.

The results showed that Original Sokos Hotel Villa is implementing desirable measures in order to be environmentally sustainable. Energy consumption is controlled with guest room key cards, which in connected also to the HVAC systems. Lighting operates on LEDs. At night time the ventilation is reduced and the lights are mostly shut down in the lobby. Water consumption is regulated with flow controllers in the taps and showers and the toilets have a dual option for flush. Waste has been reduced by stripping the rooms from redundant products, and the waste is recycled accordingly. Salads, breads and rolled buns sold in the Coffee bar are local, the refreshments are not. However, the sales volumes of the products are not that big. Allergy label guarantees the quality of housekeeping and cleaning.

Original Sokos Hotel Villas has successfully been able to implement sustainable actions without compromising guest satisfaction. Most of the feedback from the rooms are positive. Few comments have come from the low pressure from the showers and the temperature in the rooms, but they represent the minority of the feedback.

6.1 Recommendations

According to the hotel manager Original Sokos Hotel Villa does not have an environmental management system. Their operations follow the guidelines of Nordic Ecolabel, which are based on ISO systems. This external certification gives reliability about the sustainability of their operations. However, since Sokos Hotels is a wide and popular hotel chain in Finland, they could develop their own environmental system. Other large hotel chains, such as Hilton and Scandic, have implemented their own environmental systems and it enhances their image as sustainability forerunners. EMS would show that Sokos Hotels want to be socially initiative and take pro-environmental measures. This would also enable benchmarking within the company and make comparisons between the hotels. As stated earlier in chapter 3.5

Benchmarking, benchmarking can be highly motivational method for achieving the settled consumption goals. Another thing for to consider, is applying for certification that is globally recognized, such as the Green Globe. This might be appealing for the international visitors, since Nordic Ecolabel is widely known only in the Nordic countries.

The consumption of energy, water and waste could be displayed in numbers for the staff to see. In this case the monitoring is easier, and it enables to see if the goals for decreasing consumption are met. By seeing concrete numbers, the staff can feel motivated in implementing more sustainable actions. For some people ecological actions may come naturally, so one might consider environmental training as unnecessary. However, it might surprise how the things that seem very little or meaningless, such as holding the refrigerator door open for too long or not having a lid over a pot when cooking, can be very energy consuming. Therefore staff training about ecological actions is recommended.

As for the energy source Original Sokos Hotel Villa could consider utilizing wind power as a renewable energy source. This might even be the case by 2016 since S-group is planning on implementing wind power to half of their outlets.

6.2 Reliability and Validity

According to Polonsky and Waller (2011, 128.) when choosing a data gathering method, the method chosen must be able to provide data that best measures what is needed and provides valid answer to the research question. This is called validity. Hirsjärvi, Remes and Sajavaara (1997, 216-217.) add that the measures and methodology do not always reflect to the reality that the researcher wishes to study. In some cases the interviewees might misunderstand the questions and the researcher handles them according to researchers' own mindset the results cannot be considered adequate. Validity can be reviewed from different perspectives. The core of qualitative researches is the description of people, places and events. The question is whether the explanation fits the descriptions meaning is the explanation reliable?

Accurate and detailed description of implementing the research adds reliability. Accuracy consists all the phases of the research; circumstances and the place of the interview, the time, possible interferences and the errors that might occur. (Hirsjärvi et al. 1997, 217.)

According to Polonsky and Waller (2011, 128.) The data gathering method chosen should provide data with consistent results, particularly is the study is to be repeated. The reliability of the study can depend on whether the measures are free from random error. However, since the qualitative research is based on small number of respondents, the results cannot be translated to a wider population (ibid, 134.) The weaknesses for using judgmental sampling is that it does not allow generalization and it is highly subjective. (ibid, 141.)

Overall the researcher is satisfied with the chosen research methods and results. The researcher was able to identify the best practices from each section of environmental sustainability in the hotel industry. The interview was not transcribed, but the presentation of the results were sent to the interviewees to confirm whether the researcher had interpreted their answers correctly. Results about the figures of energy consumption and water consumption were not retrieved within the timeframe, due to nonresponse error, which did not permit the comparison between different hotels. Therefore deteriorating the validity ‘since the researcher is unsure where Original Sokos Hotel Villa would rank among these hotels.

6.3 Further research

Since benchmarking was not included in this research, it would be interesting to see benchmarking between different Sokos Hotels or Sokos Hotel chain benchmarked with other hotels. Benchmarking takes so many factors into consideration that it could be a topic for another research.

Sustainability is a wide concept and since this study was from the environmental perspective it leaves the social and economic realms open for research. As earlier mentioned these three reals often are intertwined with each other, and in this thesis

the social and economic realms were often referred as well, for instance in cost-savings and staff training. As it was suggested in the recommendations section, a staff environmental training program could be implemented. This could be another topic for research. Further research could also include staff and visitor motivational level research in sustainable actions.

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8 Appendices

Questionnaire

Management

Is there information available about:	**No data collected**	**Partial data available**	**Whole building data available**
Energy usage			
Water usage			
Waste volume			

Does the hotel have eco labels?	**Nordic Ecolabel**	**Green Globe**	**Orthers, which one(s)?**

Does Original Sokos Hotel have an environmental management system?	**No**	**ISO 14001**	**Internal System**	**Others, which one(s)?**

Has environmental awareness/programs been implemented?	**No**	**No, but allowed**	**Yes, limited**	**Yes**

Comments:

Emissions to air

Are low emissions products and equipment used?	**No**	**Planned**	**Yes, limited**	**Yes**

Energy management

Does the building have energy management system?	**No system**	**No system, alternative control**	**Basic system**	**Full system**

Does the building have any special efficient building features?	**No features**	**Yes, some features**	**Partial natural ventilation**	**Fully naturally ventilated**
Night cooling				
Passive stacks				
Chilled beams				
Geothermal				
Others?				

Have you made any energy savings in the past 5 years?	**< 5%**	**5-10%**	**10-20%**	**>20%**

The source of energy?

What have you done in your operations to reduce energy consumption?

What kind of lighting is being used?	**No**	**Yes**
Energy saving		

How is the lighting controlled in rooms and public spaces?

Comments:

Water management

Is the water consumption measured?	**No**	**No, could be**	**Some**	**Yes**

Is there any water saving measures? E.g.	**No program**	**Planned program**	**Some program implemented**	**Yes, full program**
Flow limitations				
Collection of gray water				
Collection of rainwater				

Source of water?

Comments:

Waste management

Is there a recycling program?	**No**	**No, but allowed**	**Yes, limited**	**Yes**

Are separate bins available for recyclable items?	**No**	**No, but allowed**	**Yes, limited**	**Yes**

Are following bins available	**No**	**Yes**
Energy waste and plastic		
Mixed waste		
Bio waste		
Glass		
Metal		
Paper		

Paperboard and cardboard		
Hazardous waste		

Is the consumption of waste minimized?	**No**	**Yes**

Is the consumption of waste monitored?	**No**	**Yes**

Is there waste avoidance?	**No**	**Yes**
Returnable bottle		
No small packages		
No-can policy		
Others?		

Are you aware how much waste is produced?	**No**	**Yes**

How much?

Comments:

Products and purchasing

Are the products provided:	**No**	**Partially**	**Yes**	**Which one(s)?**
Local				
Eco-labeled				
Organic				
Domestic				

	No	**Yes, partially**	**Yes**

Has the life cycle of the products been taken into consideration?			

Other Pollutants

Is Original Sokos Hotel Villa implementing any practices to reduce:	**No**	**Yes**
Noise		
Light		
Runoff		
Erosion		
Ozone-depleting compounds		
Air and soil contaminants		

Cleaning

Are the cleaning products eco labelled? (Which ones?)

Is the pH value in cleaning products neutral? (Which ones?)

Are the cleaning products concentrated? (Which ones?)

Is the package size large in cleaning products in order to minimize waste?

How often are the linen washed for long-term visitors?

How well the recycling is implement?

Have the staff members been educated about environmental matters?

Has the water consumption been minimized? How?

Anything to add?