



CHALMERS
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Implementing Environmental Certification of Logistical Solutions

A way to increase sustainability and
commercial advantages?

Master of Science Thesis in the Master Degree Programme Maritime Management

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CHALMERS UNIVERSITY OF TECHNOLOGY
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MASTER OF SCIENCE THESIS

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Abstract

The transport and shipping industry have historically been highly focused on economic aspects. Logistics services are seldom considered a value-adding service but rather a required cost. The result is that the aspect of price is often the highest priority when deciding on a specific transport or logistical solution. What can be done to increase the importance of environmental performance and what is the best way for communicating this information? What tools are available for the transport and shipping industry to take the step toward a more sustainable future?

This study contributes to the research area connected to certification of environmental performance in the transport industry. The aim is to take a closer look at the need and the advantages, if any, to certify certain freight transport solutions and its' environmental performance. The report is of interest for stakeholders in the shipping and transport industry as well as certifying organisations. Empirical data in the form of interviews have been performed in a qualitative, semi-structured manner.

As shown in the present study there is a high potential for environmental certifications and ecolabels to provide important information and verification. Transports are inherently complicated equations, and that means that the criteria need to counter this complexity. More importantly, and evidently, the guidelines on the assessment process have to counter this complexity in order for future ecolabels to have a significant impact.

Keywords: sustainability, ecolabels, environmental certification, environmental performance, customer demand, Good Environmental Choice

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Göteborg, May 2015

Martin Bursjö

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1. Introduction

The environmental issues associated with the transport industry include factors from the entire supply chain and cannot be tied solely to shipping. Many aspects of transport are generic within the transport chain and applies for shipping as well as for the other means of transport. Shipping is a part of the transport industry and it will be discussed as well. This study contributes to the research area connected to certification of environmental performance in the transport industry. The aim is to take a closer look on the need and the advantages, if any, to certify certain freight transport solutions and their environmental performance. The study includes views regarding environmental certifications in general and Good Environmental Choice by the SSNC in particular.

This report is a Master's Thesis in the Master of Science Programme Maritime Management at Chalmers University of Technology in Gothenburg, Sweden. The project was primarily performed at The Department of Shipping and Marine Technology. In addition, a case study was performed in collaboration with Scandinavian Logistics Partners AB and The Swedish Society for Nature Conservation in Gothenburg. The project was conducted between the 19th of January to the 24th of May 2015.

1.1 Project background

The transport and shipping industry has historically been highly focused on economic aspects. This might be because of the generally low margins and the fact that transport and logistics services are seldom considered a value-adding service but rather a required cost. The result is that the aspect of price is often the highest priority when deciding on a specific transport or logistical solution. What can be done to increase the importance of environmental performance and what is the best way for communicating this information? What tools are available for the transport and shipping industry to take the step toward a more sustainable future? As described by Brundtland, G et al. (1987), "*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*".

1.2 Objective and purpose

In the transport industry, there are environmental certificates and ecolabels available for assessing the level of environmental impact of certain logistical solutions. In order to receive these certificates specific requirements have to be met. What are these requirements, and are they suitable? What is the cost of certifying, and what are the benefits?

An investigation in terms of the value of environmental certificates and ecolabels is of interest for stakeholders in the shipping and transport industry, such as cargo owners, ship owners and

freight forwarders looking to differentiate their product portfolio. Additionally, this report is also of interest for the certifying organisation deciding on the specific criteria for licensing. In the case of this particular thesis, The Swedish Society for Nature Conservation, SSNC, and their ecolabel Good Environmental Choice will be in focus. The SSNC was at the time of this thesis carrying out a revision process for Good Environmental Choice and the results of this report could be of interest during the revision process.

The aim of this thesis project is twofold; first to investigate the value of environmental certifications and ecolabels in general and the ecolabel Good Environmental Choice by the SSNC in particular. Is it appealing to the shipping and transport industry? What is the need for environmental certifications or ecolabels in the transport industry? Are the requirements for the certification appropriate? Will customers see the value, if any, and will it increase their willingness to pay? Will a certified logistical solution bring commercial and environmental advantages?

The second part is a case study and assessment of the railway solution created and operated by Scandinavian Logistics Partners AB. Scandinavian Logistics Partners AB, in collaboration with Volvo Group Logistics Services utilizes otherwise empty railway carts for loading cargo from central Europe to Sweden. Together with the organisation Miljöbron, they have assigned the author of this report to investigate if it is possible to certify this solution according to Good Environmental Choice by the SSNC. Furthermore, Scandinavian Logistics Partners AB are interested in the financial consequences of such a certification, which will be included in the case study. The objective in part two of this report is, in other words, to assess the implementation process of certifying a logistical solution. In this case the Scandinavian Rail Shuttle by Scandinavian Logistics Partners AB, according to the SSNC, Good Environmental Choice will be assessed.

1.3 Limitations

The ecolabel in focus during this project has been Good Environmental Choice developed by the Swedish Society for Nature Conservation, SSNC. The case study assessing the implementation and certification process of a logistical solution according to Good Environmental Choice has been limited to the product Scandinavian Rail Shuttle provided by Scandinavian Logistics Partners AB.

Depending on what source one chooses to trust, environmental certification and ecolabels might be defined differently. However, for the purpose of this thesis and the manner of which the research questions have been formulated, they will both be defined as the same term and should be considered interchangeable throughout the report.

1.4 Research questions

For the main research questions this project aim to answer, see below:

- What is the need for environmental certifications or ecolabels in the transport industry?
- What are the commercial and environmental benefits from certification?
- What are the stakeholders' views on the requirements for Good Environmental Choice?
- If the criteria are met, what is the cost of certification?

The research questions, except for the one regarding the cost of certification according to Good Environmental Choice, are deliberately open-ended enabling a wide scope of possible results. The pathos of this thesis is situated in the philosophical choice of attitude toward, and different opinions regarding, environmental work in the modern and future transport and shipping industry. The research questions in this report have been designed to reflect this.

2. Methodology

This master thesis project has been conducted partly on assignment from Scandinavian Logistics Partners AB with the objective to assess one of their logistical solutions called Scandinavian Rail Shuttle. The assessment has been performed in accordance with the environmental certification, or ecolabel, Good Environmental Choice by the Swedish Society of Nature Conservation, the SSNC. The initial project was mediated to student applicants by the organisation Miljöbron. The project has been further developed, after acceptance from Miljöbron and Scandinavian Logistics Partners AB, by the author of this report to include a deeper study of the ecolabel Good Environmental Choice by the SSNC as well as the need for environmental certifications and ecolabels in the transport and shipping industry. The study includes an assessment of the implementation processes and qualities of Good Environmental Choice, partly as a foundation for future revisions of the certification criteria.

2.1 Collecting empirical data

Empirical data has been collected through interviews and literature studies including a review of current research. Data analysis for the case study on the Scandinavian Rail Shuttle by Scandinavian Logistics Partners AB has been guided by categories described in the criteria for Good Environmental Choice by the SSNC. Data collection include research articles within the area of environmental certifications, ecolabelling and marketing.

2.1.1 Scandinavian Rail Shuttle – case study

The logistical solution Scandinavian Rail Shuttle provided by Scandinavian Logistics Partners AB varies slightly due to various pickup and delivery locations which means there are variations on voyage lengths. Hence, different scenarios have been included in the case study to describe the worst case scenario with the longest distance, the best case scenario with the shortest distance and the average scenario with the average distance. The criteria from the SSNC for Good Environmental Choice require a calculation based on average numbers. For the purpose of this report and the nature of this particular logistical solution, different scenarios will be presented in the case study. Furthermore, because of the relative complexity of this solution with international transports and large quantities, the certification process require a continuous discussion with the SSNC during the implementation process. The continuous discussion with the SSNC have been useful during the calculation process explaining the criteria. Presentation of different scenarios and clear calculations should facilitate this discussion and in extension the certification process.

The data presented in the case study of Scandinavian Rail Shuttle have been based on figures obtained from Scandinavian Logistics Partners AB. The energy consumption and emission data has been provided using the emission calculator called EcoTransIT. Calculations, assumptions and limitations have been made by the author in collaboration with Scandinavian Logistics Partners AB and The Swedish Society for Nature Conservation.

2.1.1.1 EcoTransIT tool

The EcoTransIT tool is a project conducted by the Institute for Energy and Environmental Research (IFEU) in Heidelberg, the Öko-Institut in Berlin and the Rail Management Consultants GmbH RMCON/IVE mbH in Hanover in order to quantify the emissions from freight transports. The emission data gathered for conducting the case study to investigate the possibility and cost of certifying the logistical solution Scandinavian Rail Shuttle by Scandinavian Logistics Partners AB is provided by the calculation instrument EcoTransIT. The methodology behind the tool is documented and updated regularly in order to maintain state-of-the-art emission calculations (IFEU Heidelberg et al., 2014). In August, 2014 the EcoTransIT World Initiative, EWI, and the Network for Transport Measures ,NTM, decided to cooperate, making the top two providers of transport emission calculations work together exchanging expertise. The intentions are to lead the way to a globally accepted standard on transport emission calculations (EcoTransIT World Initiative (EWI), 2014).

2.2 Interviews

Since generalization is not the main purpose of the present qualitative study, data has been collected through non-probability sampling, specifically purposeful sampling (Merriam, 2009). “Purposeful sampling is based on the assumption that the investigator wants to discover, understand, and gain insight and therefore must select a sample from which the most can be learned” (Ibid., p.77). Alternatively expressed the samples have been selected due to their expected expertise in their respective area to bring as much insight as possible to this project. The sampling has been based on selection criteria (Patton, 2002). The sampling criteria of the present study and choices of interviews that have been conducted were selected due to their similarities and connection to the shipping industry as well as their vicinity or direct connection to the ecolabel Good Environmental Choice by the SSNC. Furthermore, a snowball sampling has been performed where, through referral from interviewees at an early stage, additional information-rich interviewees have been included (Patton, 2002; Merriam, 2009). The number of samples in the study has been a trade-off between limitation of time for the project and the point of saturation or redundancy of new information from additional samples (Patton, 2002).

The present study include formal interview respondents from three freight forwarding companies, one train operator, one certifying organisation and one internal logistical service provider. Scandinavian Logistics Partners AB, Geodis Wilson Sweden AB and Greencarrier Freight Services Sweden AB are all freight forwarding companies providing full service logistical solutions. Scandinavian Logistics Partners AB are in the process of certifying their logistical solution Scandinavian Rail Shuttle according to Good Environmental Choice. Greencarrier Freight Services Sweden AB currently operate certified logistical solutions according to Good Environmental Choice. Geodis Wilson Sweden AB are active in the same area of business as Scandinavian Logistics Partners AB and Greencarrier Freight Services AB and have brought further insight on the views and opinions regarding certification and labelling of logistical solutions. Furthermore, interviews have been held with The Swedish Society for Nature Conservation and Green Cargo AB. The SSNC have developed the certification requirements for Good Environmental Choice and Green Cargo AB operate the trains that are a part of some of the certified logistical solutions and are certified themselves as well. Volvo Group Logistics Services has also been included in the report due to their collaboration with the logistical solution Scandinavian Rail Shuttle and their vicinity to the shipping industry. For the list of respondents, see Appendix I. To bring further insight and incorporate the shipping segment of the transport industry in the study, the Port of Gothenburg has been included in the study with their views and opinions regarding environmental certifications and ecolabels and if there are any reasons to treat shipping differently. Additional data included in this study has also been collected through different conferences and meetings during the project. The author has together with stakeholders from the transport industry attended a meeting on April 15th 2015 at the SSNC in Gothenburg discussing the future criteria for Good Environmental Choice Transports with focus on courier transports. Furthermore the author has attended the annual meeting for the Network for Transport Measures, NTM on April 16th 2015 in Gothenburg discussing the future of environmental certification and emission data calculations together with stakeholders from the industry.

An interview guide has been created and tailored for each interview, see Appendix II for the general template. The interview guide was sent to the respondent prior the interview. With the exception of the interviews with Green Cargo AB and Geodis Wilson AB, which due to geographical constraints was conducted over the telephone, all other interviews have been conducted in person. The interviews have been recorded and transcribed in the manner explained in chapter 2.2.1 of this this report. The information presented and communicated from the Port of Gothenburg have been gathered via e-mail correspondence between the representative from Port of Gothenburg and the author of this report.

The structure and content of the interviews have been similar; with slight variations due to respondents' current, various phases in the implementation process or connection to the ecolabel Good Environmental Choice. Hence, the interview guides have been individually tailored. The interviews have been focusing on the effects of environmental certification; commercial and environmental effects, and the difference between what was intended and the actual result. Additional questions include the view on environmental certifications in general, and the ecolabel Good Environmental Choice by the SSNC in particular. The attitude toward and opinions regarding environmental initiatives and customer demand have been discussed as well. Furthermore, respondents have all been asked to provide suggestions for future plans and ideas for Good Environmental Choice. The certificate or label, its criteria and implementation process is currently under revision and the result of the report and the interviews should be of interest during the revision process. For the current criteria for Good Environmental Choice, see Appendix III.

2.2.1 Interviews, transcription process and analysis method

The interviews have been performed in a qualitative, semi-structured manner meaning that there is an interview guide with more or less structured interview questions predetermined and tailored for each specific interview, giving room for the interviewee to answer using their own words (Patel & Davidsson, 2003; Merriam, 2009). In this study, in order to be able to compare answers and draw conclusions from the interviews, the questions in the interview guides have been tailored in a similar way, varying slightly depending on interviewee. The questions in the interview guide are open-ended, with room for probes or follow-up questions, which have been deliberately undetermined as they should emerge naturally from the conversation (Merriam, 2009). The interview guides have been distributed to the interviewees before the interview enabling the interviewee to prepare and contemplate on the interview theme.

To preserve the interview content for analysis, the interviews have been recorded. The obvious disadvantage with recording an interview is the risk of making the interviewee uneasy (Merriam, 2009). However, to counter this effect, as explained earlier, the interview guide has been distributed before the interview was conducted. The interviews have been held in Swedish, with the exception of Geodis Wilson AB which was held in English. The reason for conducting the interviews in Swedish, when the respondents were native Swedish speakers, was to enable a better flow in the interviews. The subsequent translation has been done by the author and confirmed by the respondents prior formal analysis and publication of the final report. The important aspect to consider when transcribing recorded interviews is that it should enable analysis (Merriam, 2009). The transcription method used for this project is described in Merriam (2009, pp.109-115). The verbatim transcriptions of interview data have been acting as foundation for the analysis.

In qualitative research, the analysis process starts as soon as you initiate the data collection process as they are conducted simultaneously. A form of coding called open coding has been used during the analysis, later used to construct categories and themes responsive to the purpose of the research (Patton, 2002). The purpose of analysing the interviews is to make sense of the collected data, in other words the process used to answer the research questions (Merriam, 2009).

The analytical tool used during the analysis of the interviews has been sorting the respondents' answers into categories and themes created by the author. Categories and themes have been reflecting the questions from the interview guides. The questions in the interview guides are based on the research questions covering this thesis. The categories have been chosen in order to enable comparison between the respondents and to identify similarities, differences and if there are any tensions between the stakeholders included in this study.

3. Literature Review

There are studies conducted on the effect of environmental certifications and ecolabels in general. However, they are generally limited to products such as foodstuff and similar consumer products. In the literature reviewed, there seems to be a gap in research regarding the environmental certification or ecolabelling of how products are transported, specifically certification of freight transport solutions, its' demand and effect. Current research welcomes further research on green market communication between consumers and the business community (Rex & Baumann, 2007). There is a need to assess whether there are differences in how organisations analyse market signals and customer demands related to green qualities. Furthermore, there is a need to analyse the market opportunities for green initiatives and what the effects are (Ibid.). For example, if the behaviour of external stakeholders is influenced by the presence of ecolabels. With this gained knowledge we might further understand the potential relationship between organisational sustainability strategy and the behaviour and attitude of external stakeholders (Darnall & Correa-Aragon, 2014).

3.1 Ecolabels in general

With an increase in interest for information regarding environmental performance and sustainability, there is an increase in the demand and need for standardised ways of communicating that particular information. In the entire shipping and transport sector communication of environmental performance is an assisting tool for customers to base their decisions upon. It is a tool for ship owners, freight forwarders and others related to the transport industry to communicate their environmental efforts. It is especially useful in a time where corporate performance and the foundation for decision-making might stretch beyond monetary aspects. In order to use and communicate information regarding environmental performance, with high reliability, standardisation is essential (Sustainable Shipping Initiative, 2011).

In order for ecolabels to be effective, external stakeholders must recognise them as being credible. Indicated by history, requiring firms to provide external stakeholders with environmental information inspire and drives them to proactively manage their environmental-oriented activities. However, stakeholders need relevant, clear and verifiable information in order to make appropriate decisions (Darnall & Correa-Aragon, 2014). There have been many different attempts at creating standardised ways of communicating environmental information, such as databases, eco labels and environmental indices (Svensson & Andersson, 2011). Environmental certification and environmental labels can be used as a marketing tool by, for example, ship owners that want to emphasize their environmental performance. The purpose of using ecolabels, certifications and indices is to facilitate the decision-makers and purchasers

with clear and compelling information without drowning it in too much detail (Baumann & Tillman, 2004).

Studies show that the green consumption is related to the level of trust in sources regarding environmental information and environmental knowledge (Darnall et al., 2012; Yeoh & Paladino, 2013; Darnall & Correa-Aragon, 2014). Understanding why consumers choose to buy green becomes increasingly important. In the research conducted by Darnall et al. (2012) the findings suggest that consumers with a greater level of trust in the source of the information are more likely to increase their total green consumption. However, consumers tend to have less trust to private business because of the scepticism about the motives of private business and their marketing schemes. In other words the public opinion is that private business might symbolically change their products to change their perception rather than truly change their products. This means that consumers in general pay little attention to self-promoted green marketing messages. In extent this mean that trust in governmental and environmental non-governmental organisations that provide environmental information and strong regulation on environmental advertising claims is essential. Credible environmental information is particularly important in order to prevent what is called “greenwashing” (Darnall et al., 2012). Greenwashing could be described as an act of misleading consumers regarding environmental performance through various advertising campaigns. The advertising campaigns are characterized by poor environmental performance but positive communication about the environmental performance (Delmas & Burbano Cuerel, 2011). It is the intentional misrepresentation of a firm’s environmental efforts, or the lack of it (Nyilasy et al., 2012) and can generate negative effects on the trust and confidence in actual green products that are, in fact, green (Delmas & Burbano Cuerel, 2011). Furthermore, there might be a need to clearly define the meaning of ecolabelling as a step to counter the misuse of environmental certifications and ecolabels. As discussed by Ibanez and Grolleau (2008) ecolabelling include environmental claims spanning from third party certification programs to self-promoted statements.

3.2 ISO definition

The International Organization for Standardization, ISO, have identified the general objective with ecolabels as follows: "...through communication of verifiable and accurate information that is not misleading on environmental aspects of products and services, to encourage the demand for and supply of those products and services that cause less stress on the environment, thereby stimulating the potential for market-driven continuous environmental improvement.” (Global Ecolabelling Network (GEN), 2004). Furthermore, the ISO have classified labels into

three different categories: Type I (ecolabels), Type II (self-declared green claims) and Type III (environmental information labels) (International Organization for Standardization, 2000).

Type I, defined in ISO 14024:1999, ecolabels, are defined as voluntary, and based on sound scientific evidence, based on life-cycle considerations, third-party verified, independent and objective. Furthermore, Type I labels are multiple-criteria based (International Organization for Standardization, 1999; Global Ecolabelling Network (GEN), 2015).

Type II, defined in ISO 14021:1999 amended 2011, self-declared green claims, are not independently verified and include the risk of greenwashing (International Organization for Standardization, 1999; The United Nations Office for Project Services, 2009).

Type III, defined in ISO 14025:2006, environmental declarations, are voluntary programs that provide quantified environmental data under predetermined parameters (International Organization for Standardization, 2006; Global Ecolabelling Network (GEN), 2015).

3.3 Principles of ecolabelling

According to the literature ecolabels can be summarized as policies and programs that are designed to signal information to stakeholders about a products' sustainability attributes. They attempt to reduce stakeholder uncertainty about the validity of green product claim because most ecolabels rely on external certification, and thus are more likely to ensure greater conformance to specific sustainability standards (Cashore, 2002; Pedersen & Neergaard, 2006; Darnal & Correa-Aragon, 2014). In order for the consumer to be certain that a specific product or service with an ecolabel is truly an environmentally preferable alternative there is an essential need for credible, impartial guiding standards and independent third party verification (Global Ecolabelling Network (GEN), 2015). There are many companies that issue their own symbols and ecolabels, often based on their own conditions. A third party ecolabel is different since the label is separated from both the producer and the consumer which means that the criteria set are impartial and independent (The Swedish Society for Nature Conservation, 2014). The fact that consumers in an increased extent need to see tangible evidence that the offered product is in fact a better alternative from an environmental perspective have yielded marketers to assess new methods (Yeoh & Paladino, 2013).

Typically for ecolabelling programs, criteria are defined by an independent organisation with the help of advising experts performing appropriate reviews. Companies looking to join the ecolabelling program apply and submit their products for verification. In some cases the verification process is handled by an impartial third party organisation or by the issuing organisation of the certificate or ecolabel. If the product submitted is approved, the company is granted permission to use the ecolabel. There is usually a licence fee involved, and unless

renewed and re-reviewed, the permission to use the ecolabel have a time limit as well. According to the Global Ecolabelling Network (GEN) (2004) there are three major objectives for ecolabelling programs; Protecting the environment, encouraging environmentally sound innovation and leadership and building consumer awareness of environmental issues. Generally, the primary objective is to influence and encourage consumers to choose environmentally preferable services. Secondly, in order to inspire innovation, criteria are usually set high and gradually raised as the number of products that meet the requirements increase. Furthermore, increasing consumer awareness is an important objective for ecolabels, especially in countries where consumers are not that concerned about environmental issues. In some cases, ecolabelling can be used as a promotional tool for environmentally beneficial actions.

3.4 Clean Shipping Index

An example of an environmental index, in this case particularly for shipping and mentioned during the interviews, is Clean Shipping Index by the Clean Shipping Project. Clean Shipping Index is a ranking system for ships and carriers based on their environmental performance such as emission levels for carbon dioxide, sulphur oxide, nitrous oxide, and particle matter, waste management and ballast water treatment (Svensson & Andersson, 2011; Clean Shipping Index, 2015; The Swedish Society for Nature Conservation, 2015). Clean Shipping Index is a web-based tool for assessing and ranking the environmental performance of ships and shipping companies. The information regarding environmental performance is provided by the shipping companies. However, for the highest ranking third-party verification by for example Lloyd's Register, LR, or Det Norske Veritas, DNV, is required. The information is stored in a database which is accessible to cargo owners, thus giving them the opportunity to choose suppliers with the best environmental performance (Svensson & Andersson, 2011; Clean Shipping Index, 2015).

According to Sara Sköld, Director at Clean Shipping Index, coordinated requirements on suppliers of transports from large purchasers of transports is an efficient way to encourage sustainable development and put joint pressure on the ship owners (Port of Gothenburg, 2014). Clean Shipping Index is a tool to facilitate the decision-making process and it is a competitive advantage for ship owners to report to the index. Furthermore, Sara Sköld mentions that Clean Shipping Index could be a "ticket to trade" in the future since an increasing number of organisations, and as of recently many freight forwarders, choose to use the index for assessing ship owners (Port of Gothenburg, 2014).

3.5 The SSNC and Good Environmental Choice

The Swedish Society for Nature Conservation is a charitable environmental organisation with the main purpose to apply pressure on politicians, influence legislation and spread knowledge related to environmental issues. Among areas that the SSNC has been active in during the last years they are best known for the work with issues regarding climate change, seas and fishing, agriculture, environmental toxins and the preservation of endangered species such as the peregrine falcon and the white-tailed eagle. Furthermore, the organisation has been working for many years with the environmental label Good Environmental Choice, which they claim to be the world's toughest environmental label (Svensson & Andersson, 2011; The Swedish Society for Nature Conservation, 2015).

Good Environmental Choice is an environmental label, or ecolabel, created by The Swedish Society for Nature Conservation. The organisation created the ecolabel in 1988 and started with laundry detergent and paper, but since then the portfolio has grown significantly and now cover eight product areas. The purpose of the ecolabel is to guide the consumer toward the least environmentally harmful alternative. In order to be allowed to be certified according to Good Environmental Choice certain criteria have to be met. The development of the criteria is performed by experts in the specific area, investigating how the criteria might lead to improvements in the environment. Furthermore, the industry is involved in order to decide on fair criteria. As mentioned by the SSNC, although the requirements may be stiff, they must not be unreasonable. The criteria are continuously updated (Grettve, 2014; The Swedish Society for Nature Conservation, 2015).

The criteria for certification of freight transports were initially developed in 1997 and they were revised last in 2005. The latest and current revision process of the criteria was in progress at the time this report was written. The criteria for freight transport focus on energy consumption and direct emission from the vehicle and the emissions when producing the fuel or electricity used in the vehicle. The goals with the environmental certification of freight transports and the reasons behind Good Environmental Choice are to encourage the development of more efficient freight transports, decrease the emissions, and to expedite the transition to renewable fuels (Carlsson, 2013).

Good Environmental Choice is a third-party ecolabel in the sense that neither the seller nor the buyer of the certified product is associated with the ecolabel. The environmental certification Good Environmental Choice is independent and is developed, certified and updated by the Swedish Society of Nature Conservation. In order to guarantee the quality of the certification process and system, the environmental certification Good Environmental Choice is reviewed

by the international network Global Ecolabelling Network (The Swedish Society for Nature Conservation, 2014; The Global Ecolabelling Network (GEN), 2015).

3.6 Beyond ecolabels

One of the main tools for green marketing is the use of ecolabels. However, despite investments and effort, the market share of products with an ecolabel is still relatively low. A contributing reason for this is because they generally are aimed toward what could be called “green” consumers. Green consumers are consumers that already are interested in environmental issues and value sound environmental performance. Studies indicate that green marketing can learn from conventional marketing and use other, additional methods to promote sustainability (Rex & Baumann, 2007).

In the booklet written by Charter et al. (2002) marketing is described as the interface between consumption and production. Rex and Baumann (2007) state that the aim of green marketing is to include environmental issues in that interface. The notion is to provide consumers with information; in this case information related to environmental performance through for example the use of ecolabels. This information will be a part of the decision making process, and will in turn encourage and promote environmental awareness and sustainable development beyond already green consumers. Researchers argue that customers seldom know what they want, hence the need for the interface between consumers and producers, in other words marketing and marketers. They have a mission to understand customer needs better than the customers themselves do in order to meet existing and future needs (Kotler et al., 2001; Rex & Baumann, 2007). Marketers cannot continue to rely only on more effective ecolabels and current green consumers and still expect high market shares for green products. They have to figure out other ways of communicating and influencing customers (Rex & Baumann, 2007).

4. Findings

The findings of this study consist of the result of the series of interviews conducted with the intention to bring further insight to ecolabelling in the shipping and transport industry. The logistical solution Scandinavian Rail Shuttle by Scandinavian Logistics Partners AB has been assessed in accordance with the requirements for Good Environmental Choice.

4.1 Interviews

Eight interviews have been conducted, including Agneta Carlsson at Good Environmental Choice – The SSNC, Anders Bergström – Purchasing Manager, Commodity Sea & Rail at Volvo Group Trucks Operations, Volvo Group Logistics Services, Edvard Molitor – Senior Manager Environment at the Port of Gothenburg, Joakim Stoppenbach – Environment and Quality Coordinator at Greencarrier Freight Services Sweden AB, Johan Sandström – Environmental Manager at Green Cargo, Lotte Ring Holk – Sustainability Manager at Geodis Wilson Nordic, Mathias Wideroth – Chairman of the Board at Scandinavian Logistics Partners AB and Susanna Hambeson – Environmental Manager at Volvo Group Trucks Operations, Volvo Group Logistics Services.

4.1.1 General view on environmental certification and ecolabelling of freight transports

The general view among the respondents regarding environmental certification, or ecolabelling, of freight transports is overwhelmingly positive. Respondents state that it is a good aid for buyers of transports and there is a clear increase in the market of the interest in environmental aspects of transports. As mentioned by Lotte Ring Holk, Sustainability Manager at Geodis Wilson Nordic, being certified and having an established environmental management system in the company indicate a clear statement that the organisation is interested and focused on the future. Lotte Ring Holk further adds that the transportation business might not be the most optimal business to be in when it comes to environment, but they try everything they can.

Johan Sandström, Environmental Manager at Green Cargo discusses the difference between environmental certifications and environmental labels as well as the importance of credibility and verification of the certifications and labels;

What I am thinking is that a certification and a label are very different but are usually confused with each other. In general I like environmental labels, because the common man, both in private and in some extent professionally, have difficulties familiarizing with each area. Even as a professional buyer of transports you might not have complete knowledge on the actual environmental difference between different means of transports. Labels are always a good aid, if it is credible and external etc. But we are talking third-party labels, there are several labels companies create themselves, which is not the same thing – Johan Sandström, Green Cargo

In other words, there are in some cases distinctions between certifications and labels, as well as differences between different kinds of labels. You have to separate third-party, validated labels and self-declared labels. The concept of self-declared labels lead the discussion into another territory where what is called greenwashing might occur. According to Joakim Stoppenbach, Environment and Quality Coordinator at Greencarrier Freight Services Sweden AB it is an issue and proper knowledge and awareness of certificates and labels proves that you are serious in your claims;

Many claim that they are green and environmentally friendly, but you do not have to look that close to see that it is greenwashing. That is why it is known, that if you are serious, then you are aware of the certificates, labels etc. – Joakim Stoppenbach, Greencarrier Freight Services Sweden AB

Mathias Wideroth, Chairman of the Board at Scandinavian Logistics Partners AB elaborates on the concept of environmental certificates and environmental labels. He mentions that transports in a very large extent affect environment and consider it their responsibility as a transport service provider to decrease that impact. Additionally there is a clear, increasing interest of further focus on the environmental aspects of transports. The certificate or label can act as a seal of quality of the environmental performance. The observed increase in interest for environmental aspects is further confirmed by Joakim Stoppenbach, Greencarrier Freight Services Sweden AB stating that as of lately it has been a demand from customers and an increased pressure from the society that has generated this type of actions by corporations.

The customer demand and interest in environmental issues varies however. For example in an organisation without close contact to the end consumer environmental certifications and ecolabels become less important, at least as a marketing tool. There are of course internal stakeholders interested in environmental issues, as stated by Anders Bergström, Purchasing Manager Commodity Sea & Rail at Volvo Group Trucks Operations, Volvo Group Logistics Services;

There is an interest from top management to use, for example environmental diplomas, internally. But we will not use it for external marketing purposes – Anders Bergström, Volvo Group Logistics Services

The variance in importance of communication and marketing of environmental performance was further discussed by Joakim Stoppenbach at Greencarrier Freight Services Sweden AB. He mentions that according to him the tendency is that the closer you get to the end customer, the more important environmental issues become.

To conclude this part, environmental certification and environmental labels, or ecolabels, are considered positive as long as they can be verified and trusted. Furthermore, according to the respondents, their customers are increasingly interested in the environmental aspects of transport and logistical solutions. However, depending on the organisation and their vicinity to the end consumer there are variations in what type of environmental information is of importance.

4.1.2 Views on the SSNC and Good Environmental Choice

The view in the SSNC and their ecolabel Good Environmental Choice is in general positive, partly due to their history and the fact that they act independently. The key word, as it was put by Joakim Stoppenbach at Greencarrier Freight Services Sweden AB is integrity;

The SSNC have a history and act independently. I would like to summarize it as integrity. And I think that is the opinion of most people, they have integrity – Joakim Stoppenbach, Greencarrier Freight Services AB

Mathias Wideroth, Scandinavian Logistics Partners AB also consider the label as something positive with a good reputation to build upon. Although he mentions that the label for some might be considered more as a product label than a transport service label. Furthermore, he highlights that the requirements for the label is quite complicated as well. Which he mentions might be a contributing reason as to why so few currently are licensed.

The respondents were specifically chosen because of their adjacency to Good Environmental Choice as current or aspiring licensees. The reason why the interviewed organisations had chosen Good Environmental Choice in particular for certifying some of their logistical solution was that Good Environmental Choice was the only choice;

There are none else – Johan Sandström, Green Cargo

Is there anything else on the market? – Joakim Stoppenbach, Greencarrier Freight Services AB

In my understanding, there is no one else – Mathias Wideroth, Scandinavian Logistics Partners AB

Mathias Wideroth, Scandinavian Logistics Partners AB continued explaining the goals with aspiring to certify one of their logistical solutions according to Good Environmental Choice. Scandinavian Logistics Partners AB emphasize the environmental aspect and relative environmental performance of a specific solution they provide, but they want to know if it is as good as to qualify for certification in accordance with Good Environmental Choice. And if so, they will use that seal of quality as a marketing tool;

The goal is, first and foremost, to find out if it qualifies. We highlight the environmental aspect of this logistical solution, and compared to transports with trucks, transports on rail will always win, but it is interesting for us to see if it is as good as the SSNC deem worthy to be a Good Environmental Choice. And if we are qualified, the goal is naturally to use that for sales and marketing purposes – Mathias Wideroth, Scandinavian Logistics Partners AB

Scandinavian Logistics Partners AB consider to apply for certification according to Good Environmental Choice for one of their logistical solution. They were given the question if they expect any advantages with the certification. Mathias Wideroth answered that it would be satisfying to be able to claim that the logistical solution is sufficiently good to live up to the high requirements on environmental performance in accordance to Good Environmental Choice. But if it would bring them an increased amount of business he was unsure of, however he believed that it would certainly strengthen current business and relationships and perhaps open doors to new customers as well.

Joakim Stoppenbach at Greencarrier Freight Services Sweden AB describes the reason for certifying some of their logistical solutions in accordance with Good Environmental Choice as a matter of differentiation and extra value. He draws parable to when you refuel your car;

It is a matter of differentiation. For example, nowadays you do not refuel your car depending on who has the best fuel, because fuel is fuel. You stop and refuel on those who provide the best coffee and the tastiest hot dog. The same thing goes for transports, Shanghai to Gothenburg, how difficult can it be, really? So the customers choose on the basis of price and additional services and extra value. What does Greencarrier provide, and preferably without extra charge of course? What is the extra value? “Ok, they have an environmental profile.” Is our idea, that we should act as a partner in knowledge, and that together with our customers we will help them provide environmentally efficient transports. We are not forcing them to, but we should provide the know-how and they should

be aware that we have some environmental services – Joakim Stoppenbach, Greencarrier Freight Services Sweden AB

Mathias Wideroth, Scandinavian Logistics Partners AB, like Joakim Stoppenbach above, mentions the notion of being a knowledge partner and providing the “know-how” with aspects related to environmental performance stating that for example the importance of delivery precision instead of transit time;

Naturally, customers request other parameters (than cost efficiency) as well, transit time for example. But transit time is often confused with delivery precision, even in large, advanced organisations. We have a job to do in that area, to emphasize that it is not always transit time that is the most important aspect, but sometimes the delivery precision. Or at least have a discussion with the customer regarding the difference between transit time and delivery precision. A longer transit time could be more cost effective, more environmentally friendly and you could achieve a more precise delivery precision – Mathias Wideroth, Scandinavian Logistics Partners AB

In other words environmental initiatives could stretch beyond what is measured and required in the criteria for environmental certifications and ecolabels. Providing knowledge and encouragement through transparent environmental information initiatives could be a way of increasing the interest for environmental issues. A step toward a change in the industry might be, as mentioned by Mathias Wideroth earlier, to educate customers in what factors are significant for sound environmental performance.

4.1.3 Customers’ requests

To further understand the reason behind certifying logistical solutions and to understand the underlying customer demand if any, the respondents were asked to explain what information customers request when negotiating. The answers varies between the respondents and as Joakim Stoppenbach, Greencarrier Freight Services Sweden AB mentioned the range stretches from right service to the right price – case closed, to larger customers that request extensive documentation and information. But usually the requests involve environmental certification according to ISO 14000 which deals with environmental work;

The requests usually regard ISO 14000 and if we are certified accordingly. For example, question 4 – Are you certified according to ISO 14000? Yes – Please see question 8 – Thank you... Because if you are certified according to ISO 14000 you already manage a number of things. You have an environmental policy, the management has an environmental representative, usually at the board of directors, and you have conducted a preparatory and regular environmental review to see the effect your business has on the environment. If you have managed to do those tasks, it usually means that you do a good environmental work – Joakim Stoppenbach, Greencarrier Freight Services Sweden AB

He continues stating there is a difference between environmental work and environmental performance. Environmental work is how the organisation works with environmental issues such as policies and defined processes. Environmental performance is what is actually happening, for example energy consumption or emission levels. Environmental performance is what Good Environmental Choice focus on.

Lotte Ring Holk at Geodis Wilson Nordic state that a lot of their customers still chose strictly on price, however there is an increasing amount of customers starting to consider environmental aspects as well. Even though it might not be a deal breaker yet, environmental aspects are increasingly important. However according to Johan Sandström at Green Cargo they seldom receive other reasons for choosing a specific service with them other than the aspect of price.

In contrast to the above mentioned focus on price, Mathias Wideroth, Scandinavian Logistics Partners AB raise the notion of cost effectiveness and its close relationship to environmental performance;

I would like to say that the customers first and foremost request a cost effective transport or logistical solution. It is in my opinion that customers usually never view transports or logistics as a form of value adding service; it is usually only a cost. That means that cost effectiveness is what is most important. But what is interesting with cost effectiveness, is that it is easy to relate to environment, Good Environmental Choice and environmental transports. In other words a well utilized transport or a transport without empty capacity also is more cost effective transport. That is how we try to present the situation, in other words, yes we are competitive regarding price, but parts of that competitiveness derive from using more environmentally friendly alternatives – Mathias Wideroth, Scandinavian Logistics Partners AB

He continues explaining that they have never, so far, received questions related to the environmental impact of their transports, but they always present this as they believe that it is not only a selling point for them, but it might be the decisive aspect giving them the advantage. In other words even though most customers do not explicitly request environmental information, the fact that Scandinavian Logistics Partners AB provide this is appreciated.

4.1.4 Views on the criteria for Good Environmental Choice

According to Agneta Carlsson at the SSNC the primary purpose of Good Environmental Choice when it started was to promote a shift from road transports to railway transports.

The criteria for Good Environmental Choice are currently under review and input from the current and aspiring licensees of the label could provide valuable input for the process. The general opinion of the respondents regarding the criteria for Good Environmental Choice is that they are tough;

Currently they are tough, as they should be. And if I am allowed to answer what could be a potential follow-up question, it is in my opinion that they do not need to increase the requirements in the near future since there still are so few that meet the requirements... When the certification is well-known and there are many licensees, then you can increase the requirements – Joakim Stoppenbach, Greencarrier Freight Services Sweden AB

Agneta Carlsson, responsible for the Transport segment of Good Environmental Choice at the SSNC confirms the above statement and state that the current criteria are tough and that the majority of the market does not meet the requirements for the label. Mathias Wideroth, Scandinavian Logistics Partners AB state that he finds the criteria relatively complicated. However, he also mentions the possibility that some criteria are not possible to simplify without them being watered down.

Furthermore, some of the respondents acknowledge the fact that few are licensed according to Good Environmental Choice and speculate on the reasons for this. Johan Sandström at Green Cargo mentions that the SSNC might have aimed too high when they first decided on the criteria. He continues explaining that the SSNC might have overestimated the agility and development of the transport industry with the result of having almost no licensees

When they decided on the criteria, for quite a few years ago, I think they overestimated the agility and development of this industry. The result was that almost none are licensed – Johan Sandström, Green Cargo

I think they had higher ambitions than they have achieved, seeing as there are relatively few licensees. They have perhaps aimed a bit too high and allowed the best be the enemy of the good – Mathias Wideroth, Scandinavian Logistics Partners AB

In conclusion, the criteria are considered tough but there are no requests to decrease the requirements. However, due to the fact that there are few licensees the respondents agree that criteria might have to be reconsidered and reviewed in order to be an attractive ecolabel in the transport and shipping industry.

4.1.5 Environmental work initiatives

The question that generated the most variation in answers and opinions was “Do you think it is possible for you to carry out this type of environmental work without a demand from your customers?” In one end some organisations stated that they could not carry out environmental work without the pressure and demand from their customers. In the other end one organisation stated that almost none of their environmental work is because customers demand, it is on their own initiative. For example, Johan Sandström at Green Cargo stated that it is not possible for them to carry out this type of environmental work without the demand from their customers with the addition that it is a hypothetical question since both customers indeed have expectations and demands;

No, but that is a hypothetical question since both customers and owners have expectations and demands, so we have to have some activity in this area. I find it very hard to imagine large customers and owners ignoring this... There is an interest, but not in that sense that anyone would choose solely on that or be willing to pay extra – Johan Sandström, Green Cargo

Lotte Ring Holk at Geodis Wilson Nordic is slightly more cautious stating that most of their initiatives are driven by customer demand, but the times are changing and the focus increase internally as well as externally;

Most of our initiatives are driven by our customer demand, but that being said I think that the times are changing. I think it is getting more and more important for us as individuals as well to know that we work for a company that care about the environment and that we actually do things internally as well. So we have a lot of focus on that in the Nordics – Lotte Ring Holk, Geodis Wilson Nordic

Joakim Stoppenbach, Greencarrier Freight Services Sweden AB adds to the argument presented by Lotte Ring Holk stating that it is not all about financial performance anymore;

There are companies that take a social responsibility; it is not all about ones and zeroes, money – Joakim Stoppenbach, Greencarrier Freight Services Sweden AB

At Volvo Group Trucks Operations, Volvo Group Logistics Services the attitude toward initiatives driven by customer demand is similar. Since environment is a core value of the organisation and is thus incorporated in the brand and entire organisation, external pressure from customers is generally not needed to generate initiatives for environmental work;

Environment is a core value in the organisation and a part of the brand. I do not think we require external pressure from customers to work with environmental issues. However, it is something that we can be better at – Anders Bergström, Volvo Group Logistics Services

There are set goals from top management so I would say most initiatives come from ourselves – Susanna Hambeson, Volvo Group Logistics Services

Even further in this end of the spectrum lies the opinion of Mathias Wideroth, Scandinavian Logistics Partners AB, stating firmly that it is the responsibility of the logistics company to provide sustainable transports, not the customer;

Yes, definitely. Almost none of our environmental work is because of our customers; it is us who have taken the initiative. Of course, indirectly, the customer pushes us to find environmentally friendly alternatives since they request cost effective transports. But I think that it is us as a supplier, and I am very firm in this opinion, that it is us as a logistics company and a supplier of transport that have the responsibility regarding environmental transports, not our customers – Mathias Wideroth, Scandinavian Logistics Partners AB

In other words, the transport providers need to put pressure on the transport buyers in order to increase the demand for transports with high environmental performance.

4.1.6 Suggestions for future criteria, plans or request for Good Environmental Choice

As mentioned earlier in the report the SSNC is in the process of reviewing and updating the criteria for Good Environmental Choice. Hence the last question of the interview was asked to all respondents familiar with Good Environmental Choice; “Do you have any suggestions for future criteria, plans or other requests for Good Environmental Choice?”

Johan Sandström, Green Cargo suggested updating the model for licence fees and perhaps focus on carbon dioxide as other emissions will be regulated by legal requirements anyway;

They could look into the model for licence fees. And perhaps they should follow the rest of the world and focus on carbon dioxide because many of the other emissions will decrease anyway due to legal requirements. Then it might be easier using the criteria abroad – Johan Sandström, Green Cargo

Joakim Stoppenbach, Greencarrier Freight Services Sweden AB did not want the criteria to be watered down. He prefers increasing the requirements rather than a decrease. Even though a decrease in the requirements could have the effect of acquiring more licensees a decrease was not the correct way to achieve that. He concluded his statement with discussing the balance of marketing;

In conclusion, it is a matter of balance with all types of marketing, it should not be watered down or easy to achieve, but on the other hand it has to be accessible, well-known and generally accepted – Joakim Stoppenbach, Greencarrier Freight Services Sweden AB

Mathias Wideroth, Scandinavian Logistics Partners AB asks for implementation of relativity in the requirements using an example related to airfreight. Although he acknowledges the fact that it might not be a simple task, but perhaps something to consider. Most of all, he states that it is important to not let the best be the enemy of the good;

*It could probably be what I mentioned earlier regarding implementing some sort of relativity, but I realize that might not be that simple. But you could perhaps use a label called *Better Environmental Choice*, in other words it is better to fly with Norwegian and a new airplane from Boeing than with SAS and an old airplane from Airbus. This could be interesting to experiment with. I think the most important thing is to not allow the best be the enemy of the good. To seek the perfect world and forsaking all the things we can do already, is something I think drafters of certificates and labels could think about – Mathias Wideroth, Scandinavian Logistics Partners AB*

The SSNC themselves were also asked the question regarding future criteria and plans. Agneta Carlsson stated that she wanted the certification to be highly requested and recognized as a certification with strict requirements. Other than the label, the customer should not need more information;

Naturally I want the certification to be highly requested and something to be used when purchasing transport services, both private and public procurement in order to set strict environmental requirements on transports. I want it to be recognized and known as a certification with strict requirements and that you do not need much more proof than that – Agneta Carlsson, The SSNC

In conclusion, the SSNC have a vision of what they want their ecolabel Good Environmental Choice to be like in the future, how it will be viewed upon and how they hope it will be an acknowledged seal of quality for environmental performance.

4.1.7 The need for environmental certifications or ecolabels in the shipping industry

According to Edvard Molitor, Senior Manager Environment at the Port of Gothenburg the need for environmental certifications or ecolabels in the shipping industry is the direct opposite of the actual trend. There is an increasing number of detailed ecolabels. However, the need and desire from the shipping industry is to decrease the number of different labels and instead widen the scope and coverage of those left;

Generally there is a trend toward an increasing amount of detailed ecolabels within the shipping industry. But at the same time there is a desire to turn the trend around and decrease the number of different labels but with a larger scope of coverage in order to make things easier – Edvard Molitor, Port of Gothenburg

In other words there are too many different certifications, ecolabels and indices causing confusion and loss of credibility. The port of Gothenburg currently use two different environmental indices to determine port fees of vessels calling Gothenburg, Clean Shipping Index and Environmental Ship Index

The advantages of rewarding environmental performance have been very clear according to Edvard Molitor at the Port of Gothenburg, not only for the ship owners themselves who can use their environmental certifications and ecolabels as a marketing tool. But first and foremost the advantage has been a decrease in the emission levels and an increase in the interest of environmental issues. These results derive from creating economic incentives to encourage sustainable development;

In the Port of Gothenburg, the advantages with awarding environmental discounts to ship owners fulfilling certain requirements for ecolabels and certifications have been very clear. We have seen the commercial advantage for ship owners that can use their environmental certifications or ecolabels for marketing purposes. But above all we have noticed that by providing economic incentives in the form of environmental discounts we have achieved lower levels of emissions and an increase in the interest for more environmentally friendly solutions. Today, more than every sixth port call in the Port of Gothenburg is rewarded with some kind of environmental discount as a result of their environmental certification or ecolabel – Edvard Molitor, Port of Gothenburg

Furthermore, Edvard Molitor at the Port of Gothenburg was asked if there are any reasons to treat shipping differently. His answer was that in some cases shipping has to be treated differently, since it is intrinsically different and is per definition more international. The fact that shipping is international complicate the use of local or even regional certifications and labels, and is why the Port of Gothenburg primarily use the Environmental Ship Index since it is currently more internationally acknowledged than for example Clean Shipping Index;

In some cases it is necessary to treat shipping differently since shipping, per definition, is more international. It is difficult for ship owners that operate on several different continents to use local and regional labels since these often significantly vary. That is a contributing reason as to why we in the Port of Gothenburg have chosen to mainly use the Environmental Shipping Index, which in a higher extent than Clean Ship Index or other more local initiatives, is used internationally – Edvard Molitor, Port of Gothenburg

Adding to the discussion regarding the need for environmental certifications and ecolabels for shipping are the opinions from Susanna Hambeson, Environmental Manager at Volvo Group Trucks Operations, Volvo Group Logistics Services. She mentions that certifications and labels are difficult to use internationally but they use indices, for example Clean Shipping Index, to gain bargaining power in relation to the large transport suppliers currently in the shipping industry;

I think it is difficult to use internationally. When it comes to shipping we require our transport suppliers to report to Clean Shipping Index as a way to be transparent and provide us with information regarding their environmental performance...

...Shipping is very complicated, and we are very small compared to shipping suppliers which makes our bargaining power limited. That is why we are members of Clean Shipping Index, to give us more bargaining power together with other purchasers of transports – Susanna Hambeson, Volvo Group Logistics Services

In conclusion, the inherent qualities of shipping in particular result in certain difficulties perhaps not present in other industries. The fact that shipping is characteristically international brings further pressure on environmental certifications, ecolabels and environmental indices to uniformly simplify communication of environmental performance.

4.2 Case study – assessment of Scandinavian Rail Shuttle

As a part of assessing the requirements for Good Environmental Choice a real-life logistical solution has been evaluated according to the criteria. The evaluation has covered the assessment process of the logistical solution Scandinavian Rail Shuttle by Scandinavian Logistics Partner AB, according to the criteria for Good Environmental Choice by the Swedish Society for Nature Conservation. Additionally, this chapter include the answer to the research question “If the criteria are met, what is the cost of certification?”

“Train 8” by the Volvo Group is a rail route used to link component plants in northern Sweden with the Volvo assembly plants in Belgium. The rail route passes through Denmark, Germany and the Netherlands along the way from Sweden to Belgium and covers about 2500 km. The issue with the service however has been the underutilization of the return trip from Belgium to Sweden where only 10% of the load capacity has been used. The answer to this unsustainable problem was to sell surplus cargo capacity on the northbound return leg. The freight forwarder and logistics provider Scandinavian Logistics Partners AB and the Volvo Group made a deal in 2014 for this unused surplus cargo capacity which Scandinavian Logistics Partners sold to their customers. This meant that previously unused cargo capacity was now utilized which meant lower costs for all parties, and naturally, due to better load efficiency, lower overall supply chain emissions. Scandinavian Logistics Partners AB operates handling and cross docking facilities in Ghent, Antwerp, Älmhult and Hallsberg. Pick-up and distribution to and from the hubs are done with trucks. The Scandinavian Rail Shuttle is calculated to significantly reduce emissions of carbon dioxide, sulphur and hydrocarbons. The total capacity is about 275 000 pallets annually which amounts to roughly 200 000 mt of goods. Annually around 7000

trailer transports can be moved to the Scandinavian Rail Shuttle and decrease the equivalent of about 8 000 000 kg of carbon dioxide. Lead-time stability enables just-in-time possibilities for deliveries (Scandinavian Logistics Partners AB, 2014; Williams, 2014). For an overview of the logistical solution is presented, see Figure 1 below.

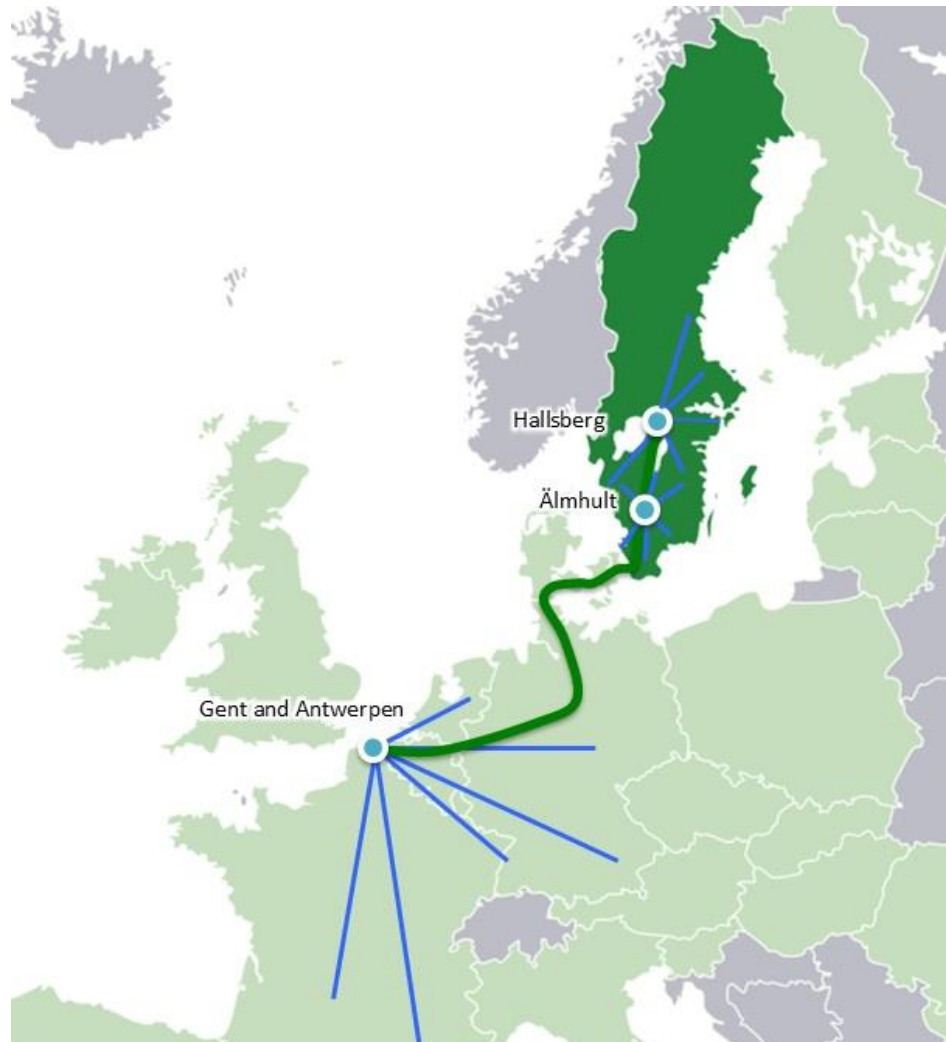


Figure 1 Overview Scandinavian Rail Shuttle

4.2.1 Requirements Good Environmental Choice

The requirements for Good Environmental Choice applicable for the Scandinavian Rail Shuttle by Scandinavian Logistics Partners AB are drafted and communicated by the Swedish Society for Nature Conservation, the SSNC. The criteria can be viewed in its whole in Appendix III, but for the purpose of this thesis see the applicable summary below with requirements relevant to Scandinavian Rail Shuttle.

Table 1 Requirement summary

Operation and life cycle value requirements		
Non-renewable energy	kWh/tkm	0,1
NO _x + SO _x	g/tkm	0,2
NMHC	g/tkm	0,01
Particles	g/tkm	reported

The criteria apply for the whole life cycle and the total use of non-renewable energy may not exceed 0,1 kWh/tonne-km. Emissions of nitrogen oxides and sulphur oxides may not exceed 0,2 g/tonne-km combined. Emissions of non-methane hydrocarbons, NMHC, may not exceed 0,01 g/tonne-km. Emissions of particles must be reported as well but a maximum level requirement is not specified. For load carriers powered by electricity at least 30% of the total volume of electricity must be labelled with Good Environmental Choice or equivalent. Furthermore the licensee must have an environmental policy and provide a maintenance plan for their load carriers. The environmental policy must be adopted by the company management where they commit to reducing their negative impact on the environment. Furthermore the organisation must have a designated person responsible for environmental work. The maintenance plan reporting the consumption and use of environmentally destructive substances in the maintenance of load carriers must be produced in accordance with the template provided by the SSNC. The licensee must undergo an annual inspection verifying that all requirements are being met. The inspection must be verified by an authorized auditor approved by the SSNC (The Swedish Society for Nature Conservation, 2005).

4.2.1.1 Ecolabelled electricity

The train is powered by electricity but the source of the energy is not the same in all countries that the train crosses. The calculation tool EcoTransIT includes this fact in the calculations (IFEU Heidelberg et al., 2014).

Table 2 Energy split of electricity consumption used by railways

Energy split - railway electricity								
Country	Source	Reference Year	Solid Fuels	Oil	Gas	Nuclear	Renewable	Other
Belgium	UIC 2009	2007	13,60 %	0 %	16,60 %	57,90 %	2,10 %	9,70 %
Netherlands	UIC 2009	2005	23,30 %	0 %	51,80 %	9,10 %	9,70 %	6,10 %
Germany	UIC 2009	2007	46 %	0 %	8,80 %	29,90 %	14 %	1,40 %
Denmark	UIC 2009	2007	49,40 %	2,70 %	17,50 %	0 %	26 %	4,40 %
Sweden	UIC 2009	2007	0 %	0 %	0 %	0 %	100 %	0 %

In Sweden, the railway is, as stated in the table above, 100 % powered by renewable energy. Additionally, in this case the energy is labelled with Good Environmental Choice and operated by Green Cargo. This means that if 30 % or more of the total distance is allocated on the railway, the criteria requiring at least 30 % electricity with Good Environmental Choice or equivalent will be fulfilled. According to the Corporate Social Responsibility report issued by the Öresundsbro consortium 2014, 87% of the total carbon dioxide emissions was generated by Swedish electricity. Furthermore, since the Danish electricity generate more carbon dioxide emissions than the Swedish, the conclusion is that more than 87 % of the electricity used for the Öresundsbro is generated in Sweden (The Öresundsbro Consortium, 2015). However, with 87% of the length of the Öresundsbro together with the railway distance in Sweden, the total distance with electricity confirmed to be labelled with Good Environmental Choice only constitute 29 %. This is true for transports to Hallsberg. Transports to Älmhult will generate lower overall percentage than 29 % of Swedish railway transports.

Table 3 Railway ratio

Railway ratio	
Distance in Sweden (km) A	475,35
Total distance (km) B	1 635,85
Ratio A/B	0,29

4.2.2 Scenario comparison

The logistical solution Scandinavian Rail Shuttle by Scandinavian Logistics Partners AB varies slightly due to various pickup and delivery locations which means there are variations on voyage lengths. Hence, the case study includes different scenarios to describe the worst case scenario with the longest distance, the best case scenario with the shortest distance and an average scenario with an average distance. The criteria from the SSNC for Good Environmental Choice require a calculation based on average and for the purpose of this report and the nature

of this particular logistical solution, different scenarios will be presented below. Since the criteria require presentation of data on the whole life cycle well-to-wheel data according to standard EN16258 will be presented and used in the calculations. The average total goods weight carried on the train and trucks are based on figures obtained from Scandinavian Logistics Partners AB during Q4 2014 and Q1 2015. Total goods weight carried on each individual northbound train range from 24 MT / train up to 393 MT / train with 251 departures during Q4 2014 and Q1 2015. The average total goods weight during this period was about 143,7 MT / train. On average 10 trailers / train was used in each end of the transport for pick-up and distribution to and from the cross-docking hubs. The data containing the amount of trains and trucks and total goods weight during Q4 2014 and Q1 2015 have been received directly from Scandinavian Logistics Partners AB.

Table 4 Statistics Q4 2014 & Q1 2015

Q4 2014 & Q1 2015		
Trucks	amount	2 348
Trains	amount	251
Total goods weight	mt	36 064
Average number of trucks per train	trucks/train	10
Avarage goods weight per train	mt	143,7

The presentation of the different scenarios should be considered models of the reality since the properties of individual transports will vary. Assumptions and limitations have been created as an attempt to mathematically describe a complex reality. For the purpose of facilitating the assessment process of the Scandinavian Rail Shuttle certain factors have been defined and should be considered average values. The conditions and properties for utilized vehicles in the supply chain connected to Scandinavian Rail Shuttle that have been used during the assessment process have been received directly from Scandinavian Logistics Partners AB.

Table 5 Vehicle conditions

Vehicle Conditions			
	Truck Origin	Train	Truck Destination
Type	26-40 t	1000 t	26-40 t
Emission Standard	Euro V	Electrified	Euro V
Load Factor	60 %	90 %	60 %
Empty Trip Factor	20 %	10 %	0 %
Weight	N/A	1000 t	N/A

In reality goods are transported to the hubs in Ghent and Antwerp from many different European locations. In the three different scenario calculations it is assumed that the total amount of goods is transported from one single origin to one single location. The average distance scenario has been decided to be presented as a transport from Wijchen in the Netherlands to Bro in Sweden. During Q4 2014 and Q1 2015 Wijchen was the most frequent origin with a distance to Ghent of about 186 km. The average distance for the 30% top most frequent origins during Q4 2014 and Q1 2015 was about 151 km which makes the average distance scenario Wijchen to Bro a realistic average scenario. The figures have been received directly from Scandinavian Logistics Partners AB.

Table 6 Frequent origins

Frequent origins		
Origin	Number of shipments	Distance to Ghent (km)
NLHLM	85	205
BEIZG	86	53,7
NLDOI	93	275
NLTLB	122	139
BEROE	157	49,5
NLWCH	180	185,7
Total	723	907,9
Average		151,31 km

The reason why the logistical solution Scandinavian Rail Shuttle is interesting to assess whether or not it is eligible for certification according to Good Environmental Choice is that it utilizes otherwise unused loading and transport capacity. However, before moving northbound from Continental Europe to Sweden the train moves southbound with Volvo cargo. Whether or not this trip should be included in the calculations can be debated since without unutilized northbound capacity the solution cease to exist. In other words, without the already transported southbound train, the cost efficient northbound unused cargo capacity is not available. For the purpose of this thesis, as the logistical solution is operated by Scandinavian Logistics Partners only northbound calculations will be presented in the main scenarios. Additional calculations including the southbound transport from Umeå to Ghent will be presented as well in order to emphasize the level of variance depending on how the calculations and measurements are performed.

4.2.2.1 Short distance case scenario

The short distance case scenario is a transport from Mouscron in Belgium via Ghent to Bro in Sweden. The distances and emission data have been collected from EcoTransIT.

Table 7 Short distance case scenario

Short distance case scenario		
		Distance (km)
Leg 1 - Truck	Mouscron - Ghent	56,22
Leg 2 - Train	Ghent - Hallsberg	1 635,85
Leg 3 - Truck	Hallsberg - Bro	193,86
Total		1 885,93

The following data has been collected from EcoTransIT using data received from Scandinavian Logistics Partners AB.

Table 8 Emission data short distance case scenario

Emission data				
		Truck	Train	Total
Energy consumption	kWh	9 272	12 071	21 343
SO _x + NO _x	g	10 000	4 000	14 000
NMHC	g	1 000	200	1 200
PM10	g	300	200	500

With the data collected from EcoTransIT and the statistics from Q4 2014 and Q1 2015 the following has been calculated.

Table 9 Result short distance case scenario

Result			
Non-renewable energy	21 343 kWh	kWh/tkm	0,08
NO _x + SO _x	14 000 g	g/tkm	0,05
NMHC	1 200 g	g/tkm	0,004
Particles	500 g	g/tkm	0,002

4.2.2.2 Average distance case scenario

The average distance case scenario is a transport from Wijchen in the Netherlands via Ghent to Bro in Sweden. The distances and emission data have been collected from EcoTransIT.

Table 10 Average distance case scenario

Average distance case scenario		
		Distance (km)
Leg 1 - Truck	Wijchen - Ghent	185,7
Leg 2 - Train	Ghent - Hallsberg	1 635,85
Leg 3 - Truck	Hallsberg - Bro	193,86
Total		2 015,41

The following data has been collected from EcoTransIT using data received from Scandinavian Logistics Partners AB.

Table 11 Emission data average distance case scenario

Emission data				
		Truck	Train	Total
Energy consumption	kWh	14 535	12 071	26 606
SO _x + NO _x	g	14 000	5 000	19 000
NMHC	g	1 600	200	1 800
PM10	g	400	200	600

With the data collected from EcoTransIT and the statistics from Q4 2014 and Q1 2015 the following has been calculated.

Table 12 Result average distance case scenario

Result			
Non-renewable energy	26606	kWh/tkm	0,09
NO _x + SO _x	19000	g/tkm	0,07
NMHC	1800	g/tkm	0,01
Particles	600	g/tkm	0,002

4.2.2.3 Long distance case scenario

The long distance case scenario is a transport from Saint-Jean-Bonnefonds in the south of France via Ghent to Bro in Sweden. The distances and emission data have been collected from EcoTransIT.

Table 13 Long distance case scenario

Long distance case scenario		
		Distance (km)
Leg 1 - Truck	Saint-Jean-Bonnefonds - Ghent	806,76
Leg 2 - Train	Ghent - Hallsberg	1 635,85
Leg 3 - Truck	Hallsberg - Bro	193,86
Total		2 636,47

The following data has been collected from EcoTransIT using data received from Scandinavian Logistics Partners AB.

Table 14 Emission data long distance case scenario

Emission data				
		Truck	Train	Total
Energy consumption	kWh	39 955	12 071	52 026
SO _x + NO _x	g	40 000	5 000	45 000
NMHC	g	4 500	200	4 700
PM10	g	1 100	200	1 300

With the data collected from EcoTransIT and the statistics from Q4 2014 and Q1 2015 the following has been calculated.

Table 15 Result long distance case scenario

Result			
Non-renewable energy	52 026	kWh/tkm	0,14
NO _x + SO _x	45 000	g/tkm	0,12
NMHC	4 700	g/tkm	0,01
Particles	1 300	g/tkm	0,003

For an overview of the results for all scenarios compared, see Table 16 below.

Table 16 Result comparison

Result comparison					
		Criteria	Short	Average	Long
Non-renewable energy	kWh/tkm	0,1	0,08	0,09	0,14
NO _x + SO _x	g/tkm	0,2	0,05	0,07	0,12
NMHC	g/tkm	0,01	0,004	0,01	0,01
Particles	g/tkm	reported	0,002	0,002	0,003

In conclusion, the short and average distance scenario fulfill the operation and life cycle value criteria for Good Environmental Choice.

4.2.3 Cost of certification

The licence fee for Good Environmental Choice includes a variable annual fee and a fixed annual fee. There is also a one-time fee when applying for the certification and additional fees for changes to the application. Currently the fixed annual fee is 7000 SEK / year, the application fee is 5000 SEK + 2000 SEK / type of vehicle in the application. The variable annual fee is designed in three stages varying in rate and based on the annual amount of tonne-km for the certified product. In the first stage for 0 – 1.000.000 tonne-km, the fee is 0,03 SEK /tonne-km. In the second stage for 1.000.000 – 100.000.000 tonne-km, the fee is 0,002 SEK / tonne-km. In the third and last stage for 100.000.000 tonne-km and above, the fee is 0,000125 SEK / tonne-km (The Swedish Society for Nature Conservation, 2008).

Table 17 Licence fee model

Licence fee		
Annual variable fee stage 1	0 - 1 000 000 tkm	0,03 SEK/tkm
Annual variable fee stage 2	1 000 000 - 100 000 000 tkm	0,002 SEK/tkm
Annual variable fee stage 3	>100 000 000 tkm	0,0000125 SEK/tkm
Annual fixed fee		7000 SEK/year

The first licence fee is based on the information stated in the application. Hence, the estimation of the annual licence fee for the case study is based on the average distance scenario.

Table 18 Total tonne-km

Total tonne-km		
Average distance case	tkm	286 188,22
Trains Q4 2014 & Q1 2015	amount	251
Total average Q4 2014 & Q1 2015	tkm	71 833 243,22
Total average annually	tkm	145 386 437,30

The licence fee is based on the annual amount of total tonne-km and separated in stages.

Table 19 Licence fee calculation including Sweden

Licence fee calculation		
	Tonne-km	SEK
Annual variable fee stage 1	1 000 000,00	30 000,00
Annual variable fee stage 2	100 000 000,00	200 000,00
Annual variable fee stage 3	44 386 437,30	554,83
Annual fixed fee		7 000,00
Total	145 386 437,30	237 554,83

The distance covered by rail in Sweden should not be included since that is already licensed by Green Cargo. The new licence fee calculation excludes Swedish tonne-km.

Table 20 Licence fee calculation excluding Sweden

Licence fee calculation		
	Tonne-km	SEK
Annual variable fee stage 1	1 000 000,00	30 000,00
Annual variable fee stage 2	100 000 000,00	200 000,00
Annual variable fee stage 3	10 095 924,00	126,20
Annual fixed fee		7 000,00
Total	111 095 924,00	237 126,20

Based on the average distance scenario the annual licence fee payable to the SSNC is about 237 000 SEK.

4.2.4 Southbound rail transport

The above mentioned calculations are based on the exclusion of the southbound rail transport. The southbound cargo is handled by Volvo and is not connected to Scandinavian Logistics Partners AB. For the purpose of further highlight the variance generated depending on what is included in the calculations the southbound rail transport will be included below. The statistical transport data used in the calculations have been retrieved directly from Volvo Group Logistics Services. Distances and emission data have been calculated using EcoTransIT.

The total goods weight is on average 168 mt / train from Umeå. Transports to and from the railway stations have been excluded.

Table 21 Distance Train 8

Train 8 - Distance		
		Distance (km)
Leg 1 - Train	Umeå-Ghent	2 557,63

Table 22 Average weight Train 8

Train 8 - Weight		
		mt
Average goods weight per train		168

The following data has been collected from EcoTransIT using data received from Volvo Group Logistics Services.

Table 23 Emission data Train 8

Emission data		
		Train 8
Energy Consumption	kWh	17 816
SO _x + NO _x	g	6 000
NMHC	g	300
PM10	g	300

With the data collected from EcoTransIT and the statistics from an average southbound rail transport the following has been calculated.

Table 24 Result Train 8

Result - Train 8			
Non-renewable energy	17 816,00	kWh/tkm	0,04
NO _x + SO _x	6 000,00	g/tkm	0,01
NMHC	300,00	g/tkm	0,001
Particles	300,00	g/tkm	0,001

Combined with the result from the average case presented earlier in the report, the result including the southbound rail transport will differ.

Table 25 Result Train 8 & Average distance scenario

Result - Train 8 & Average distance scenario			
Non-renewable energy	44 422,00	kWh/tkm	0,06
NO _x + SO _x	25 000,00	g/tkm	0,03
NMHC	2 100,00	g/tkm	0,003
Particles	700,00	g/tkm	0,001

When including the southbound rail transport the total overall percentage of Swedish, ecolabelled electricity will increase to about 44 %, thus fulfilling the specific requirement for Good Environmental Choice.

Table 26 Railway ratio including Train 8

Railway ratio	
Distance in Sweden (km) A	1 864,69
Total distance (km) B	4 193,48
Ratio A/B	0,44

4.2.5 Verdict

In conclusion, based on the average distance scenario and data collected during Q4 2014 and Q1 2015 the logistical solution Scandinavian Rail Shuttle by Scandinavian Logistics Partners AB should be eligible for certification according to the energy consumption and emission level criteria for Good Environmental Choice by the Swedish Society for Nature Conservation. However, the criteria requiring at least 30 % or more of the electricity used to be labelled with Good Environmental Choice or equivalent is not comprehensively fulfilled since the electricity source is difficult to determine outside the Swedish railway network. Additionally, the total percentage in this logistical solution of Swedish rail network is even lower with transports to Älmhult instead of Hallsberg. Scandinavian Logistics Partners AB do have an environmental policy as they are certified according to ISO:14001. The maintenance plans for the load carriers are not presented in this study. The estimated first annual licence fee is about 237 000 SEK and subsequent annual licence fees will be based on revised figures during the annual revision.

Table 27 Criteria comparison summary – Excluding southbound rail transport

Good Environmental Choice			
		Requirement	Average distance case scenario
Non-renewable energy	kWh/tkm	0,1	0,09
NO _x + SO _x	g/tkm	0,2	0,07
NMHC	g/tkm	0,01	0,01
Particles	g/tkm	reported	0,002
Ecolabelled electricity	%	30	29
Environmental policy	Yes/No	Yes	Yes ISO:14001
Maintenance plan	Yes/No	Yes	Not assessed

The criteria for operation and life cycle values based on average, as well as the environmental work requirements are met. However, the logistical solution fall short on ecolabelled electricity for the railway network outside Sweden. Hence, maintenance plans for the load carriers are not presented at this stage.

5. Discussion

5.1 Interviews and literature

The interviews contribute to further understand whether there are differences in how organisations analyse market signals and customer demands related to green qualities, as discussed by Rex and Baumann (2007). Evidently there are market opportunities for green initiatives and in a time where corporate performance and the foundation for decision-making might stretch beyond monetary aspects, as some of the respondents stated, this claim become increasingly true. However, as mentioned by the Sustainable Shipping Initiative (2011), information regarding environmental performance need to be communicated with high reliability which makes standardisation essential. The notion of standardisation and clear compelling information without drowning it in too much detail, which was mentioned by Baumann and Tillman (2004), was highlighted in the present study as well.

5.1.1 What are the stakeholders' views on the requirements for Good Environmental Choice?

The interviews reveal that the general view on environmental certification, or ecolabelling, is overwhelmingly positive. Respondents stress that it is a good aid for buyers of transports and there is a clear increase of the interest in environmental aspects of transports. As stated during the interviews, the transport industry might not be the most optimal industry in regard to environmental performance. However, there are an increasing amount of initiatives.

Furthermore, there is a distinction between labels and certifications as well as different kinds of labels. The argument is supported by the literature study and the results from the interviews; certifications and labels need to be credible and trustworthy in order to prevent greenwashing. As Joakim Stoppenbach at Greencarrier Freight Services mentioned, many claim to be green or environmentally friendly when underneath the surface they in fact are not.

With this in mind, the conditions for the SSNC and Good Environmental Choice are sound as the organisation is, according to the respondents, a credible, trustworthy organisation with integrity. That is an important, indeed essential starting point when developing requirements for an ecolabel with the ambition to have a significant impact.

The views on the requirements for the ecolabel Good Environmental Choice are varied. The requirements are considered tough and complicated. Tough requirements could generate the effect of few licensees, and of course that is the risk with strict criteria. However, the SSNC are aware that the criteria are tough. It is not recommended to decrease the requirements in order to attract more potential licensees. It might be suitable to review the type and scope of

requirements to include in the next version of Good Environmental Choice. Reflections and suggestions will be discussed later in the report.

The stakeholders generally do not want to see a watered down version of future reviewed criteria. But at the same time, they give a warning toward too strict requirements with the effect of no licensees. “Do not let the best be the enemy of the good” as stated by Mathias Wideroth, Scandinavian Logistics Partners AB captures the issue the ecolabel Good Environmental Choice have. Indeed many labels and certifications requiring verification share this issue. The balance between credibility and accessibility is essential. In other words, it has to be sufficiently strict to demonstrate that approved licensees have significantly better environmental performance, and at the same time it needs to be reasonably achievable. The fact that Good Environmental Choice for heavy transports currently have very few approved licensees could be considered an issue. The impact of a certificate and its requirements might be significantly lower with a low number of licensees. As some respondents mentioned the SSNC might have overestimated the agility and development of the transport industry. They might have had slightly too high ambitions and thus lost potential licensees.

Another aspect discussed is the type of requirements. They need to be adapted to the industry in which they will be applicable. Regardless of the reason, there might be potential licensees that perhaps still are able to develop and drive rigorous sustainable performance and could be encouraged to keep pushing this development. However, if they are left outside the loop, and relative environmental performance is not rewarded, there might be an issue in motivating the industry toward a direction with sustainable development. This of course applies to all types of regulations and requirements, not only the Good Environmental Choice.

5.1.2 What is the need for environmental certifications and ecolabels in the transport industry?

One of the research questions for this thesis is; “Is there a need for environmental certifications and ecolabels in the transport industry?” Naturally, “need” is a relative term based on opinion, but if we choose to define the goal of the transport industry as being sustainable, the need for sustainable transport solutions suddenly becomes clear. If there is an increase in the interest for information of environmental performance it stands to reason that the need for standardised ways of communication is highly important in order to maintain credibility and trust (Sustainable Shipping Initiative, 2011). As discussed in the literature review earlier in the report, trust is the main reason as to why consumers choose to buy green (Darnall et al., 2012; Yeoh & Paladino, 2013; Darnall & Correa-Aragon, 2014). With the use of untrustworthy self-declared environmental claims of products and services, that trust is diminished. Hence, trust is essential for the development of sustainable products and services. Credible, validated and

serious ecolabels could be a way to increase that level of trust as well as influencing and encouraging customers to take an interest in environmental issues.

If we further elaborate on the concept of need it also becomes clear that it is not always derived from the customers themselves. As discussed by Kotler et al. (2001) and Rex and Baumann (2007) there is a need for additional methods for communicating, influencing customers and promote sustainability. The mission of the transport suppliers should be to push sustainable development forward and not hide behind the perceived lack of demand from their customers, but create the need themselves through environmental initiatives and clear communication. The concept of need, as mentioned as a part of the overall research questions for this thesis, was confirmed during the interview with Mathias Wideroth, Scandinavian Logistics Partners AB. He is convinced that it is his responsibility, as a provider of logistical solutions, to provide environmentally efficient transports.

In other words, the need for environmental certifications and ecolabels in the transport industry, as a tool for communicating environmental performance, is present. However, perhaps not as a way for customers to put pressure on the transport suppliers, but a way for suppliers to simplify the communication of their credible, validated and serious work with environmental performance. Naturally, increasing the requirements for certification will require efforts from the licensees to maintain their certificates and permission to use the specific ecolabels.

Another aspect regarding the need for environmental certification and ecolabels was brought to attention by Edvard Molitor, Senior Manager Environment at the Port of Gothenburg. Since the Port of Gothenburg grant discounts on the port fees for ship owners certified according to certain requirements and performing well in indices such as Clean Shipping Index or Environmental Ship Index, there is an essential need for credible, third-party verified certifications, ecolabels and indices to base the decision on. However, there seems to be an issue with the trend of an increasing number of different certifications, labels and indices which could cause confusion, and unsurprisingly decrease the credibility of environmental certifications and ecolabels and the organisations that use them.

In the shipping industry, which generally is considered inherently international, the need for uniform environmental certifications and ecolabels become increasingly important. In many cases there is too much variation between different local certifications and labels. In other words, it seems there is a need for environmental certifications and ecolabels in the shipping industry as well. Similar to other transport industries it is essential to maintain a high level of credibility. An increasing number of different certifications and labels might be harmful to the credibility since there is generally little governance over creating new certifications and labels,

especially self-declared certifications and labels. Again, standardisation as discussed by the Sustainable Shipping Initiative (2011) is essential.

5.1.3 What are the commercial and environmental benefits from certification?

According to the interviews conducted during this thesis, the general consensus is that certification of logistical solutions indicate a clear statement the organisation is focused on the future and perform sound environmental work. Being certified according to for example ISO:14001 indicate a clear proclamation of an organisational focus on the future.

Specifically for certification according to Good Environmental Choice, the evidences or statements of commercial and environmental benefits are however somewhat vague. For the two organisations with a current licence of Good Environmental Choice interviewed both use the certificate as a part of their brand and portfolio, or “battery of services”. As Joakim Stoppenbach, Greencarrier Freight Services Sweden AB mentioned, they are certified in order to differentiate themselves on the market. However, he also mentioned that it is difficult to claim that Good Environmental Choice was the decisive aspect. In other words it is difficult for them to correlate acquired businesses with the presence of Good Environmental Choice. There are testaments of when Good Environmental Choice was the one conclusive factor that determined the outcome of a business negotiation. One of which was mentioned during a meeting with the SSNC and stakeholders in the industry discussing the upcoming criteria for Good Environmental Choice for light transports. Tommy Andersson at Stadens Bud, Gatubolaget stated that they have on several occasions acquired clients because of the fact that they were certified according to Good Environmental Choice and their competitors were not.

Scandinavian Logistics Partners AB are considering the possibility to certify one of their logistical solutions according to Good Environmental Choice. Not counting on the certificate bringing them an increased amount of business, they do expect some benefits if they qualify for Good Environmental Choice. They expect some of their current businesses to be strengthened. And with a new tool for communicating environmental performance through the use of Good Environmental Choice, it might open otherwise closed doors to new customers as well.

The Port of Gothenburg express clear advantages with environmentally certified ship owners since they base the port fees on the ships’ environmental performance. The Port of Gothenburg use Environmental Ship Index to assess the environmental performance of the ship owners. They acknowledge the commercial benefits for the ship owners which can use their environmental performance as a marketing tool. High environmental performance and transparent reporting of environmental information could potentially be a “ticket-to-trade” as mentioned by Sara Sköld, Director at Clean Shipping Index (Port of Gothenburg, 2014).

Additionally, and more importantly, they see the environmental benefits from higher environmental performance which result in a decrease in emissions and incidentally an increase in interest for environmental issues. The balance of combining environmental benefits with commercial benefits is seldom an easy endeavour. The Port of Gothenburg have by rewarding environmental performance created incentives for their customers, the ship owners, to focus on environmental work. Similar to what Scandinavian Logistics Partners AB have done with some of their solutions they have managed to generate commercial benefits through better environmental performance. Sceptics might argue that if there was no commercial benefit and customer demand, environmental performance will not be discussed. However, as we now have acknowledged, cost effectiveness and environmental performance is correlated. Customer demand might be something that needs to be taught, especially the notion of being proactive instead of reactive.

5.1.4 Stakeholder differences

When analysing the interviews, it seems the respondents generally have had similar opinions, however in some regards different opinions have been expressed. The most significant area of disagreement was related to the drivers of environmental work and if customer demand needed for initiatives regarding environmental work. The responsibility either lies with the transport supplier to communicate information and provide sustainable solutions or with the customer to demand it. In some organisations customer demand seems to be considered the sole driver of environmental work. In other organisations the attitude seems to be that the demand should be foreseen and accommodated by the transport supplier themselves. The suppliers should provide logistical solutions with high environmental performance, even before there is a customer demand. In other words the transport suppliers should be proactive instead of reactive. These are two very different philosophical ways of defining the organisational attitude regarding sustainable development. In one end of the spectrum, the organisations choose to do nothing without being certain there is a demand and thus a way to profit. In the other end of the spectrum, the profit derives from creating the demand by providing solutions with high environmental performance and high cost efficiency.

Of the two organisations interviewed which currently are licensed according to Good Environmental Choice only one have chosen to charge extra for labelled solutions. Both firms have stated that the ecolabel is a part of their brand and corporate profile. Green Cargo have their entire logistics system certified and have up until now not charged extra for this service. Starting this year Good Environmental Choice will be an extra optional fee for the customers to choose. The reason for this change is that the licence fee of Good Environmental Choice is considered a large cost for Green Cargo. With this additional fee solution Green Cargo might be able to keep the licence. However, as mentioned by Johan Sandström at Green Cargo,

hypothetically no customers will chose this option. This is consistent with his earlier statement that there might be an interest for environmental issues from the customers, but not in that sense that anyone would be willing to pay extra.

In contrast, Greencarrier Freight Services Sweden AB, the other interviewed organisation with a licensed logistical solution, have chosen not to charge extra for their solutions certified according to Good Environmental Choice. However, as they partially rely on Green Cargo for their logistical solution the future regarding extra fees is unclear. Regardless, evidently there are differences in the philosophical attitude and organisational strategy regarding customer demand and drivers for environmental work. In the area of attitude toward environmental issues and environmental performance, environmental certifications, ecolabels and organisational environmental initiatives have a very important role to play.

5.1.5 What should be the future plans and criteria for Good Environmental Choice?

As the SSNC are in the process of reviewing and updating the criteria for Good Environmental Choice for transports the respondents were asked to give suggestions for future criteria, plans or other requests for the certification. Johan Sandström at Green Cargo suggests that Good Environmental Choice perhaps should focus on carbon dioxide emissions as he claimed that the rest of the world is doing that and a large part of other types of emissions will decrease anyway due to legal requirements. Focusing on the emissions of carbon dioxide could, according to Johan Sandström, make it easier to use the criteria abroad.

Joakim Stoppenbach at Greencarrier Freight Services Sweden AB states that it is important not to allow the criteria to be watered down but at the same time not increase them in such an extent that fewer are eligible for certification. It is naturally difficult to balance the criteria to be strict but also achievable. Mathias Wideroth at Scandinavian Logistics Partners AB adds an idea to this discussion regarding balance, even though he realize that it might be difficult to achieve. He suggests a label called “Better Environmental Choice”. In other words, using the relatively better alternative from an environmental perspective could perhaps be rewarded somehow. The reason for this is to not let the best be the enemy of the good.

Furthermore, Agneta Carlsson at the SSNC was very clear on that she wanted the ecolabel to be highly requested and recognized as an ecolabel with strict requirements and a seal of sound environmental performance. In other words, the consumer should not need much more environmental information communicated than the fact that the logistical solution is certified according to Good Environmental Choice in order for the consumer to be confident that it is be best choice, from an environmental performance perspective.

As discussed by Rex and Baumann (2007), one of the main tools for green marketing is the use of ecolabels. They claim that despite investments and initiatives, products with ecolabels still constitute a relatively small market share. The analysis of data in the present study suggest that this is evident for Good Environmental Choice as well.

5.2 Case study – Scandinavian Rail Shuttle

The logistical solution Scandinavian Rail Shuttle by Scandinavian Logistics Partners AB utilize otherwise unused cargo capacity to create cost efficient transports. Assessing the solution according to the criteria for Good Environmental Choice is not as straightforward as it might have been intended by the certifying organisation, the Swedish Society for Nature Conservation. The criteria themselves are fairly straightforward, but the guidelines on how to compare them to the reality, what to include in the calculations and how to create an assessable, simplified model of a complex, highly variable transport solution is not. During the assessment process many assumptions, limitations and simplifications of the reality had to be made. With arbitrary calculations the consequence is that the credibility decreases. The criteria in their current state are focused on annual average figures, so the calculations have had to consider this. Furthermore, the vehicle conditions and other factors inserted in the emission calculation tool are also models and simplifications of the reality.

With the assumptions made and the limitations created, the logistical solution does fulfil the requirements regarding the operation and life cycle values. This is notable since the logistical solution include truck transports in both ends of the transport. Naturally, compared to a truck transport from door to door, the Scandinavian Rail Shuttle have significantly higher environmental performance. In addition, it is sufficiently efficient to fulfil the strict life cycle requirements for Good Environmental Choice. However, the criteria requiring 30 % of the electricity used being labelled with Good Environmental Choice or equivalent is difficult to fulfil without stretching the reality too far and tilting the figures to an advantage. As the criteria are defined today they are open for discussion. This has been proven during the assessment process and the ongoing discussion with the SSNC trying to define what factors should be included in the calculations and what assumptions that are approved. A problem with criteria that are open to discussion and assumptions and limitations varying between licensees is that the probability of being able to measure correctly is decreased. Scandinavian Rail Shuttle does not fulfil all requirements for Good Environmental Choice and falls short on one single requirement. However it proves that from an environmental perspective it is significantly better than the alternatives. The criteria as they are currently defined create some interesting consequences. For example, if the end station of the railway transport was situated a few kilometres farther north than Hallsberg today, the criteria for the ratio of certified electricity

would have been fulfilled. This essentially means that a longer transport in Sweden, according to the criteria, would be better from an environmental perspective, which probably was not the intended message from the SSNC. Another consequence of the current criteria is that a logistical solution using no electricity but fulfilling the life cycle requirements, thus omitting the 30 % electricity requirement, could be certified when for example the case example cannot.

To bring further insight to the variance issue additional calculations were made. In contrast to the average distance case scenario, if the southbound rail transport is included in the calculations the result is very different. With the southbound rail transport included in the calculations, the total overall percentage of ecolabelled electricity fulfils the requirements for Good Environmental Choice and the total energy consumption per tonne-km is lower than in the average distance case scenario. This highlights the current issue with the criteria and the undefined method to calculate and measure the comparable data. Depending on what is included and what limitations are made, the result will vary significantly. As been proven in this report, the same actual logistical solution will generate different results. In other words, the credibility of the results, even in this report, are questionable. Unless the required calculation method is defined in future iterations of the criteria the credibility will remain questionable. In this report the result is based on data as close to the reality as possible and still there is room for discussion regarding the credibility and simplification of the actual reality.

Additionally, in this particular case with Scandinavian Rail Shuttle there are several questions left unanswered which will have a significant impact on the results. For example, should the southbound rail transport with unrelated cargo be included, and to what extent? Should the rail transport in Sweden be included at all since it is already certified through Green Cargo? In reality the logistical solution have a certain level of environmental performance. On paper however, with virtually undefined requirements regarding measurement and calculation methods, the result is allowed to vary significantly. Finding the solution to this problem is however not an easy task.

6. Conclusion

The aim of this thesis project was to investigate the value of the environmental certifications and ecolabels in the transport and shipping industry in general, and the ecolabel Good Environmental Choice by the SSNC in particular. The intention was to create a discussion and hopefully bring further insight on the attitude toward sustainable development in the transport and shipping industry, and what might be done as a step toward a more sustainable future.

6.1 The need for ecolabels in the transport industry

There is a need for environmental certifications or ecolabels in the transport and shipping industry, in some segments more than others. As have been stated in different ways during several of the conducted interviews and attended meetings and seminars, environmental issues and the clear, simplified communication of environmental performance is important. Additionally, the importance regarding correct type of information increases closer to the end consumer. As mentioned earlier in the report, credibility is essential for consumers to trust the producers or transport providers. That trust can be achieved by using third-party verified certifications and ecolabels. However, considering the local focus of Good Environmental Choice and the present study, the ecolabel is currently geographically limited. In order to increase the credibility and impact of future iterations of the ecolabel, collaboration with other countries and organisations to develop standardised measures is advised. In conclusion, perhaps the issue is not the level of availability or need of emission reports or environmental certifications. If a customer is interested to know their impact of for example choosing rail instead of road, most suppliers of transport can provide this information. Perhaps the real issue is to truly encourage the customer to take the step of choosing the sustainable alternative. There are countless green initiatives from all types of organisations, especially in the shipping and transport industry. But the question as to why green transports still is not the norm, but considered something extra, remains.

6.2 Commercial and environmental benefits

Environmental certifications are seen as ways to increase sustainability and generate commercial advantages. There are examples mentioned in the report of commercial and environmental benefits from being certified according to certain requirements. Not only as a seal of quality of the environmental performance and a clear statement that the organisation focus on environmental issues, but also as a way to increase cost efficiency through environmental performance. Furthermore, there are examples of economic incentives to encourage sustainability but the environmental performance benefitting from economic

incentives need to be verified, for example by third-party validators in the form of different environmental certifications and ecolabels.

6.3 Stakeholders' views on Good Environmental Choice

The views on Good Environmental Choice by the SSNC are generally positive. The organisation as such is considered trustworthy and the keyword has been integrity throughout the interviews. The requirements are considered tough, as they should be. In some cases they are considered complicated and not adapted appropriately to the transport industry. Good Environmental Choice has an important role to play in providing credibility to ecolabelling. In order to achieve a significant impact more licensees are needed. With these conditions as a foundation Good Environmental Choice now have the possibility to continue and improve their work with environmental performance. The shipping and transport industry could benefit from further expansion of environmental certifications and ecolabels. There is an opportunity to create a new, revised standard that can truly change the view and impact of environmental certifications and ecolabels in the shipping and transport industry.

7. Implications and future recommendations

When discussing and deciding on new criteria there is usually a tendency to include as much factors as possible. The purpose of including many different detailed requirements in the new criteria is understandable since the purpose is to be strict, have a significant impact and encourage sustainable development. However, highly detailed criteria might be too complicated and in some cases negatively interfering with the business of the organisation looking to become a licensee. If the criteria require too much detailed factors unnecessary obstacles for organisations otherwise concerned of environmental issues might arise. An idea is to move some of the more detailed criteria and suggestions outside the requirements for Good Environmental Choice. These criteria could be guidelines on how to achieve the other, strict requirements. By omitting a few detailed requirements, Good Environmental Choice could be more straightforward and easy to assess. A result of this could be that the ecolabel will attract more licensees and thus increasing the positive environmental impact. In other words, the SSNC will be able to provide knowledge in how to achieve the requirements, not having the method being a part of the requirements themselves. This will encourage sustainable development instead of defining it. It is not desirable to exclude potential licensees that in fact meet the requirements for example energy usage and perform well in regard to environmental performance, but fall short on for example the type of tyres they use. The aspiring licensee might be legally obligated to use a certain type of tyre that falls outside the requirements for Good Environmental Choice.

It might be difficult to ascertain what factors that are significant, and to defend and explain why they should be included or not in the criteria. But to facilitate the reality that most organisations and potential licensees face every day, there has to be a clear decision on focusing on specific KPI's. Even though many factors are important there has to be a clear and easy-to-assess objective, otherwise the scope of requirements will be too wide and detailed. Perhaps allowing the criteria to focus on what level should be achieved, and permitting the current and potential licensees figure out how, could make the ecolabel more universal and applicable in the shipping and transport industry.

The estimated annual licence fee for the logistical solution Scandinavian Rail Shuttle by Scandinavian Logistics Partners AB presented in this report is considerably high. Seeing as the purpose of the licence fee is to fund a non-profit organisation and the administration of the label, a review of the licence fee model is desirable. The assessment process with detail-oriented criteria and the high licence fee are obstacles preventing the ecolabel Good Environmental Choice to truly appeal to the transport and shipping industry. The future of the ecolabel depends on their next decision regarding the two major aspects of criteria and licence fees. If the label

aim to being a generally acknowledged seal of sound environmental performance in the transport and shipping industry the criteria have to be designed with this industry in consideration. There are significant differences between industries providing services and industries providing products and the criteria have to reflect this fact. It is not feasible to demand overly detailed requirements in an industry where such detailed measurements are not available or only arbitrarily calculated. Accuracy in reporting is essential for the industry. With that being said, the transport and shipping industry should not be allowed to do as they please without strict requirements. Organisations such as the SSNC and their label Good Environmental Choice can contribute to the industry with significant positive effects. But in order to do that, the label needs to have a major impact, and without licensees and general acknowledgement, that impact will not happen. It is clear that the criteria and the licence fee model is based on having one major licensee, Green Cargo. This means that there is very limited transferability to new licensees. Even Greencarrier Freight Services Sweden AB that are licensed, are licensed through Green Cargo. Furthermore, by having the total amount of tonne-km as the base for the rate of the licence fee hinders the incentive to certify large systems. Essentially, the larger amount of customers for example Scandinavian Logistics Partners AB are able to convince to choose their more environmentally efficient railway solution, the more the organisation have to pay in licence fees to the SSNC. Another issue with data collection is of course the credibility of the data. During this case study many assumptions have been made and many limitations have been created. In each and every step the modelled reality strays farther from the actual reality. If aspiring licensees are allowed, and forced to, provide special, arbitrary calculations the credibility for the calculations and in extension the ecolabel itself is in question.

It is as mentioned difficult to decide what requirements are significant, and naturally, all together even the less significant factors generate an impact. It is also very difficult to keep the balance so that the requirements are achievable but not watered down. One reason as to why environmental certification on transports is still not that wide-spread is perhaps because of the nature of transports. Transports are inherently complicated equations, and that means that the requirements for certification need to counter this complexity by being simple and straightforward. It is also important to remember that simple and straightforward criteria does not mean that the criteria should be lower. What makes ISO standards successful is that they are applicable to several different industries, organisational structures and business models. The criteria in ISO standards generally focus on easily measurable data and processes and are properly verified by an independent third party. The SSNC might have an issue of being impartial, due to their vision, mission and overall focus on environmental issues. In other words, they might be too detailed and wide in their scope. Thus they might lack the ability to adapt to different industries and businesses. It is easy to decide on detailed criteria based on firm

opinions regarding environmental issues. It is a lot more difficult to adapt the criteria to the corporate reality. The challenge for the SSNC is to keep the balance between their own vision and opinions, and the potential impact of new criteria being increasingly applicable and adapted to different industries.

As shown in the present study there is a high potential for environmental certifications and ecolabels to provide important information and verification that the transport providers manage their environmental performance. There is an outspoken need for verified, environmental certifications and ecolabels. There are also examples of clear benefits when using them. But for future iterations of the environmental certifications and ecolabels to have a significant impact of how we view environmental work and environmental performance, the criteria have to spark interest. A way to do this is to further include the industry in the process and listen to what they have to say. A mutual agreement to collectively work with environmental performance and together create incentives to further push sustainable development will certainly have a more significant environmental impact than strict environmental certifications and ecolabels that too few acknowledge or use. By including more stakeholders in the process, future environmental certifications and ecolabels can be strict, acknowledged and provide a significant environmental impact.

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Appendix Content

Appendix I - List of respondents

Agneta Carlsson	Good Environmental Choice – Transports, The Swedish Society for Nature Conservation
Anders Bergström	Purchasing Manager Commodity Sea & Rail, Volvo Group Trucks Operations, Volvo Group Logistics Services
Edvard Molitor	Senior Manager Environment, Port of Gothenburg
Joakim Stoppenbach	Environment and Quality Coordinator, Greencarrier Freight Services Sweden AB
Johan Sandström	Environmental Manager, Green Cargo
Lotte Ring Holk	Sustainability Manager, Geodis Wilson Nordic
Mathias Wideroth	Chairman of the Board, Scandinavian Logistics Partners AB
Susanna Hambeson	Environmental Manager, Volvo Group Trucks Operations, Volvo Group Logistics Services
Tommy Andersson	Stadens Bud, Gatubolaget Göteborg

Appendix II – Interview guide

Explain research question

Explanation, recording/transcription process, pre-publication fact check

Role of interviewee

Interview guide

What is your view on environmental certification of freight transports in general?

What are your customers' views on environmental certification of freight transports in general?

What is your view on the Swedish Society of Nature Conservation and Good Environmental Choice?

What are your customers' views on the Swedish Society of Nature Conservation and Good Environmental Choice?

What do customers demand in negotiations?

What do you present in negotiations?

Why do you want to certify your logistical solution according to Good Environmental Choice?

What are your goals with certifying?

What advantages or benefits do you think the certification will bring?

Do you charge extra for solutions with Good Environmental Choice?

Why did you choose Good Environmental Choice in particular?

What is your opinion regarding the criteria for Good Environmental Choice?

Is there a demand for environmental certification of freight transports? From who?

What are your expectations on environmental certifications for freight transports?

What are your customers' expectations on environmental certifications for freight transports?

Is there a need for environmental certifications and ecolabels in the shipping industry?

Are there any reasons to treat shipping differently?

Is it possible for you to carry out environmental initiatives without pressure from your customers?

Do you have any suggestions for future criteria or plans for Good Environmental Choice?

Appendix III – Criteria Good Environmental Choice

The Swedish Society for Nature Conservation
Criteria for Good Environmental Choice labelling

Goods Transport 2005



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© Swedish Society for Nature Conservation 2005
Basic data: Magnus Blinge, TFK (Transport Research Institute)
Text: Caroline Hopkins
Processing: Mera text & form

For further information on GOOD ENVIRONMENTAL CHOICE labelling and the application procedure please contact the Swedish Society for Nature Conservation, Box 7005, 402 31 Gothenburg, Sweden, tel.: +46 (0)31-711 64 50, fax: +46 (0)31-711 64 30, e-mail: gbg@naturskyddsforeningen.se, or visit the website: www.bmv.snf.se

Foreword

Good environmental choice labelling of goods transport activities is one of the tools used by the Swedish Society for Nature Conservation to advance the development of a sustainable society. Requirements for renewable energy and emissions to air are always set in relation to transport value.

Goals

- To accelerate the development of transport activities that are more environment-friendly and resource-efficient.
- To reduce harmful emissions from transport activities.
- To accelerate the transition to renewable fuels.
- To reduce the use of environmentally destructive substances in the maintenance of vehicles, vessels, trains, etc.

Criteria

The criteria for the Good Environmental Choice of good transport activities apply from 01-10-2005 until the next version comes into force, no earlier than 01-07-2007.

All forms of good transport activities can be labelled, including international ones. In the agreement with the Swedish Society for Nature Conservation, goods transport activities are defined as the Product. The product is the transport activity that moves goods using one or more kinds of vehicle, vessel, aircraft, etc.

Anyone wishing to use the Good Environmental Choice label or refer to the label must satisfy all obligatory requirements and enter into a licensing agreement with the Swedish Society for Nature Conservation.

The licensee must observe the following environmental legislation in each country.

The criteria comprise requirements in respect of:
The production of fuel and electricity
Transport activities, operations
Maintenance work

PRODUCTION

The Swedish Society for Nature Conservation can define standard values that an applicant may use in its application. If an applicant's own values are stated, the source and measurement method must be explained.

Transport activity

The scope and any limitation of each transport service must be defined. If a transport activity involves both passengers and goods, the environmental impact must be allocated and reported for each transport service.

The requirements for distribution must be applied if a least 75 per cent of the transport activities take place in densely populated areas.

The requirements for mixed goods relate to shipments with a total weight of less than one (1) tonne.

Energy consumption

The requirements for the use of non-renewable energy and emissions to air (except particles) apply for the whole life cycle.

The fuels and any electricity used must be specified and reported throughout the entire production chain. Calculation of the total transport activity must be based on the average annual impact, unless the Product has a different time demarcation.

The production chain includes one or more stages of production and distribution of the fuel. For electricity production, the building and demolition of power stations must also be included, Total energy consumption must be reported for each stage, as well as the proportion of non-renewable energy. The total volume of energy used to operate the load carriers must be specified, as well as the proportion of non-renewable energy contained in the fuel.

The total use of non-renewable energy may not exceed:

- 1) 0.1 kWh/tonne/kilometre or
- 2) 0.5 kWh/tonne/kilometre for distribution or
- 3) 0.6 kWh/v/km for mixed goods.

For load carriers powered by electricity, at least 30 per cent of the total volume of electricity used must bear the Good Environmental Choice label or equivalent.

Emissions

Emissions of nitrogen oxides and non-methane hydrocarbons (NMHC) must be reported for all stages of the production chain, including distribution. For electricity production, the building and demolition of power stations must also be included. Emissions from the operation of vehicles must comply with the certification provisions within the EU.

Nitrogen oxides and sulphur oxides must be calculated as NO₂ and SO₂, and they must be measured in accordance with the prevailing certification provisions within the EU. NO_x and SO_x must be weighted 1:1

Emissions from the production chain and operations may not exceed:

- Nitrogen oxides and sulphur oxides:
- 4) 0.2 g/tonne/kilometre or
 - 5) 0.65 g/tonne/kilometre for distribution or
 - 6) 3.5 g/v/km for mixed goods.

Non-methane hydrocarbons, NMHC. Can be reported as HC:

- 7) 0.01 g/tonne/kilometre or
- 8) 0.03 g/tonne/kilometre for distribution or
- 9) 3.5 g/v/km for mixed goods.

Emissions of particles from vehicles must be reported in accordance with normal filter measurement or equivalent. Emissions of particles must be reported in grams/tonne/km. If there is information about size distribution, this must also be reported.

Table 1: Summary of energy and emission requirements.

	Operation and life cycle values			Operation only
	Non-renewable energy	NO _x +SO _x	NMHC	Particles
	kWh/tonne/km	g/tonne/km	g/tonne/km	specified
Basic requirement	0.1	0.2	0.01	reported
Distribution	0.5	0.65	0.03	reported
	kWh/v/km	g/km	g/v/km	specified
Mixed goods	0.6	3.5	3.5	reported

ENVIRONMENTAL WORK

The licensee must have an environmental policy that has been adopted by company management, in which the company commits to developing its business to reduce the negative impact on the environment and health. The company must designate someone to assume responsibility for environmental work.

MAINTENANCE PLAN

The licensee must also report the consumption and use of environmentally destructive substances in the maintenance of load carriers. The report must be produced in accordance with the Swedish Society for Nature Conservation's template for each transport category, and also include a plan for how the principle of product choice must be applied.

INSPECTION

Companies with a licence for Good Environmental Choice labelling must undergo an annual inspection and be able to prove that all requirements are being satisfied. The license agreement includes the terms specified in the criteria and in the license application.

The licensee must maintain financial systems and routines in proper order so that it is possible to check that the criteria are being observed.

The inspection must be conducted in the form of an audit of the parts of the business affected by the criteria. The information must be checked by an authorised auditor approved by the Swedish Society for Nature Conservation.

Explanations

PRODUCTION

The transport activity for various transport systems is measured in tonnes per kilometre, t/km. Tonnes per kilometre means the total number of kilometres that the goods on a vehicle are transported. Vehicles can be, for example, a truck, a ship or an aircraft. If it is to be possible to compare emissions from the various transport systems, we must consider how much transport activity they undertake. Emissions from a ship are certainly higher than emissions from a truck, but the ship will usually transport more goods per kilometre.

Certain ferries and aircraft, and to some extent buses, trains and cars, transport both passengers and goods. The total environmental impact of a transport activity is measured in various ways. The compensation method can be used when a passenger transport system has income from goods transport that also exceeds 10 per cent of total income. For ferry traffic this means that energy consumption and emissions are calculated on the basis of the criteria that apply for a pure cargo vessel with the same goods capacity. In the calculation the ferry load is compensated by the fact that much of the vessel's dead weight is due to the space for passenger transport. Examples of such calculations are contained in KFB 1994:9. For air traffic involving planes in combined traffic, the goods constitute a smaller element of turnover and weight. In these transport systems it is not the transport prices that determine how the transport medium is designed or how the service is structured. In these cases the marginal calculation method can be used. This means that the extra energy and the extra emissions resulting from the plane being loaded with goods must be included when calculating energy consumption.

Life cycle perspective

In order to be able to compare the environmental impact of different transport activities, the whole fuel chain must be analysed. The fuel used in the transport activities must therefore be reported from a life cycle perspective. All emissions from plants that produce the fuel must be reported (cf. Brandberg, etc.).

When fuels are manufactured and transported, non-renewable energy is used. Such auxiliary energy must be included when calculating the fuel's energy content. This is expressed in the form of a so-called yield ratio. A high yield ratio means that you obtain a lot of fuel and energy from the volume of non-renewable energy that you use. When fuels such as petrol, electricity and ethanol are

manufactured, heat is also produced. If the heat is used, for example in a district heating system, not all of the energy that was included in the process has to have a negative impact on the calculations. Primary energy must be placed in proportion to the energy distribution between the fuel produced and the heat or other commercial by-products.

Emissions

These criteria do not include methane in the hydrocarbon requirement that limits the harmful emissions. The reason is that methane is a stable molecule that is not harmful to health. Methane is a greenhouse gas that is instead limited by the requirement for energy consumption. Hydrocarbons are usually measured as HC, but if measurements are available the applicant may use the values for NMHC.

ENVIRONMENTAL WORK

The maintenance of load carriers often uses products that contain toxic chemicals, even though there are perfectly good alternatives that are better from an environmental perspective. These include, for example, lubricants, detergents and degreasing agents.

According to the principle of product choice (chap. 2, section 6 of the Environmental Code), anyone who sells or uses chemical products, bio-technical organisms or products that have been treated with such products, is obliged to replace them if there is any equivalent product that has less of an impact on the environment.

The requirement in these criteria is that the licensee must report his maintenance work based on a number of important, selected aspects and submit a plan describing how it will be improved.

Terms and abbreviations

Biogas – extracted from methane gas. Can be treated to create methane gas and used to drive vehicles using the same technology as fossil gas.

Vehicle – vehicle that transports goods, e.g. ship, train, cycle courier or truck.

Fossil gas – sometimes called natural gas. Contributes towards the greenhouse effect when used.

Renewable fuels – fuels produced from renewable energy sources, e.g. ethanol, RME, hydrogen and biogas. However, the refinement process often requires non-renewable energy.

HA oils – oil waste from refineries, with high contents of carcinogenic, toxic, polyaromatic hydrocarbons. Used in tyres (1 litre per car tyre) as a softening agent instead of being treated as environmentally hazardous waste. When the tyre wears, the toxins are passed into nature.

HC/THC – total hydrocarbons. Measurements of hydrocarbons from vehicles often report the total volume of hydrocarbons, as most hydrocarbons react in the same way. There are exceptions, such as alcohols and aldehydes.

Non-renewable energy – fossil-based energy and nuclear energy. Fossil-based energy can come from natural gas (fossil gas), peat, petrol, diesel, Fischer-Tropsch diesel, oil, coal, waste, etc.

kWh – kilowatt hour, a measurement of energy content. 1 kWh= 3.60 MJ.

MJ – megajoule, a measurement of energy content, like kWh. 1 MJ=0.278 kWh.

NMHC – Non Methane Hydro Carbons. The total volume of hydrocarbon compounds excluding methane.

NO_x – nitrogen oxides. Released into the atmosphere primarily as nitrogen oxide (NO) from the combustion of fossil fuels. NO is converted, oxidised, in an initial stage into nitrogen dioxide (NO₂), which is far more toxic and also contributes, together with VOC, towards the creation of ground-level ozone. High contents of ozone cause damage to people, plants and animals. In a second stage, NO₂ is converted into nitrate/nitric acid, which leads to acidification.

PM 10 – measure of the volume of particles that can be inhaled, representing particles smaller than 10 mm.

ppm – measurement of the volume of a substance per volume of air (parts per million).

Standard values - values defined by the Swedish Society for Nature Conservation within various areas. Can be specified for fuels, production methods, vehicles, systems, etc.

Tonne/kilometre – total number of kilometres that every tonne of goods is transported.

Wagonload traffic – rail transport with a full, sealed wagon that travels from sender to recipient.

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The Swedish Society for Nature Conservation identifies threats to the environment and draws up solutions. We create opinions and exert pressure on those in power in the fields of politics and business. Become a member! Phone +46 (0)8-702 65 00 or contact your local branch of the Swedish Society for Nature Conservation.