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Case Study for Assessment of Environmental and Social Responsibility

Examining possible fuel suppliers for Pääkaupunkiseudun Kierrätyskeskus Oy

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The purpose of this thesis study was to evaluate different methods for the assessment of corporate responsibility. Environmental and social responsibility were the main focus areas of research. A case study relating to the assessment of responsibility was also carried out. The case study gave some practical results which could be used in the evaluation of the different methods.

The theory includes background information on the LCA method, which was not considered in the case study. Theory is provided also for GRI reporting and environmental barometer, the tools that were used in the case study.

The case study was done for Pääkaupunkiseudun Kierrätyskeskus Oy, a recycling company in Helsinki, Finland. The goal was to evaluate and compare potential fuel suppliers of biofuel. The biofuel is to be used for the transportation needs of the company, which currently uses regular diesel. Comparison was focused on the environmental and social impacts of the production process, and corporate responsibility.

The results of the case study were used to evaluate the efficacy of the methods used for assessment. The conclusion was that the combination of multiple tools and assessment methods is needed for an accurate assessment of corporate responsibility.

Keywords	environmental responsibility, GRI report, environmental barometer, LCA, Pääkaupunkiseudun Kierrätyskeskus Oy

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1 Introduction

Among the most important characteristics or aspects of an organization are their relationships with the environment and with society. This relationship does not apply solely to the internal business actions but also to the relations with other companies. The reputation of a successful corporation can quickly and sometimes irreversibly be tarnished as a result of an environmental catastrophe or accident caused by actions within the operations of the business. This can also be detrimental to other organizations who have had business relations with the offender. On the other hand, a growing business can improve its reputation and image by being recognized as a fair employer and a responsible party with respect to the environment. These values improve relations with customers and other businesses, and therefore can aid in the financial progression of the organization. On average, most businesses probably lie somewhere in the middle of these extremes, not receiving much recognition for an adverse or favorable view towards the environment or society.

Due to the significance of these relationships, they can be the decisive factor when comparing services or products from multiple establishments. Contractual decisions and other business actions must not be based on financial aspects alone; an assessment of the environmental and social responsibility of the organization in question will give valuable information which can aid in making a decision which will not jeopardize the business's own image. The case study in this report concerns a decision to be made about potential biofuel suppliers.

A significant portion of worldwide greenhouse gas (GHG) emissions is attributed to transportation. With the goal of increasing the use of renewable sources in transport fuel and thus reducing emissions caused by fossil fuels, the EU has passed a renewable energy directive. This requires member states to have 10% of their transport fuel derived from renewable sources such as biofuels by 2020. To ensure adequate and controlled results, the used biofuels must also follow given sustainability criteria in order to be counted towards the 10% target. [1] Businesses which rely heavily on transportation can improve their image by altering their operations to support the goal of this directive.

The concept of using biofuel as a transportation fuel in place of traditional diesel or gasoline may sound like an obvious improvement in terms of conserving the environment

and reducing greenhouse gas emissions. After all, replacing a portion of the fossil fuel in diesel or gasoline with a fuel derived from renewable energy sources naturally limits the amount of harm caused by the fuel. However, by thoroughly examining potential biodiesel providers and producers, a decision can be made which also takes into account the environmental and social responsibility of the organizations.

In order to make a responsible decision in the selection of biodiesel choices from commercial suppliers, a thorough examination and analysis of all relative factors and influences must be conducted. This includes, for example, reviewing the reputation of the suppliers in terms of sustainability, researching the type of raw material used in the biodiesel, and analyzing the environmental and social impacts of the production process.

2 Goal and scope

The goal of this thesis was to study different ways of assessing the environmental and social responsibility of organizations. There are many tools which can help in evaluating the performance and reputation of the actions and values in a company. Perhaps the most thorough assessment can be reached through a life cycle analysis, a lengthy process which requires both accurate data and information as well as a specific product or process which to analyze. However, resources may be limited and a more general picture of an organization can also give valuable information to interested parties. One way of achieving a clear representation is to review the annual report, or more specifically the GRI index. This contains information of the company's economic, environmental, and social indicators. Another tool is an environmental barometer, which gives an approximate assessment of different environmental categories through a set of questions. These two types of assessments are to be reviewed and applied in a case study, which gives practical results that help in the evaluation of the tools. The majority of data in this report is qualitative, and therefore some of the results may not be as definitive or objective as a quantitative analysis.

The case study concerns a choice of possible biodiesel fuel types to be used as transport fuel for Pääkaupunkiseudun Kierrätyskeskus Oy, a recycling company in Helsinki, Finland. The company currently has about ten diesel-engine vehicles which are being used for transportation of recyclable products such as used furniture. Replacing the traditional diesel fuel of the vehicles with biodiesel would reduce the overall emissions caused by

transportation and would fit the image of the company as an environmentally-friendly organization.

The selection of the most appropriate biodiesel from different suppliers is influenced by many factors, some more than others. The main criteria for the decision to be made by Pääkaupunkiseudun Kierrätyskeskus are the environmental and social impacts of the product and its producer/supplier. The impacts are assessed by comparing the GRI reports of the biofuel producers and using the environmental barometer to evaluate different environmental categories. For a view of other factors influencing the decision, a cost comparison of the fuel types is also carried out, showing an estimate on the annual expenses.

3 Theoretical Background

3.1 Life Cycle Assessment

Life cycle assessment (LCA), also known as life cycle analysis, is a method of measuring the impacts of a product or service. Traditionally the impacts can be measured from 'cradle-to-grave' - from the raw material production to the end use of the product. The concept of LCA is very broad, however, and can be conducted in various different ways while focusing on some aspects more than others. Because LCA was not used as a main method per se in this thesis, a limited background theory is provided in this subsection.

3.1.1 History and model

According to a publication by the European Environment Agency, the earliest studies relating to life cycle assessment began in the 1960s and 1970s. The Coca Cola Company, for example, funded a study in 1969 to compare the environmental impacts and resource consumption of beverage containers. Energy use was initially prioritized over waste and outputs because of a global oil crisis, and therefore there was little distinction between the resources going into the product and the interpretation of associated impacts. Interest with the methodology grew slowly over the next few decades until a new wave swept over a broad range of industries in the early nineties. [2 p. 13] Modern LCA guides and manuals are based on the international standards ISO 14040 and ISO 14044 [3 p. 91].

3.1.2 Structure and phases

One example of the basic structure of calculations of an LCA can be seen in Figure 1 below. The calculation is based on an approach which takes into account the inputs (materials, energy, transport) and outputs (product or service itself, emissions, by-products, wastes and recycling) of the total system. [3 p. 9]

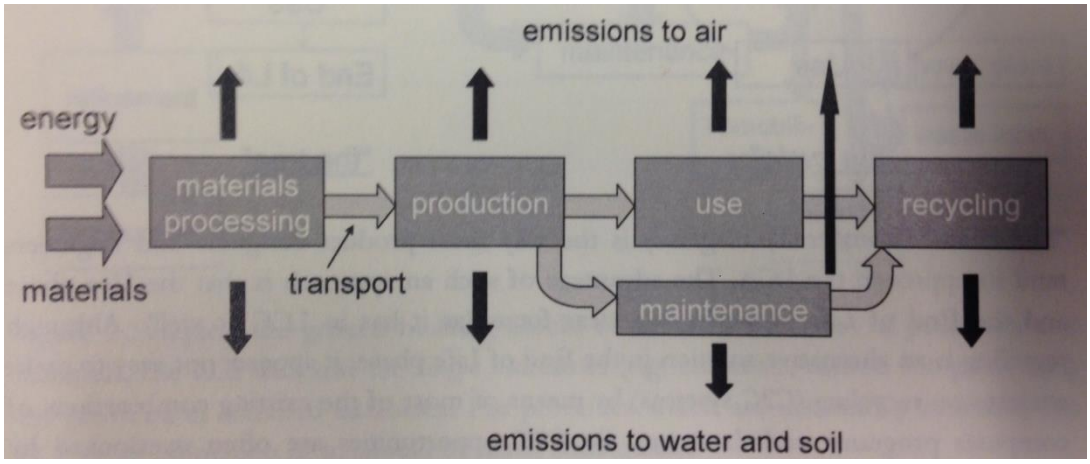


Figure 1. Basic calculation system of LCA (3 p. 9)

The first step in the LCA is to define each of the processes (black boxes in Figure 1). The definition is unique for each case and can have a significant impact on the results of the calculations. A definition that is too narrow might exclude important sub-processes and a specific definition might focus on insignificant factors. This can be called setting the goal and scope of the assessment. These pose a challenge for even professionals and thereby the optimal solutions are gained via trial and error. [3 p. 9]

Once the processes have been defined and the goal and scope has been set, the next essential step is to define the right functional unit. The functional unit of an LCA is the combination of the functionality of the system and the unit with which the functionality is expressed. As an example, we can examine a non-reusable cardboard box being compared to a reusable plastic crate as means of transporting vegetables. One might decide to choose the containment of vegetables per liter as a functional unit, but this would not take into account all the factors in the scenario. However, if the functional unit is changed to containment and transport of vegetables per liter from a warehouse to a store, the system of calculations will include all the significant factors of the process. [3 p. 18-21] The functional unit can be challenging to define for some studies, and using a wrong functional unit can lead to erroneous results in the assessment.

Because a complete assessment of a life cycle involves the consideration of numerous interconnected and embedded systems, a determination must be made of what is included and what is left out in the system. This can be seen in Figure 2, and is called the boundary limit. [3 p. 13]The boundary limit can be chosen based on the significance level of a factor on the overall impact or even because of lack of data. The choosing of the boundary limit is an important step before beginning the calculations.

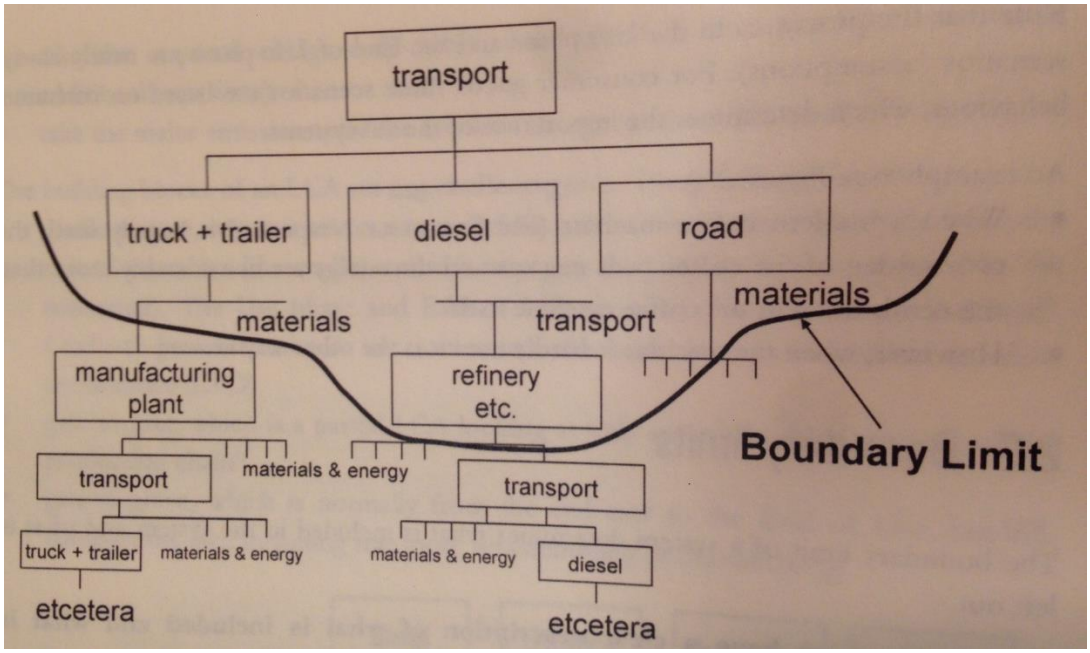


Figure 2. Boundary limit [3 p. 14]

The first three steps in setting up an LCA study (goal and scope, functional unit, boundary limit) are usually proposed in manuals to be performed in this specific order. However, doing the steps in reverse order might give a better idea of the problem to be solved by thinking about the system. The reporting of the LCA should follow the correct order, regardless of the order used in the analysis. [3 p. 24]

The next step is the LCI or life cycle inventory. This phase includes the collection of data, refining the system boundaries, calculation, validation of the data, relating the data to the specific system, and allocation. Data collection is often the most laborious part of the LCA because of all the data needed and the specific requirements set by the functional unit and system boundaries. Databases are used extensively by professionals, which provide faster results than researching each category individually. Sometimes data is

also limited and thereby changes the outcome of the study. Allocation may be required to assure that the data fits the framework set by the boundary limit. [2 p. 58-62]

A sample of data gathered for LCI can be seen in Figure 3 below:

Inventory table presenting "Gross inputs and outputs associated with the production of 1 kg of PVC averaged over all the polymerisation processes" (Boustead, 1994).

		Unit	Average[1]
Fuels	Coal	MJ	6.96
	Oil	MJ	6.04
	Gas	MJ	15.41
	Hydro	MJ	0.84
	Nuclear	MJ	7.87
	Other	MJ	0.13
	Total fuels	MJ	37.24
Feedstock	Oil	MJ	16.85
	Gas	MJ	12.71
	Total feedstock	MJ	29.56
Total fuel plus feedstock		MJ	66.80 (48 - 89)
Raw materials	Iron ore	mg	400
	Limestone	mg	1600
	Water	mg	1900000
	Bauxite	mg	220
	Sodium chloride	mg	690000
	Sand	mg	1200

Figure 3. Inventory table [2 p. 60]

The units of the categories are unique for each case and must be then related back to the functional unit through a process called normalization [2 p. 62]. As was stated earlier, much of this process can be expedited by using software which can calculate and normalize the data faster.

Once the inventory is complete, a life cycle impact assessment (LCIA) can be carried out. This can be defined as a process to characterize and assess the effects of environmental interventions identified in the inventory phase. Simply stated, the collected data is used to calculate its effect on various categories. These impact categories include land use, global warming, ozone depletion, ecotoxicological impacts, human toxicological impacts, acidification, and eutrophication. [2 p. 64-65] This process requires the classification and characterization of the inventory data, which are not discussed in this thesis.

The final step of LCA process is the interpretation of the results. If the previous phases do not contain significant errors, the impact assessment should provide results which can highlight environmental issues, confirm or contradict predictions, and perhaps show how improvements can be made. The interpretation phase gives the researcher an op-

portunity to see if there are problems in the previous phases and make corrections accordingly. The results of the interpretation and evaluation are discussed in the conclusions of the assessment. [2 p. 68-72]

As was stated earlier, LCA can be conducted in many different degrees of completeness and accuracy. This section described shortly the most comprehensive method used by professionals; other methods include the 'Fast Track' LCA and SLCA. When considering the thorough assessment of corporate responsibility, a main limitation in LCA is that economic and social impacts are typically outside the scope [4 p. 21]. In the next section we will examine an LCA of NExBTL biofuel, a Neste product which will be considered in the case study.

3.1.3 Neste LCA

The LCA to be examined in this section was part of a study done by Sami Nikander for Neste in 2008. The purpose was to research the greenhouse gas emissions and energy consumption of the biofuel product chain. The three different raw materials of the biofuel – animal fats, palm oil, and rapeseed oil – were compared using life cycle assessment as a tool. The inventory was carried out following LCA standard requirements of ISO 14040 and ISO 14044. [4 p. 2]

The main purpose (goal & scope) for the life cycle inventory was to produce data for an assessment of greenhouse gases and energy specific to the new biofuel product. This inventory included the collection of secondary data for some modules of the product chain and producing primary data for others. Most processes of the product chain were included in the inventory excluding land use, which was taken into account during the greenhouse gas intensity assessment. [4 p. 28]

The functional unit chosen for the study was MJ biofuel used, which was used in final calculations. Several other functional units were needed in the first phases of the analysis, such as the yield of one hectare for agricultural products palm oil and rapeseed oil. This unit was then converted to match the final functional unit by estimating how many hectares were needed to produce 1000 kg of biofuel. The unit for the final results is in the form g CO_2e/MJ_{NExBTL} or $MJ_{consumed}/MJ_{NExBTL}$ [4 p. 29]

For the system boundary, all factors of the process chains of each raw material are considered, except for land use and alternative waste treatment. Each process chain (production, transport energy use and emissions, pretreatment) has few aspects which are left out of the study for various reasons. [4 p. 30]

The results of the LCI were used in the next phase of the study, the greenhouse gas and energy assessment. As the next figures illustrate, the results give valuable information which can be used in the comparison of raw materials.

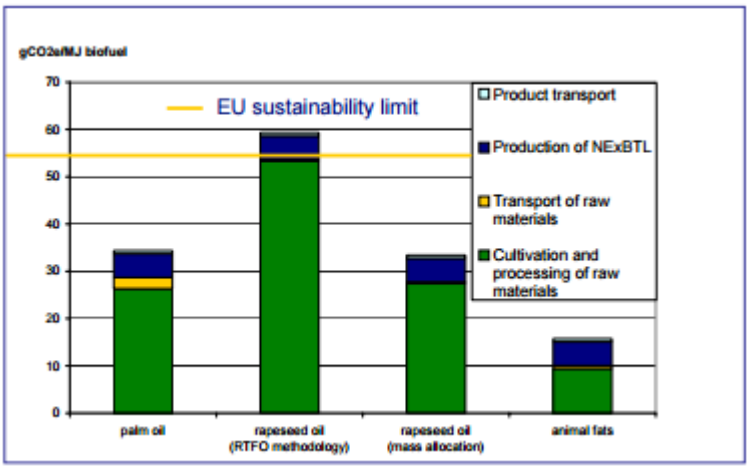


Figure 4. Total GHG emissions per functional unit [4 p.71]

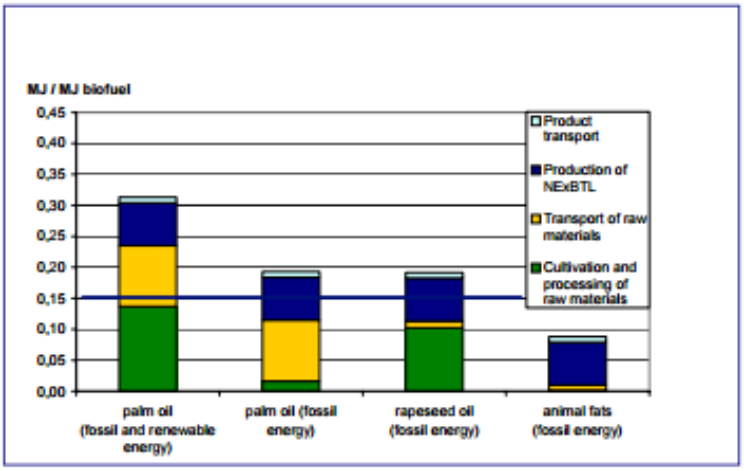


Figure 5. Total fossil energy consumption per functional unit [4 p. 72]

Both figures support the notion that the use of animal fats as raw material in the biofuel would be the optimal option in terms of emissions and energy efficiency. The blue line in Figure 5 represents the referential energy efficiency of fossil fuel (0.15 MJ/$MJ_{biofuel}$). The results of the energy efficiency also depend on the type of energy used in the processes of the product chain, which can also be seen in Figure 5. The results of this assessment

are not conclusive, however, as the purpose was for the study to be a basis for further studies.

This example of LCA shows how this methodology can be used to obtain quantitative data on the environmental responsibility of an organization, or more specifically, a product. Although this is a superior method compared to qualitative comparison methods, circumstances in time and resources can sometimes require the use of alternative tools.

3.2 GRI Reporting

One method or tool that can be used for the assessment of corporate responsibility is the review of GRI reports. This section gives some background theory on the structure and characteristics of corporate responsibility reports, and more specifically GRI reports.

3.2.1 Benefits and goals of corporate responsibility reporting

Corporate responsibility reporting can be defined as providing a sufficient and balanced picture of the outcomes of corporate responsibility and the operational actions and results of responsibility work. The publication of a corporate responsibility report is a strategic decision for a company, just as is its relationship towards responsibility and its development trends in principle. Niskala et al. list many different benefits of releasing such a report in a guide to corporate responsibility reporting. The benefits may be hard to measure financially or predict in advance, but both the company itself and its stakeholders and customers are more informed and connected via the report. The operations of a company may be responsible and in order, but without the voluntary release of responsibility information, interested stakeholders might not be convinced of the integrity of the business. [5 p. 98]

The responsibility reporting can be seen as a tool of leadership for management because the process of reporting gives a general idea of what and how much stakeholders want to know about the corporate responsibility. The reporting guidelines act as a navigational tool for leadership to set the appropriate goals which support both the business operations and responsibility requirements. The teamwork needed in compiling the report can also connect different divisions of the company. This can provide new viewpoints which can be used in the development of business strategy and leadership. [5 p. 99]

The goals of responsibility reports can be deduced from its benefits. In terms of risk management, the report aims to aid in recognizing risks relating to supplier chains, stakeholder relationships, legislations, business image, and brands. Reporting should create the possibility to compare and assess the organization's corporate responsibility with respect to legislations, norms, standards, and voluntary initiatives. The report can show how the responsibility goals affect business operations and in turn how the operations affect stakeholders and society. Another important goal is to be able to compare organizational actions and operations over time with respect to the organization itself and other entities. [5 p. 107]

3.2.2 GRI model

GRI (Global Reporting Initiative) is an international initiative to provide a similar approach used in financial report for the corporate responsibility reporting of companies and organizations. The vision is to make responsibility reporting as standardized and comparable as financial reporting. The development work for the GRI guidelines began in 1997 by the United Nations Environmental Program (UNEP) and Coalition for Environmentally Responsible Economies (CERES). The GRI guideline has rapidly achieved a status as a certified and accepted framework for reporting. GRI is a non-profit trust fund which is funded by other organizations, governments, and private businesses. [5 p. 106]

The purpose of the reporting guidelines of GRI is to provide a universally accepted reference for the reporting of a company's economic, social, and environmental operations. The goal is to make it compatible for all organizations, regardless of size, industry, or geographic location. As was stated earlier, the main goal of the GRI guideline is to increase the comparability of corporate responsibility reports. The first version of the GRI guideline was published in 1999. This pilot model was tested by businesses and through the feedback an official version was released in 2000. This included the reporting principles, which are described later, as parameters for corporate reporting. Corporate responsibility indicators also began to gain form, as did environmental indicators. [5 p.107-108] Indicators will also be described in detail in the next sections. The current GRI G4 guideline was released in 2013, which includes multiple improvements and changes from previous versions [5 p. 110]. There are numerous other tools or methods along with GRI that can be used in responsibility reporting. ISO 14000, for example, is a commonly used standard relating to environmental management. A business can create and certify its environmental management by following the standard, giving it credence and credibility.

GRI aims to aid in the use of other tools for reporting and maintaining a responsible business by providing models and guidelines which can be applied across a wide field of standards and procedures [5 p. 113].

3.2.3 GRI tools and reporting principles

The main tools provided by GRI can be seen in Figure 6 below. The tools for reporting can be divided to two sections as is seen in the figure: how to report and what to report. Standard disclosures and sector supplements give instructions which help in compiling the information needed for the report. The purpose of sector supplements is not to replace the standard disclosures, but to complement the guideline and make the reporting compatible for different sectors and industries. The protocols as well as principles and guidance, on the other hand, guide the actual writing of the report. Together these tools of GRI aim to harmonize the reporting of corporate responsibility. [5 p. 111]

Figure 6. Reporting Framework [6]

The goal of the reporting principles is to define the content of the report and ensure the quality of reported information. The principles are divided into two groups: defining report content and defining report quality. [5 p. 118] These are listed and explained shortly in Table1. The first four principles define report content.

Table 1. GRI Reporting Principles [7 p. 17-18]

Principle	Explanation
Stakeholder Inclusiveness	Identify stakeholders; explain how the organization has responded to their expectations and interests
Sustainability Context	Present performance in wider context of sustainability
Materiality	Covered aspects should reflect significant economic, environmental, and social impacts
Completeness	Coverage of material aspects and boundaries which sufficiently reflect impacts
Balance	To enable reasoned assessment, report should reflect positive and negative aspects of performance
Comparability	Information should be available consistently; report should enable analysis of performance over time – also relative to other organizations
Accuracy	Sufficiently accurate and detailed information for assessment
Timeliness	Reports should be released on a regular schedule
Clarity	Information should be made understandable and accessible
Reliability	Information and processes used in preparation of report should be made available to be checked

The reporting principles give a good evaluation method for the assessment of a report. A report with some insufficient content can still be more valuable than a report with complete content as long as it follows the reporting principles. It could be said that the content of the report is not necessarily as important as the principles of the content.

3.2.4 Standard disclosures and indicators

The scope of the responsibility report can be chosen to be either general or specific. GRI guidelines provide the standard disclosures, which guide in the content requirements and indicators of different elements, for both general and specific reports. The general standard disclosures cover the following areas: strategy and analysis, organizational profile, identified material aspects and boundaries, stakeholder engagement, report profile, governance, and ethics and integrity. These areas cover all the essential information of corporate responsibility reporting, regardless of the scope. With the content obtained for

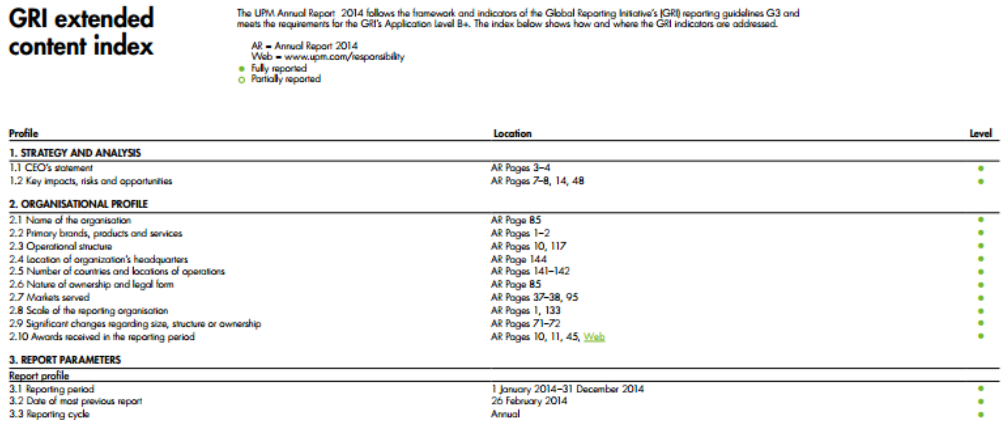
these categories, it is possible to understand and assess the basic level of responsibility of the reporting party. [5 p. 139]

A comprehensive report includes both general standard disclosures and specific standard disclosures. Specific standard disclosures are divided into three main sections: economic-, environmental-, and social responsibility. The information for the sections and subsections is reported through the use of indicators, which are used to measure the performance of corporate responsibility according to each category. Indicators give quantitative or qualitative data which improve the comparability and clarity of the reports. [5 p. 67]

In the case study of this report, only the environmental and social responsibilities were considered. Although the economic responsibility is also an important aspect for responsibility assessment, the scope was narrowed to fit parameters which could achieve the desirable results most efficiently.

3.2.5 GRI index of UPM

An index of the GRI report indicators is generally included in the annual report of an organization or company. Figure 7 shows an example of what this might look like; this index for UPM was used in the case study.



GRI extended content index

The UPM Annual Report 2014 follows the framework and indicators of the Global Reporting Initiative's (GRI) reporting guidelines G3 and meets the requirements for the GRI's Application Level B+. The index below shows how and where the GRI indicators are addressed.

AR = Annual Report 2014
Web = www.upm.com/responsibility
● Fully reported
○ Partially reported

Profile	Location	Level
1. STRATEGY AND ANALYSIS		
1.1 CEO's statement	AR Pages 3–4	●
1.2 Key impacts, risks and opportunities	AR Pages 7–8, 14, 48	●
2. ORGANISATIONAL PROFILE		
2.1 Name of the organisation	AR Page 85	●
2.2 Primary brands, products and services	AR Pages 1–2	●
2.3 Operational structure	AR Pages 10, 117	●
2.4 Location of organization's headquarters	AR Page 144	●
2.5 Number of countries and locations of operations	AR Pages 141–142	●
2.6 Nature of ownership and legal form	AR Page 85	●
2.7 Markets served	AR Pages 37–38, 95	●
2.8 Scale of the reporting organisation	AR Pages 1, 133	●
2.9 Significant changes regarding size, structure or ownership	AR Pages 71–72	●
2.10 Awards received in the reporting period	AR Pages 10, 11, 45, Web	●
3. REPORT PARAMETERS		
Report profile		
3.1 Reporting period	1 January 2014–31 December 2014	●
3.2 Date of most previous report	26 February 2014	●
3.3 Reporting cycle	Annual	●

Figure 7. GRI index [8]

The index is from the 2014 annual report and follows GRI G3 guidelines, the predecessor of G4. The whole index is not shown and would be slightly different for a report following the G4 guidelines. Although not seen in this figure, some of the categories and indicators are not fully reported, and therefore marked with an empty circle. The end of the index

also contains information regarding data measurement techniques. This follows the reporting principle of reliability, as assessors can see where the data comes from.

3.3 Environmental Barometer

Due to their mainly qualitative nature, the comparison of GRI reports is not a fully sufficient method to assess the responsibility of a corporation or business – the use of multiple tools or methods gives a more comprehensive image. Quantitative data is often needed to gain a clear understanding of different aspects in an organization. Corporate responsibility and especially environmental responsibility matters are multidimensional and therefore pose a challenge for the comparison of businesses even in the same sector or industry. One tool which aims to bridge the gap for comparison is the environmental barometer explained in this section.

3.3.1 Goals and foundation

The environmental barometer was developed in 2006 as part of a thesis study concerning environmental management by Susanna Wiss. The basic idea was to apply background theoretical knowledge for the development of a barometer to measure the environmental responsibility of different organizations. The goal was for the barometer to be applicable to all businesses regardless of industrial or geographical factors. The barometer needed to also produce quantitative results which would allow for an easier interpretation of the outcomes. [9 p.32]

The challenges of comparing the subjective nature of responsibility are alleviated with the use of this tool. The simple questions posed for businesses as part of the barometer are designed to make the comparing even between different industrial sectors feasible. [9 p. 32] However, this tool is fairly new and untested, and the subjectivity of some aspects cannot be completely eliminated.

The series of questions of the barometer are based on guides and theory from various literature sources. Among these are the ISO standard 14031, which offers guidelines for measuring the level of environmental management, and GRI reporting guidelines. Two other publications on management of environmental issues and business actions were also used as a basis. [9 p. 32]

3.3.2 Structure

The questions give a comprehensive perspective on both the versatility of actions to improve environmental management and the organization's activeness in the management of environmental issues. The barometer does not consider the actual environmental impacts of the organization, such as energy use or amount of produced waste. The four subjects to be examined are as follows: environmental management, environmental awareness, environmental reputation management, and processes. [9 p. 32-33]

The questions regarding environmental management aim to give a picture of the management's commitment towards environmental matters and the integration of these into the natural actions of the organization. Table 2 below shows the questions regarding this subject; the same form is used throughout the entire barometer.

Table 2. Environmental management questions [9 p.34]

Question	Subject of review
1	Are environmental issues managed in the organization
1A-1B	Management commitment to environmental issues
1C-2B	The integration of environmental issues into a natural part of operations, and the goal-oriented and systematic level of activities concerning environmental issues

The determination of a management's commitment to environmental issues is based on the existence or non-existence of defined environmental policies, and if the management has solutions to acquire resources for the handling of environmental issues. Without the knowledge of needed resources to manage environmental issues, it is difficult for management to invest in the policies. For the integration of environmental issues to be possible, environmental responsibilities must be shared with as many employees and organizational levels as possible. Setting goals - and methodologies with which targets can be reached - ensure the systematic improvement of the handling of environmental issues. [9 p. 34]

The environmental awareness section aims to examine how well the organization is informed on the various factors in its operations that affect the state of environment, and the obligations placed on its operations. The questions concern the awareness of both

environmental legislation and environmental risks and effects. An understanding of environmental legislation and the prediction of its changes gives an organization the possibility to fulfil its obligations and avoid making detrimental investments. Personnel knowledge of the organization's environmental perspectives and a motivation to consider environmental issues in their work is a prerequisite for the issues to be handled in practice. [9 p. 35]

The measuring of environmental reputation management is based on questions relating to the maintaining of stakeholder relationships which are important to the environmental issues, and the level of environmental communication. The essential factor in the environmental reputation - and subsequently competitiveness - of an organization is its mindfulness of legislation concerning business operations. Reputation can be ruined by the violation of applicable legislation. Conversely, awards and recognition for environmental awareness gives an organization market value in the eyes of stakeholders. Questions regarding stakeholder relationships give an understanding of an organization's attitude towards the viewpoints of stakeholders, and how actively mutual understanding is pursued in terms of environmental issues. [9 p. 36]

The final subject of questions evaluates the processes and operations of an organization. The measuring is based on the life cycle principle – each phase of the life cycle impacts the environment through inputs and outputs. The processes of the organization are divided according to the figure below, and are modified for each industry and business. In manufacturing, the processes focus on the first four sections although the last three sections will continue to receive more weight in the future. In the service sector and public administration only the first four sections are usually considered.

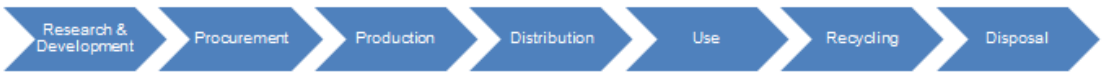


Figure 8. Process division [9 p. 38]

Environmental aspects should be considered and monitored already in the research and development phase of any process. The decisions made in the design phase have an effect on all subsequent phases of the life cycle. It is often costly and difficult - sometimes impossible - to consider environmental issues of a product after the research and development. The same can be said for procurement. Purchases made by the organization

are often based on needs of product development and production. Organizations should take into account the environmental aspects of purchases and have requirements for suppliers and subcontractors on their levels of environmental conservation. [9 p. 38]

The production process is generally the most critical in terms of environmental issues for both industrial production and service production. Even if issues were not considered sufficiently in the development and procurement phases and opportunities to influence production were consequently minimal, the effects of environmental violations occurring during the nahvas production process can often be significant and long-term. The questions regarding the production focus on the effectiveness of efforts to minimize factors that affect the environment i.e. material consumption, energy use, emissions [9 p.39]

The transportation services used for distribution by an organization tend to be influenced by expenses. However, the most cost-efficient option can often be the least efficient with respect to the environment. Although logistics are not emphasized greatly when considering environmental issues, the neglect of this phase can lower the environmental conservation level of a company or at least ruin its environmental image. The questions about distribution give a picture of the actions taken by an organization to decrease the environmental impacts of transportation. [9 p.39]

A responsible organization knows the environmental impacts of the use of their products, the recyclability, and subsequent impacts to the environment. Materials should also be marked so the consumer knows the impacts of the product and how to dispose of the product with minimal impacts to the environment. The questions regarding product use aim to compare the environmental impact of the product with similar products, and reveal the existence and use of markings on products. Recycling questions focus on recycle and reuse possibilities and guidelines for dismantling, recycling, and reuse. Disposal questions are posed to assess the environmental impacts of disposal with similar products, and determine the use of guidelines for the least-taxing disposal. [9 p. 40]

3.3.3 Assessment of results

In order to set the barometer into quantitative form, a scoring system had to be created. The scoring was challenging because of the multi-dimensionality of environmental issues and the fact that the viewpoints of the creator would be seen in the final results. To eliminate the influences efficiently, a simple setup was used: one point is gained for a factor

that improves the quality of the environment and a minus point given for each factor that affects the environment negatively. This system does not set organizations from different sectors on uneven positions. [9 p.41]

The points received from the set of questions are then applied to assess the level of environmental management of the organization. The five levels range from the zero level – environment is not considered at all – to the ideal level where environmental issues lead the actions of the organization and sustainable development is reached. The levels are as follows: ideal level (A), strategic level (B), operator level (C), basic level (D), and zero level (E). Each section of the barometer lists the minimum point requirement to reach each level. [9 p. 42-43]

The barometer also provides a SWOT analysis which can help in assessing the effects of environmental responsibility on the economy of the corporation [9 p.45]. It is important to note that this tool has not been tested extensively and the scoring system could result in erroneous results. The purpose of the thesis study for which this barometer was created was to provide a model or prototype which can be developed further. This tool was tested in part for the case study.

4 Case Study: Pääkaupunkiseudun Kierrätyskeskus Oy

As was stated in the goal and scope of this report, the case study concerns Pääkaupunkiseudun Kierrätyskeskus Oy and its decision to change its fuel type from traditional diesel to a biofuel mixture containing biodiesel. One of the most important factors of choosing the fuel type and supplier is the environmental and social responsibility of the respective organizations. The process for selection included a cost comparison, GRI report comparison, and a limited assessment using the environmental barometer explained in the earlier section.

4.1 Compared fuel types

Three different biodiesels are considered in this case study. They are as follows: Neste Pro Diesel, St1 Diesel Plus, and ABC Smart Diesel. These diesels contain a small percentage of biodiesel and are available at most of the suppliers' gas stations. The fuels are described in detail in the subsections.

4.1.1 Neste Pro Diesel

Neste is a Finnish company which specializes in oil refining and the development of renewable fuels. Founded in 1948 to secure the oil supply of Finland, it has grown into a frontrunner in its field by combining modern business and environmental values with solid industry experience. During the turn of the century Neste introduced NExBTL renewable diesel, which is produced by hydrotreating vegetable oils. This renewable fuel can be used as an alternative in any proportion to traditional diesel. In 2015 Neste became the world's largest producer of waste and residue-based renewable fuels. [10]

Neste Pro Diesel was introduced in 2012 in Finland as a high-performance diesel which suits all diesel engines. It is a mixture of diesel and a minimum of 15% NExBTL renewable diesel. It has been tested extensively on different diesel engines and has yielded excellent results in performance and fuel efficiency. Depending on the operating conditions, it can improve the fuel efficiency by up to 5% and increase the torque by 2%. In addition, the lifetime emissions of the fuel have been reported to decrease by at least 10%. The fuel's low cetane number ensures a decrease in visible smoke and noise following a cold start of the engine. The test results clearly support the status of the fuel as a bona-fide renewable diesel. Pro Diesel is available at select Neste fuel stations. [11]

4.1.2 St1 Diesel Plus

The provider of Diesel Plus fuel is St1, a privately owned Finnish company. It is comprised of two business groups: St1 Nordic, which focuses on fuel marketing in the Nordic countries of Finland, Sweden, and Norway and on renewable energy solutions such as industrial wind power and waste-based ethanol; and St1 Group, which focuses on refinery operations. The company was founded in 1995 and employs around 700 workers. Fuel supply comes from North European Oil Trade Oy (NEOT) which is co-owned by St1. [12]

Diesel Plus is a premium diesel introduced by St1 which contains a renewable diesel developed by UPM, a Finnish forestry company. The biodiesel, BioVerno, is produced from tall oil, and is comparable in its properties to traditional diesel. Although the percentage of biodiesel in the mixture is low, it is nevertheless a better option than traditional diesel due to its performance-increasing additives and the lesser impact it has on the

environment. A cetane value of over 60, compared with 51-55 for normal diesel, assures that the Diesel Plus ignites faster and produces more power to the engine. This fuel is suitable for all diesel engines and is available at all St1 fuel stations. [13]

4.1.3 ABC Smart Diesel

ABC is a Finnish gas station chain which is owned by S-group, a retailing cooperative organization. The first gas stations were opened in 1998, and since then it has grown to become the leading seller of gasoline in Finland. ABC gas stations traditionally contain a small market and restaurant facility which are open every day of the year. As with St1, the fuel supply comes from NEOT, which is co-owned by S-group. In 2011, EkoFlex E85, an ethanol-based gasoline was introduced to ABC stations, providing a new option to traditional fuels. Two years later Smart Diesel was introduced. [14]

Smart Diesel is a renewable fuel similar to Diesel Plus. It contains a small percentage of BioVerno and is supplied by NEOT, which is co-owned by St1 and S-group. Although the shipments of fuel may contain differing blends of BioVerno and diesel, it is assumed that Smart Diesel and Diesel Plus are the same product because of the common source of biofuel and same supplier. [15]

5 Cost comparison

A cost comparison was carried out over a one month period to determine the differences in prices of the fuel. Although this is an important aspect to consider when choosing a possible fuel, it is not relevant to the environmental and social responsibility comparison, and therefore will not be discussed in detail in this report. However, some main findings are good to point out. Daily fuel prices of the compared fuels were recorded and plotted, including a base comparison of regular diesel. Discount prices were taken into account when calculating the annual cost for the fuel used in the vehicles. The results in Figure 9 below show that the annual costs vary from around 70 000 to 73 000 euros. This is not a significant difference, but with a higher annual consumption (60 000 liters was used as an estimate) the margins could increase noticeably.

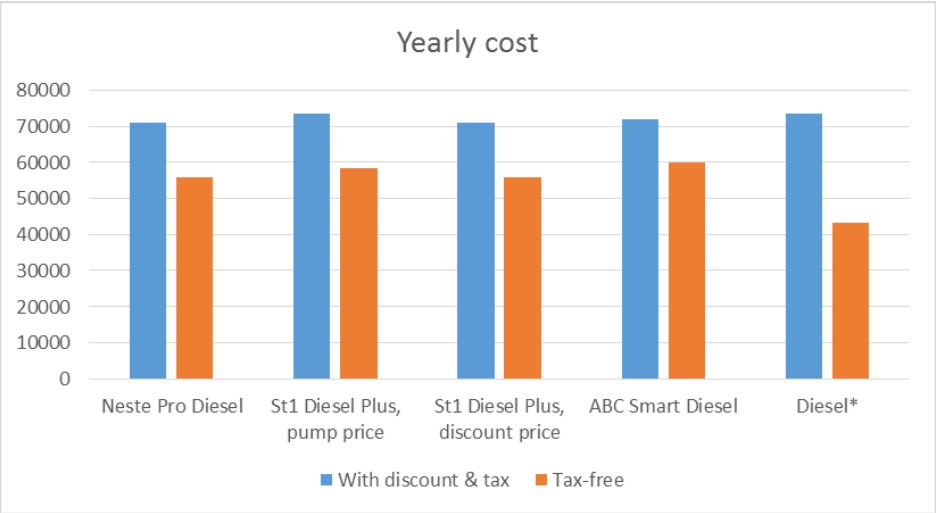


Figure 9. Yearly costs

6 Comparison of GRI reports

The next aspect of comparison was the GRI reports of the potential suppliers. Annual reports and/or GRI reports were not available for all three suppliers, so the producers of the biodiesels NExBTL and BioVerno, were instead considered. Neste produces its own biodiesel which is a component of Pro Diesel, and UPM produces the biodiesel which is a component in both Smart Diesel and Diesel Plus.

The GRI reports of Neste [16] and UPM [17] were reviewed using a comparison chart. Both reports used the older G3 guidelines which are nearly the same as the newest G4 guideline. Only the environmental and social indicators of the index were considered, and some categories were left blank because of lack of data or irrelevancy to the study. The comparison charts can be found in the appendix.

While UPM works in the forestry industry and produces mainly paper products, Neste is in the oil industry and produces oils and fuels. For this reason, it was somewhat difficult to compare the two companies with each other. However, some key findings were found in the review, which are discussed in the next subsections. The abbreviations of the indicators in question are provided, for example (EN 1).

6.1 Environmental Indicators

For more accurate comparisons, information about NExBTL and BioVerno were included rather than all other products whenever possible. The first noticeable difference was in the category of recycled material use (EN 2). Neste did not include this information in the report while UPM reported to recycling approximately 90% of production waste. This difference can partly be attributed to the fact that the companies are in different industries, but on the other hand UPM's BioVerno is produced from the residue of pulp production in the form of tall oil. This gives an advantage to UPM because this results in less energy consumption and land use is completely negated. A judgment would be unfair, however, because of the differing industries and products.

The next difference is in the sources of energy consumption (EN4). Neste gains over 90% of its energy needs from fuels and natural gas while UPM claims to receive nearly 50% of its energy consumption needs from renewable fuels. Both organizations seem to have initiatives which follow energy-efficiency trends, ranging from new process equipment and products to reduction goals in terms of CO_2 emissions (EN6).

The total GHG emissions for 2014 were similar (3.6 and 3.8 million tons CO_2), although Neste has significantly higher additional indirect emissions caused by product use and disposal (EN16, EN17). Both organizations have received recognition for their efficiency in their respective industries, and as was stated earlier, initiatives are in place to further increase efficiency and reduce emissions (EN 18).

Although the reporting principle of balance calls for both positive and negative aspects of the organization, some indicator categories were left blank while the other organization provided negative aspects. For example, Neste reported about multiple minor incidents of non-compliance with regulations and sulfur unit disruptions, while UPM did not report anything (EN28). It is not known whether this was deliberately left out or if no violations took place, which is why some explanation would help with clarity.

Overall, it is difficult to determine the better option based on the indicators alone for reasons stated earlier. No major disadvantageous aspects were discovered in the index, and based on the environmental indicators alone both organizations seem to value environmental management in their operations.

6.2 Social Indicators

The categories concerning labor practices provided limited information which would set the organizations apart in terms of corporate responsibility. UPM employs significantly more people (20000 vs. 4000) and its workforce is predominantly male (80% vs. 65%) (LA1, LA2). The basic salary of men and women is reported to be fairly similar for Neste, while UPM did not disclose any information (LA14). UPM provides an average of 15 hours of training per employee per year; Neste did not report for this indicator (LA10).

Neste has been criticized in the past for human rights violations in Malaysia by Finnwatch, an NGO focused on global corporate responsibility [18]. The cooperation with Finnwatch following the accusation is mentioned in the human rights section of social indicators. Although the conditions have improved, the report has hurt the image of the company and forced it to focus on the aspect of human rights. Both organizations report that all significant suppliers are assessed for possible risks of human rights violations (HR2). Incidents concerning child labor or forced labor were not found in the report.

The section on society provided some insight into the policies and actions of the organizations. UPM reported of 16 incidents of possible corruption within the organization. These were all handled and some led to disciplinary action including termination of employment (SO4). Neste reported the efforts of promoting the use of wastes and residues in biofuels; EU regulations prefer it to be used primarily in the cosmetic industry (SO5).

The two organizations have been involved in a court battle against each other regarding a patent infringement, as reported by UPM (SO7). Neste filed action with Finnish Market Court based on the suspicion of an infringement in a UPM biorefinery. The court has dismissed the demand for a preliminary injunction, although this casts a shadow of doubt on the ethical practices of UPM. Neither organization has been significantly sanctioned for non-compliance with laws or regulations in 2014 (SO8).

The management approach to product responsibility seems to be positive for both organizations. For example, Neste aims to continue launching quality products with small impacts on the environment, and UPM is targeting a 25% growth in ecolabelled products by 2020. Although most Neste products are classified as hazardous, information for the

handling of products is available for customers (PR1). According to surveys, most customers are satisfied with the organizations and take interest in various aspects of sustainability and responsibility. The overall satisfaction of UPM as a supplier is 77% (PR5).

Compared with environmental indicators, more categories of social indicators were left unanswered, and therefore made it difficult to make definite conclusions. Perhaps the Finnwatch reports stand out as a significant divider of the levels of social responsibility between the organizations. It is impossible to say whether UPM also has had violations or non-compliances which have not been made public. The fact that Neste is addressing its mistakes and rectifying the situation, however, proves that its corporate responsibility is still in place.

7 Environmental barometer results

The intent of the environmental barometer is for the assessed organization to answer the questions internally to get an accurate picture of the environmental management. This was not done for this thesis, however, and only a few questions were considered from the entire set of questions. The answers are based solely on information provided through the GRI reports of the respective organizations.

The table of questions for Neste and UPM are found in the appendix. Few questions were not answered due to lack of information in the reports. The answers were very similar for both Neste and UPM; we will consider the results for Neste in the calculation of the score.

The score for the questions regarding environmental management are calculated according to the following simple equation [9 p. 79]:

$$EM = \frac{\frac{1A+1B}{2} + \frac{1C+\frac{1D_1+1D_2}{2}}{3} + \frac{2A\left(+2A_{follow-up}\right)+2B}{3}}{3} \times 100 \qquad (1)$$

A default value of 0.5 was assumed for unknown answers in order to get an estimated score for overall performance. The outcome for the score was 78 points.

With a score of 78 points, the environmental management performance level would fall in the B level on the hierarchal model of performance. This is the second highest level,

called the strategic level, and the characteristics of such an organization are defined in the following condensed description: Environmental awareness is an integral part of organizational actions, therefore environmental management is used. Environmental policies are in place and environmental issues are considered in planning and decisions. An environmental management system is also in use. [9 p. 85]

The goal of using the environmental barometer as a tool for assessment was to test its efficacy and validity. The results should not be used in the decision because of the limited sample size and incomplete answers. A more accurate assessment can be made by sending the barometer questions to the organizations to answer. This would result in accurate and complete answers to the questions, and subsequently scores for all the different categories of environmental responsibility.

8 Conclusions

The goal of this thesis was to analyze and review different methods to assess the corporate responsibility of an organization. Environmental and social responsibility were the primary focus areas in the case study. The decisions on the selection and depth of analysis of the tools were constrained by limited time and resources. The comparison of GRI reports was used to acquire qualitative data while the environmental barometer provided quantitative data.

Because of the qualitative results obtained from the method, the GRI reports did not provide conclusive results which would differentiate one organization from the other in terms of corporate responsibility. However, it does provide a general picture of the level of management and handling of environmental and social responsibilities. The case study revealed that both Neste and UPM are responsible corporations on a general level. GRI reporting is not available from especially smaller organizations and is, therefore, limited to larger and well-known organizations. At best, the reports can be used as a supplementary analysis method.

The environmental barometer was not fully applied in the case study. The basic idea of quantifying the results seems to make it a valuable tool if used properly. The next step would be to have the organizations themselves answer the questions. Although the theory which the development of the barometer is based on is relevant to the purpose of the

tool, the scoring system might need some tuning to reflect the accurate performance level of the organization.

Generally, it can be said that the assessment of corporate responsibility requires close contact between the assessor and the organization in question. The work in this thesis was conducted almost entirely based on only public reports of Neste and UPM, which limited the comprehensive level of results. Direct communication with the organization and the use of multiple assessment methods will give the most accurate assessment of corporate responsibility.

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Appendix 1. GRI Comparison: Environmental Indicators

Indicator	Abbreviation	Neste	UPM
Management approach to environmental responsibility		- More out of less - Material-efficient choices - Operate in accordance with permits - Sustainability Program[1]	- Energy efficiency - Comply with laws and regulations - Promote global sustainability projects
Materials used by weight or volume	EN1	- 2.6 million tons of renewable diesel in 2014 - 62% from wastes and residues, 38% crude palm oil (2012: 35% wastes, 65% palm oil) - Aim to use only waste and residues in renewable diesel by 2017	- Wood: 26.3 million m^3, Market pulp: 1.8 million tons, Paper for recovery: 3.4 million tons, Minerals: 2.5 million tons - Materials used to produce mainly paper, chemical pulp, timber
Percentage of materials used that are recycled input materials	EN2	Not included in report	- Approx. 90% of production waste is reused or recycled - 35% of all fiber used in UPM paper production is recycled - BioVerno is produced from residue of pulp production
Direct energy consumption; Indirect energy consumption by primary source	EN3, EN4	- Total energy consumption: 12.7 TWh - 91.5% from fuels and natural gas	- Total energy consumption: 54.15 TWh - Nearly 50% from renewable fuels (of which 79% come from UPM processes)
Energy saved due to conservation and efficiency improvements	EN5	- Development measures in refineries in 2014 result in annual energy saving of 76 GWh - Efficiency improved through maintenance and renewal of equipment and new utility management system	- Energy-saving investments reduced annual energy consumption by 55 GWh - Only paper and forest company in world to achieve A100 level in CDP Climate indices

Initiatives to provide energy-efficient or renewable energy based products and services	EN6	- New distillation furnaces estimated to save 50 GWh annually - Renewal of power generation in refinery - Station yards in Finland projected to reduce electricity consumption by 25% by 2020 compared to 2007 levels	- Aim to reduce fossil CO_2 emissions by 15% by 2020 compared to 2008 level - Biofore Concept Car made with biomaterials and runs on BioVerno
Total water withdrawal by source	EN8	- 8.6 million m^3 for 2014 (excluding cooling water) - From rivers in Netherlands and Finland	- Surface water: 470 million m^3 - Groundwater: 21 million m^3 - Communal water: 4 million m^3
Water sources significantly affected by withdrawal of water	EN9	- Water quality of sea around refineries has been monitored for many years - Wastewater is treated before discharge into waterways at refineries	- Surface water, groundwater - All UPM mills located in areas where there is abundance of water
Percentage and total volume of water recycled and reused	EN10	Data not found	Data not found
Location and size of land holdings in biodiversity-rich habitats	EN11	- Stormossen bog (75 hectares) conservation site near Porvoo refinery - Vanto rare oak tree area in Naantali	- UPM owns forests which include 121 000 hectares of protected sites in Finland and USA
Significant impacts on biodiversity in protected areas and biodiversity-rich areas outside protected areas	EN12	- Strive to protect areas alongside rest of environment around refineries	- Native tree species provide food and habitat for vegetation and animals
Habitats protected or restored	EN13	Data not found	- Flagship protected area is Griffin Forest in southern Finland (1 400 hectares) - New conservation areas in 2014 totaled 633 hectares

Managing impacts on biodiversity	EN14	- Groundwater and soil monitoring at refineries in Finland - Soil condition and quality monitored in and around retail stations	- Aim to 'maintain and increase biodiversity in forests and promote best practices in sustainable forestry' - By 2020 goal is for 85% of fiber to be certified by FSC/PEFC
Species with extinction risk with habitats in areas affected by operations	EN15	Not included in report	- Cooperation with BirdLife to help with conservation - Chestnut seedeater population in Uruguay has increased - Black grouse and other birds in Scotland have had habitats restored
Total direct and indirect greenhouse gas emissions	EN16	- 3.6 million tons CO_2 (2014)	- 3.8 million tons CO_2 (2014)
Other relevant indirect greenhouse gas emissions by weight	EN17	- Scope 3 emissions (end use of products, purchased goods and services) total 49 million tons CO_2	- Purchased power, transport, and raw material production result in additional 9.4 million tons CO_2
Initiatives to reduce greenhouse gas emissions	EN18	- Aims to use only waste and residues in renewable diesel production by 2017 - Oil refining efficiency is top-class; biopropane production reduces emissions	- Aim to reduce 2008 CO_2 emissions level by 15% by 2020 - Majority of fuel used in power plants are free from CO_2 emissions
NO_x, SO_x and other significant air emissions	EN20	- 3 000 tons NO_x - 6 800 tons SO_2	- 9 600 tons NO_x - 2 800 tons SO_2
Total water discharge by quality and destination	EN21	- 8.4 million m^3 wastewater (2014) - Treated wastewater discharged into waterways at refineries	- 240 million m^3 process waste water (2014)
Total amount of waste by type and disposal method	EN22	- Figures from 2014 - Conventional waste: 12 100 tons - Recycled waste: 33 800 tons	- Figures from 2014 - Dry landfill waste: 134 000 tons - Temporary storage: 20 000 tons

		- Hazardous waste: 24 200 tons	- Hazardous waste: 3 900 tons
Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting	EN25	- River Maas in Rotterdam - River Mustajoki in Porvoo - River Kokemäenjoki in Naantali	Data not found
Mitigating environmental impacts of products and services	EN26	- Reduction of emissions through renewable diesel production was 5.6 million tons (48 % of annual GHG emissions from road traffic in Finland)	- 90 % of production waste is reused or recycled - Many products created primarily from recycled waste
Significant fines and sanctions for non-compliance with environmental regulations	EN28	- Multiple minor incidents with no environmental impacts - Some disruptions at sulfur units which increased sulfur emissions	Not included in report
Significant environmental impacts of transporting products	EN29	- GHG emissions from raw material and fuel transportation total about 10 g CO_2eq/MJ	- No data found on emissions - 68% of deliveries by rail and road, 32% by sea
Total environmental protection expenditures and investments by type	EN30	Not included in report	- Environmental investments for 2014 totaled 12 million euros, largest investment was for a new gas purification system - Environmental protection costs amounted to 127 million euros, mainly for effluent treatment and waste management costs

1 http://2014.nesteoil.com/sustainability/sustainability-management-and-strategy/sustainability-management/

Appendix 2. GRI Comparison: Social Indicators

Indicator	Abbreviation	Neste	UPM
Management approach to social responsibility		- Six focus areas form foundation of sustainability work: - Cleaner solutions - Safety - Our people - Society - Climate and resource efficiency - Sustainable supply chain	- Safe and inspiring workplace - sharp commercial ambition and sales capabilities - change readiness and agility in changing business environment
Total number and rate of employee turnover by age group, gender and region	LA2	- Turnover percentage not included - 37% of employments less than 5 years - 5 to 9 years: 22.8% - 65.3% men, 34.7% women	- Turnover: 10.86% - (voluntary): 4.76% - Average age of personnel: 43.7 - 80% men, 20% women
Coverage of collective bargaining agreements	LA4	- Not all personnel in all countries covered by collective bargaining agreement - 71% of personnel are covered by some agreement	- Does not report on union membership on global level - Estimated percentage of personnel covered by agreement is 73%
Minimum notice period(s) regarding operational changes including whether it is specified in collective agreements	LA5	- follows local legislation	- follows local legislation
Injuries, lost days, absentee rates and fatalities	LA7	- Total workday injury frequency per million hours worked: 2.0 - Oil retail and Singapore refinery worked over two million hours without injury	- About 3% of theoretical working time was sick leave - Lost-time accident frequency: 5 accidents per million hours of work
Education, training, counseling, prevention, and risk-control	LA8	- Wellbeing at work plan implemented - Alternative work is offered for recovering employees	- Step Change in Safety initiative to improve safety culture and performance - Employees must report all near

		- Occupational health care services in Finland	misses, which are reviewed
Average hours of training per year per employee	LA10	Not included in report	- 15 for active employees
Programs for skills management and lifelong learning	LA11	- Performance and development discussions covered 81% of personnel in 2014 - Training-related investments: 3.1 million euros - Training offered to shift workers	- 70/20/10 model: 70% learning on the job, 20% learning from others, 10% from development programs - Development program portfolio for leaders focuses on self-leadership, coaching capabilities, innovation, and leading in complexity
Employees receiving performance and career development reviews	LA12	- 81% (excluding service station personnel in Russia)	- 86% of permanent employees
Composition of governance bodies and breakdown of employees	LA13	- Share of employees working as managers or supervisors was 14.6%	- 39% salaried - 61% shop-floor
Ratio of basic salary of men to women by employee category	LA14	- Varies between 93% and 110% depending on responsibilities and category of employee	Not included in report
Management approach to human rights		- Central aspect of human rights is promotion of equality - Cooperated with Finnwatch following their report of shortcomings related to workers' rights in Malaysia	- Respects international human rights agreements - Code of Conduct training required for all employees
Percentage of significant suppliers and contractors that have undergone human rights screening and actions taken	HR2	- Security Check for all suppliers to review areas such as governance, corruption unresolved legal claims - Sustainability survey covers operating	- Risk assessment for suppliers covers environmental, social and economic risks - Suppliers must apply principles of Code of Conduct

		practices and policies	
Employee training on policies and procedures concerning human rights relevant to operations	HR3	Not included in report	- Code of Conduct training attended by 88% of all active employees
Operations identified in which right to exercise freedom of association or collective bargaining may be at significant risk and actions taken to support these rights	HR5	- No threats to rights were identified in 2014	Not included in report
Operations identified as having significant risk for child labor	HR6	- No incidents found in report	- No significant risks identified in own operations
Operations identified as having significant risk for forced or compulsory labor	HR7	- No incidents found in report	- No significant risks identified in own operations
Number of incidents involving rights of indigenous people and actions taken	HR9	Not included in report	- No incidents in 2014
Management approach to society		- Listen to stakeholders' feedback and develop operations accordingly - Make expertise available to decision-makers	- Target to develop strategic sustainability initiatives - Continuous sharing of best practices with stakeholders
Assessment and management of impacts of operations on communities	SO1	Not included in report	- Activities on permanently closed sites and in restructuring typically focus on retraining, re-employment and relocation within the company

Percentage of employees trained in anti-corruption policies and procedures	SO3	- Data not found	- Data not found
Actions taken in response to incidents of corruption	SO4	Not included in report	- 16 concerns of violations reported in 2014 - Corrective actions taken, some led to disciplinary action including termination of employment
Public policy positions and participation in public policy development and lobbying	SO5	- EU Renewable Energy Directive encourages use of wastes and residues in biofuels although EU waste regulations prefer use of animal fats in cosmetics - Neste sees the use of waste in biofuels as a greater reducer of traffic emissions	Not included in report
Contributions to political parties, politicians and related institutions	SO6	- Does not sponsor political parties - Charity work and sponsorship spending in 2014: 1 million euros	- Does not financially support political parties - Co-operates with WWF Finland to promote sustainability of economic forests and wood-based liquid biofuels
Number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes	SO7	- No cases during reporting period	- Neste filed action with Finnish Market Court requesting the prohibition of a patent infringement in a UPM biorefinery - Market Court dismissed Neste's demand for preliminary injunction[1]
Significant fines and sanctions for non-compliance with laws and regulations	SO8	- No cases during reporting period	- No significant cases in 2014

Management approach to product responsibility		- Product carbon footprint closely monitored - Goal is to continue launching quality products with smaller impact on the environment	- Target is to have environmental management systems certified in all production units - 25% growth in share of eco-labelled products by 2020
Assessment of health and safety impacts of products	PR1	- Most products sold are classified as hazardous - Information for product handling is readily available to customers	Not included in report
Type of product information required by procedures	PR3	- Products based on R&D work to ensure safe use and compatibility	- Products must be safe to handle and not contain harmful chemicals - Products contain different ecolabels
Practices related to customer satisfaction and results of customer satisfaction surveys	PR5	- Customer interaction through social media, customer care channels, surveys - Customers expect high-quality and safe products, reliable deliveries and good availability, sustainable operations, competitive pricing	- Customers take interest in responsibility performance and sustainability of operations - Important topics include product safety, forest certification, resource efficiency etc. - Overall satisfaction with UPM as supplier is 77%

1 page 75-76 of UPM 2014 annual report

Appendix 3. Environmental Barometer: Neste

Environmental Management		
Management commitment and integration of environmental issues as part of organizational operations	**Question**	**Scoring**
	1. Does management consider environmental issues in actions? (If no, go to question 3.) YES	1. No: 0 points
	1A. Does the organization have an environmental policy defined by management? YES	1A. No: 0, Yes: 1
	1B. Does the organization have a method which can be used to gain information on the needed resources for actions to maintain and improve environmental management? YES	1B. No: 0, Yes: 1
	1C. How are environmental issues considered in action planning decision making? (a) (a) Consideration is normal procedure (b) Issues are considered, but it has not been set as normal procedure (c) No consideration	1C. a: 1, b: 0.5, c: 0
	$1D_1$. Number of organizational levels which have defined environmental responsibilities in work descriptions, with respect to total number of organizational levels: UNKNOWN **$1D_2$.** Number of employees which have defined environmental responsibilities in work descriptions, with respect to total number of employees: UNKNOWN	$1D_1$ and $1D_2$: Answered number =points
Environmental management systems, goals, targets	**2A.** Has the organization set goals and targets relating to environmental protection? YES If yes: Sum of set goals and targets which have been reached by deadlines and/or sum of goals and targets which are being attained according to schedule, with respect to sum of total set goals and targets: UNKNOWN	2A. No: 0, Yes: 1 Follow-up: Answered number =points
	2B. Environmental management systems: (d) (a) Organization does not have EMS (b) EMS being developed (c) Working EMS in use (d) Externally certified EMS in use	2B. a: 0, b: 0.5, c: 0.75, d: 1

Appendix 4. Environmental Barometer: UPM

Environmental Management		
Management commitment and integration of environmental issues as part of organizational operations	**Question**	**Scoring**
	2. Does management consider environmental issues in actions? (If no, go to question 3.) YES	1. No: 0 points
	1A. Does the organization have an environmental policy defined by management? YES	1A. No: 0, Yes: 1
	1B. Does the organization have a method which can be used to gain information on the needed resources for actions to maintain and improve environmental management? UNKNOWN	1B. No: 0, Yes: 1
	1C. How are environmental issues considered in action planning decision making? (a) (d) Consideration is normal procedure (e) Issues are considered, but it has not been set as normal procedure (f) No consideration	1C. a: 1, b: 0.5, c: 0
	$1D_1$. Number of organizational levels which have defined environmental responsibilities in work descriptions, with respect to total number of organizational levels: UNKNOWN **$1D_2$.** Number of employees which have defined environmental responsibilities in work descriptions, with respect to total number of employees: UNKNOWN	$1D_1$ and $1D_2$: Answered number =points
Environmental management systems, goals, targets	**2A.** Has the organization set goals and targets relating to environmental protection? YES If yes: Sum of set goals and targets which have been reached by deadlines and/or sum of goals and targets which are being attained according to schedule, with respect to sum of total set goals and targets: UNKNOWN	2A. No: 0, Yes: 1 Follow-up: Answered number =points
	2B. Environmental management systems: (d) (e) Organization does not have EMS (f) EMS being developed (g) Working EMS in use (h) Externally certified EMS in use	2B. a: 0, b: 0.5, c: 0.75, d: 1