

NORDIC WORKING PAPERS

Nordic Swan and PEF

Focus on Product Environmental Information

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Nordic Swan Ecolabel and Product Envi- ronmental Footprint

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Definitions

- **Business to Business (B2B)** – Describes transactions between businesses, such as between a manufacturer and a wholesaler, or between a wholesaler and a retailer. (PEF Guide 5.2, p.12)
- **Business to Consumers (B2C)** – Describes transactions between business and consumers, such as between retailers and consumers. According to ISO 14025:2006, a consumer is defined as “an individual member of the general public purchasing or using goods, property or services for private purposes”. (PEF Guide 5.2, p.12)
- **Comparative Assertion:** Environmental claim regarding the superiority or equivalence of one product versus a competing product that performs the same function. (ISO14044:2006)
- **CPA/NACE Code:** Statistical Classification of Products by Activity/ Nomenclature Générale des Activités Economiques dans les Communautés Européennes. (PEF Guide, 5.2. p.9)
- **Data Quality:** Characteristics of data that relate to their ability to satisfy stated requirements. (ISO14044:2006).
- **Ecolabel (Environmental label):** Claim which indicates the environmental aspects of a product or service. (ISO14024:1999)
- **Environmental Aspect:** Element of an organisation’s activities, products or services which can interact with the environment. (ISO14020: 2000)
- **Environmental Impact:** Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation’s activities, products or services. (ISO14024:1999)
- **Final Product:** Something that is bought and used as it is, without requesting any further significant processing (e.g. drinks, paints, apparel, etc.). (PEF Guide 5.2, p. 19)
- **Functional Unit:** Quantified performance of a product system for use as a reference unit. (ISO14044:1999)
- **Impact Category:** Class representing environmental issues of concern to which life cycle inventory analysis may be assigned. (ISO14044:2006)

- **Intermediate Product:** something that requires further significant processing (e.g. paper pulp) (PEF Guide v. 5.2, p. 19) studied “from cradle to gate”. (PEF Guide v. 6.0, p.32)
- **Life Cycle:** Consecutive and interlinked stages of a product system from raw material acquisition or generation of natural resources to the final disposal, where product includes any goods or service. (ISO14040:2000)
- **Life Cycle Assessment:** Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle. (ISO14044:2006)
- **Life Cycle Inventory Analysis:** Phase of life cycle assessment involving the compilation and quantification of inputs and outputs for a product group throughout its life cycle. (ISO14040:2006)
- **Life Cycle Impact Assessment:** Phase of life cycle assessment aimed at understanding and evaluating the magnitude and significance of the potential environmental impacts for a product system throughout the life cycle of the product. (ISO 14040:2006)
- **Life Cycle Consideration:** Referred to as life cycle perspective in *MEKA Vejledning for Nordisk Miljømærkning*. Consideration of the entire life cycle of a product or service to identify relevant characteristics and significance of environmental claims. It does not necessarily mean a Life Cycle Assessment. (ISO 14020:2000)
- **Product:** Any good or service. (ISO14044:2006)
- **Product Category:** Group of products which have equivalent function. (ISO14024:1999)
- **Product Environmental Criteria:** Environmental requirements that the product shall meet in order to be awarded an environmental label type I. (ISO14024:1999)
- **Product Environmental Footprint Category Rule (PEFCR):** Product category-specific, life-cycle-based rules that complement general methodological guidance for PEF studies by providing further specification at the level of a specific product category. (PEF Guide 6.0, p. 16)
- **Product Environmental Footprint Profile:** The quantified results of a PEF study. (PEF Guide v.6.0, p.16)
- **Product Environmental Footprint Study:** An analysis done to determine the environmental footprint of a product. (Own definition, not defined in PEF Guide)

- **Product System:** Collection of unit processes with elementary and product flows, performing one or more defined functions, and which models the life cycle of a product. (ISO14044:2006)
- **Representative Product:** In PEF, a real or a virtual (non-existing) average product on the EU market. (PEF Guide v.6.0, p. 19-20)
- **Scope:** Defines among others, the product system to be studied in an LCA study, its functions, functional unit, system boundary as well as aspects related to data and methodology, and limitations, *etc.* (ISO14044:2006)
- **System Boundary:** Set of criteria specifying which unit processes are part of a product system. (ISO14044:1999)

Preface

The concept of a Product Environmental Footprint (PEF) has been introduced by the European Commission, as a common measure of product environmental performance, and as a way forward in the creation of a single market for green products in Europe. As a possible future requirement for producers, it is anticipated that it would have consequences for the industry operating in the European market. The exact nature of the consequences will be shaped by the eventual practical application of PEF.

The Nordic Council of Ministers (NCM) decided to fund a three year project "Nordic Swan, Circular Economy and Product Environmental Footprint" (2016-2018) as one of the projects of Finland's Presidency in 2016. The NCM considered it important to understand the extent to which there are potential synergies with the Nordic Swan Ecolabel, given that PEF would eventually operate alongside the Swan and a package of other measures of the European Integrated Product Policy (IPP).

This working paper focuses on environmental information. It aims to analyse the documentation related to the Nordic Swan Ecolabelling Scheme and the PEF Pilot phase, in order to assess synergies, complementarities and differences in the two systems. The Finnish Environment Institute SYKE would like to acknowledge the contribution of Karin Bergbom (Nordic Swan Ecolabel, Finland), Elisabeth Magnus (Nordic Swan Ecolabel, Norway), as well as Catharina Hohenthal (VTT Oy), Tomas Rydberg (Swedish Environmental Research Institute, IVL) Marianne Wesnæs (University of Southern Denmark) and Sirkka Koskela (SYKE) for their critique and good ideas. However, the authors are solely responsible for the results and conclusions.

This study paves the way for a future discussion among experts in the fields of Life Cycle Assessment (LCA) and Ecolabelling. It may be one of the first steps towards developing Nordic IPP recommendations on how PEF will integrate with other IPP tools for green products. A next extended report will be published by the beginning of 2018.

Helsinki, April 2017

The authors

Executive Summary

The Product Environmental Footprint (PEF) initiative of the European Commission (EC) aims to develop and test a common methodology for use by manufacturers and service-providers in measuring and communicating the environmental impact of products. The eventual role of PEF as an additional product policy tool in the European Market could bring about changes on the use of existing tools, including ecolabels. This Working Paper was written at the time when the EC's PEF pilot project was still ongoing and the review will be revised once the PEF project by the EC is completed.

This study aims to shed light on how the PEF compares with the Nordic Swan Ecolabel (Swan) especially regarding the product environmental information used and produced in both systems. The study uses the currently available working versions of documents associated with the PEF pilot phase, and both publicly available and internal documents of the Nordic Swan Ecolabel. The main research questions are how they compare on the level of their goals, methodological approaches (use of life cycle assessment type of information), outputs and communication to the public.

PEF Category Rules (PEFCRs) provide product-category specific guidance for preparing a PEF study. Guidance is given on how to assess life cycle impacts of a product, in terms of relevant environmental impact categories. In accordance with the pilot phase PEFCR Guidance documents (Version 5.2- February 2016, Version 6.0- November 2016 and Version 6.1 -February 2017), the PEFCRs outline procedures for identifying the most relevant impact categories, life cycle stages, processes, elementary flows, and, hence also, the life cycle hotspots. The output is a Resources Use and Emissions Profile (RUaEP), or a "PEF Profile", which indicates the product's environmental performance. It is intended that the PEFCRs also indicate a benchmark, based on a modelled representative product. Different communication vehicles (label, website, QR code etc.) to be used in B2B or B2C applications are still being tested at the time of writing this report.

The Nordic Ecolabel "Swan", established in 1989 and well-known among producers and consumers in the Nordic countries, is a label that indicates that a product or a service is among environmentally the best

performing products in its category. The role of the Nordic Ecolabelling organisations is to define the level of performance that denotes “best among its category” and set corresponding criteria for producers and service-providers. It determines the criteria based on an analytical approach, called “RPS”, based on “Relevance (R)”, “Potential (P)”, and “Steerability (S)”. To determine relevance and to some extent potential, a life cycle perspective is applied. Namely, by using a method called “MECO” (Materials, Energy, Chemicals, and Other) environmental aspects are assessed, to pinpoint the life cycle hotspots where criteria could result in most reduction of environmental impact.

For the purpose of illustrating any eventual similarities or differences in the outcomes of the assessments, we compared the PEFCRs and Criteria Documents of three product groups (T-shirts/Textiles, Hides, Skins and Leather; Intermediate Paper; and Rechargeable Batteries). This comparison indicated that the environmental impact groups appearing in the Swan Criteria are to an extent different to those taken as “most relevant” environmental impact categories of PEFCRs. To a smaller extent also different life cycle stages were highlighted. The “intermediate” product group - paper - showed fewer differences between Swan and PEF compared with the two final products.

Ultimately, the difference in the two approaches comes down to the methodological differences. The PEF provides a calculation method for a set of 16 environmental impact categories. The Swan Criteria are set based on available LCAs to define environmental aspects, but the approach is more flexible, taking also into consideration non-quantifiable information and qualitative expert judgements in the criteria setting. Both schemes do provide the option for additional (quantifiable or non-quantifiable) information relevant to the product category in question. Swan and PEF both lay emphasis on the quality of data, and there are stringent requirements for this, specified by both schemes.

Despite the differences in the methodologies and operational approaches, both schemes aim to steer the market for green products through information to consumers (B2C) and purchasers (B2B).

The study was funded by the Nordic Council of Ministers. It is prepared as a background material for a workshop on PEF and the Nordic Swan Ecolabel (Swan) (4 May 2017, Helsinki) and it raises a set of key open questions for discussion at the workshop. This Working Paper will be further developed using the discussions of the Helsinki Workshop, on 4 May 2017 and the new material that the EU PEF Pilot phase produces during the summer and autumn 2017. We aim to publish a more comprehensive TemaNord Report in the beginning of 2018.

The key questions to be discussed during the workshop are:

1. To what extent can the PEF Screening Studies, PEF Category Rules or PEF profiles be used in setting or revising criteria for the Nordic Swan Ecolabel's product groups? And should a 'good PEF-value' be one requirement in the Swan criteria set?
2. How could the PEF-information prepared by companies be used by applicants of the Nordic Swan Ecolabel? What are differences in data quality requirements of Swan and PEF?
3. How can we avoid situations where the two schemes give "disagreeing results"? If we cannot avoid that, what to communicate to consumers and companies about the reasons for the differences?

1. Introduction

1.1 Objectives

This Working Paper is the first report of the project “Nordic Swan, Circular Economy and Product Environmental Footprint” (2016-2018), funded by the Nordic Council of Ministers. The project’s aims are two-fold: (1) to clarify to what extent the Nordic Swan Ecolabel is adapted to the Circular Economy, and (2) to identify the implications of the forthcoming Product Environmental Footprint (PEF) on the Nordic Swan Ecolabel and outline possible synergies between the two systems.

This Nordic Working Paper provides a comparative study of the PEF and the Nordic Swan Ecolabel (Swan) focusing on product environmental information in the schemes. This working paper addresses the questions:

- ***What are the similarities and differences in the use of the environmental information and what are the implications for PEF and Swan?***
- ***What are the synergies and the opportunities for cooperation regarding environmental information produced by the two systems?***

This report is the material for a Nordic workshop (Helsinki, May 2017). Chapter 5 lists questions for the workshop participants. It will be further developed using the discussions of the Helsinki Workshop, on 4 May 2017 and the new materials that the EU PEF Pilot phase produce during the second part of 2017. We aim to publish it as a more comprehensive TemaNord Report in the beginning of 2018.

This Working Paper describes the goals, methodological approaches, as well as outputs, and communication in relation to PEF and Swan. Case studies focusing on three product groups are included to further illustrate the comparison: T-shirts/Textiles, Rechargeable Batteries (Portable Power Sources) and Intermediate Paper Products.

The review and comparison of the two schemes presented in this Working Paper aims to provide a basis for understanding the potential implications of the forthcoming EU PEF on the Nordic Swan Ecolabel, and on the other hand, how the two may complement each other in the Nordic market. However, the focus in this report is on the product environmental information. Later in the project we aim to analyse also how PEF will change the field of product policy instruments and the position of Swan in it.

1.2 Materials and Methods

The study is a document review which focused in particular on the following documents:

- Nordic Swan Ecolabel: Goals and Principles for the Nordic Ecolabel, MECOGuidance, RPS Guidance and Criteria documents for paper products (basic module), textiles, skins, hides and leather and rechargeable batteries, and their background documents;
- PEF: PEF Guide versions 5.2, 6.0, and 6.1, PEFCRs for Intermediate paper products, T-shirts and High Specific Energy Rechargeable Batteries for Mobile Applications.

1.3 Background

In 2013 the EC launched the PEF Pilot phase to test a harmonised European set of methodological requirements for quantifying the environmental footprint over the life cycle of a product¹. The project has led to the development of a Pilot Phase Product Environmental Footprint Guidance for the development of Product Environmental Footprint Category Rules (Hereinafter referred to as PEF Guide). Draft PEFCRs have been produced for 22 products and 2 organisational sectors. At the time of writing this report, the PEFCRs were being pilot tested on their respective product groups. The pilot projects will also define product

¹ PEF Guide 5.2, p. 14

benchmarks and test different means of communicating about the products' environmental performance.

At the end of the pilot testing phase the EC will be in a position to propose the use of PEF **either as a mandatory or as a voluntary method** to assess product environmental performance. It may also propose how the PEF should be communicated in B2B and B2C situations. The PEF may be a label, but other ways of communication are currently still under consideration.

In particular in the case that the PEF would become a mandatory or a voluntary product label, there could be important implications on the use and market position of the Nordic Ecolabel. Therefore, the interest of the NCM for this project is to identify synergies and opportunities, as well as clarify potential challenges in the case that the two schemes- the PEF and the Swan- would eventually be working in parallel on the Nordic market.

The Swan, introduced in 1989, is an instituted information tool and brand on the Nordic market. Its objective is to encourage the demand for and supply of products that cause less stress on the environment as a Type 1 Ecolabel according to ISO14024. The Swan aims at defining what can be considered a "best performing" product within a product group and setting the criteria at that bar and providing clear-cut information to consumers and purchasers.

It is important to recognise that the PEF Pilot Phase is still ongoing, and therefore the conclusions are pending until the eventual EC recommendations on the use of the PEF.

2. Basic Information on Swan and PEF

2.1 Nordic Swan Ecolabelling Scheme

2.1.1 Introduction

The Nordic Swan Ecolabel (Swan) is a Type 1 Environmental labelling programme according to ISO14024: It is a voluntary, multiple-criteria-based programme. It awards a license to an organization authorizing the use of an environmental label on a product, indicating overall environmental preferability within a particular product category based on life cycle considerations². Following ISO14024 the objective is to reduce environmental impacts over the course of a life cycle of a product, and therefore the product environmental criteria are developed by identifying environmental impacts and potential for improvement in extraction of resources, manufacturing, distribution, use and disposal.

The Ecolabel is a tool that aims to steer the market towards “greener” products. The Nordic Swan Ecolabel is well-known among Nordic consumers: Approximately 91% of them are familiar with the label and a quarter always/often looks for products that have a Swan ecolabel³. Consumer choices, including purchaser choices, for ecolabelled products are expected to create market pressure on producers, leading to the development of products and services with better environmental performance⁴. Nordic Swan Ecolabelling is a member of the Global Ecolabelling Network (GEN) for ecolabels.

2.1.2 Policy Background and Guiding Documents

² ISO 14024:1999, p.1

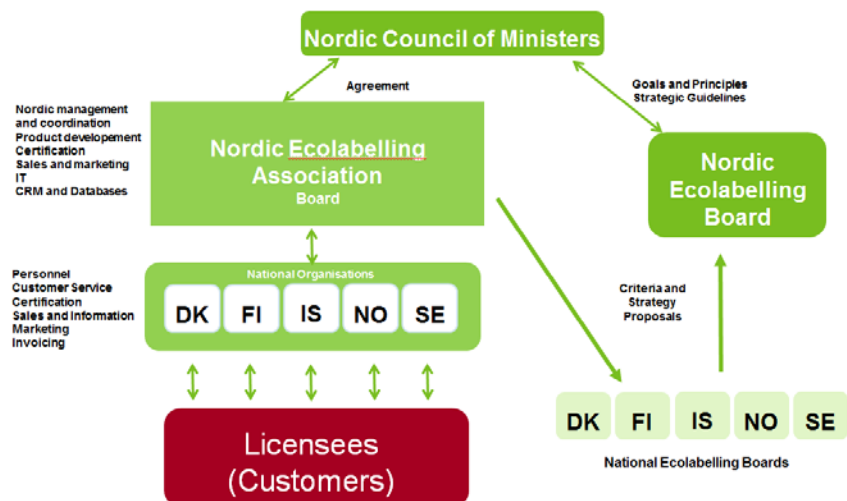
³ Miljömerkning. Nordisk förbrukarundersökelse 2015. Presentation by YouGov. 09.03.2015 (Provided by Karin Berbbom, Motiva Services Ltd).

⁴ Finnish Website of the Nordic Swan Ecolabel <http://www.joutsenmerkki.fi>

The Nordic Council of Ministers took a decision to establish an official Nordic Ecolabel on 6 November 1989⁵. Today, it continues to be an important instrument for achieving the Nordic countries' goals for sustainable consumption and production, as determined in the Nordic Environmental Action Plan and the Nordic Strategy for Sustainable Development⁶. The Goals and Principles for the Nordic Swan Ecolabel, adopted by the Nordic Council of Ministers for the Environment on 22/10/2014, direct the Ecolabel's work.

The Nordic Ecolabelling Scheme is endorsed and partly funded by all the Nordic governments and is administered through a Nordic Swan Ecolabelling organisation and national ecolabelling organisations of each of the five Nordic countries. A common Nordic board adapts the overall environmental strategy and regulations. It also approves the selection of new product groups and establishes the criteria for the specific product groups⁷.

Figure 1 Organisation chart for the Nordic Swan Ecolabelling



⁵ NCM (2014) Goals and Principles for the Nordic Ecolabel , accessed online at: <http://www.nordic-ecolabel.org/about>

⁶ NCM(2014) Goals and Principles for the Nordic Ecolabel, accessed online at: <http://www.nordic-ecolabel.org/about>

⁷ NCM (2014) Goals and Principles for the Nordic Ecolabel (2014), accessed online at: <http://www.nordic-ecolabel.org/about> and Arbetsordning för Nordiska miljömärkningsnämnden (2014) accessed online at: <http://www.ecolabel.dk/~media/Ecolabel/Files/om-os/overordnede-rammer/Arbetsordning-f%C3%B6r-Nordiska-milj%C3%B6m%C3%A4rkningsn%C3%A4mnden-2014.ashx?la=da>

The main documents guiding the current Nordic Ecolabel functioning are:

- Environmental Philosophy (2000): Defines the general principles and process for selecting the product groups, defining criteria, including life cycle perspective based assessment and the RPS- process⁸.
- RPS-Guidance (2013): An updated description of RPS as a tool to assess and prioritise environmental standards to achieve maximum environmental benefit⁹.
- The MECO-Guidance (2013): Describes a three step process for assessing environmental aspects in the life cycle of a product¹⁰.
- Goals and Principles for the Nordic Swan Ecolabel (2014): Gives the overarching guidelines for the Nordic Ecolabelling organization including strategic objectives and thematic priorities in terms of environmental impacts¹¹.
- Rules for Nordic Ecolabelling Board (2014): Describes the roles and responsibilities of the Nordic Ecolabelling Board¹².
- Fees for application and license are specified in the Fee Regulation (2016)¹³.

2.1.3 Goals

The Nordic Ecolabel aims to reduce the environmental impact of consumption by means of voluntary ecolabelling (§1). Its objectives (§2) are to help consumers, companies and other organisations to purchase in an environmentally conscious manner and to encourage the development of products and services that have less of an impact on the environment and climate than similar products on the market. It targets the reduction of all types of environmental impact resulting from the choice

⁸ Nordic Ecolabel (2000). Environmental Philosophy. *Internal document*. The idea is also summarized in the document "Nordic Ecolabelling Steps" (2001) available at: <http://www.nordic-ecolabel.org/CmsGlobal/Downloads/Ecolabelling%20Steps%20towards%20Sustainability.pdf>

⁹ Nordisk Miljømerking (2013). Internt notat om RPS (RPS-guidanse) – Versjon 1/2013

¹⁰ Nordisk Miljømærkning (2013). MEKA vejledning for Nordisk Miljømærkning – Version 1.0 2/8 2013

¹¹ NCM (2014). Goals and Principles for the Nordic Ecolabel, accessed online at: <http://www.nordic-ecolabel.org/about>

¹² Arbetsordning för Nordiska miljömärkningsnämnden (22/10/2014): <http://www.ecolabel.dk/da/virksomheder/regler-for-miljoemaerkning>

¹³ Nordic Swan Ecolabel (2016). Fee Regulations for the Nordic Ecolabel. Available online at: <http://www.ecolabel.dk/da/virksomheder/regler-for-miljoemaerkning>

of raw materials, use of hazardous chemicals, use of energy and resources, emissions to all kinds of recipients, health aspects, noise and waste treatment¹⁴.

The Swan is a tool which aims to create a demand for “greener” products on the Nordic market by defining the criteria for such products and offering a straightforward communication mechanism to indicate the better environmental performance to consumers. The Swan sets product environmental criteria selectively (ref. ISO14024) to differentiate environmentally preferable products from other products in the category¹⁵. The requirements for product environmental performance are periodically strengthened, creating a push for enhancing product features towards better environmental performance. To identify the most environmentally sound products on the Nordic Market, the criteria are defined at a level where, at the time of adoption, only a maximum of one third of products available on the Nordic Market meet the criteria¹⁶.

For consumers and purchasers (in public organisations and companies) the ecolabel provides guidance for choosing more sustainable products. The ecolabel acts as a proof of better environmental performance to consumers, who therefore do not need to obtain detailed or complex information on products’ and services’ performance¹⁷. It is expected that consumers, through their choices, also create market pressure that pushes producers and service providers to develop products that are more sustainable¹⁸.

¹⁴ NCM (2014). Goals and Principles for the Nordic Ecolabel, §6.4, accessed online at: <http://www.nordic-ecolabel.org/about>

¹⁵ ISO14024:1999, p.3

¹⁶ NCM (2014). Goals and Principles for the Nordic Ecolabel, §6.4, accessed online at: <http://www.nordic-ecolabel.org/about>

¹⁷ Nordisk Miljømerking (11 Des 2016) Rapport til Husbanken Bærekraftige materialvalg i kriterier for svanemerket renovering (Report to the Norwegian Housing Bank: Sustainable selection of materials in criteria for Nordic Swan Ecolabelling of renovation; in Norwegian) p. 9
<http://biblioteket.husbanken.no/arkiv/dok/Komp/Barekraftig%20materialvalg%20i%20kriterier%20for%20svanemerket%20renovering%20ny.pdf>

¹⁸ Nordic Ecolabel (2000). Environmental Philosophy. Internal document.

2.2 Nordic Swan Ecolabel Product Environmental Criteria

2.2.1 Criteria Documents

Criteria documents describe the specific requirements for each product group¹⁹. Product Environmental Criteria are “environmental requirements that the product shall meet in order to be awarded an environmental label” (ISO14024:1999). Their role is to differentiate environmentally preferable products from others in the product category, based on a measurable difference in environmental impacts. All products that meet the criteria shall be eligible to use the label²⁰. Currently, the Nordic Ecolabel has awarded criteria documents for 65 product groups (including services)²¹. A Nordic Ecolabel Criteria Document sets the requirements that a license applicant needs to achieve in order to be granted a license to use an ecolabel. Each Criteria Document includes the following sections:

- Product Group Definition and potential exclusions, i.e. products that cannot receive an ecolabel under any circumstances.
- Environmental, Quality and Regulatory requirements. The following are indicative examples from one product group of how requirements may be formulated²²:
 - Computers and displays must be designed in such a way that disassembly is possible (Computers, requirement 06)
 - Plastic parts heavier than 25 g must not be painted or metallised (Computers, requirement 09)
 - When cardboard boxes are used, they shall be made of at least 50% post-consumer recycled material (Computers, requirement 017)
- A description of verification procedures as well as appendices with forms that the applicant must fill in.
- New Future criteria: this section provides ideas about new criteria forthcoming at the next criteria revision stage.

¹⁹ Nordic Ecolabel (2014). Goals and Principles for the Nordic Ecolabel , §6.1. Available online: <http://www.nordic-ecolabel.org/about>

²⁰ ISO14024:1999, p.3

²¹ Finnish website of the Nordic Ecolabel: <https://www.joutsenmerkki.fi>

²² Nordic Ecolabelling 2013. Nordic Ecolabelling of Computers. Version 7.3. 23 October 2013-30 June 2019. Available online: <http://joutsenmerkki.fi/tuotteet-palvelut/kriteerit-sivu/>

2.2.2 Process for Setting Product Environmental Criteria

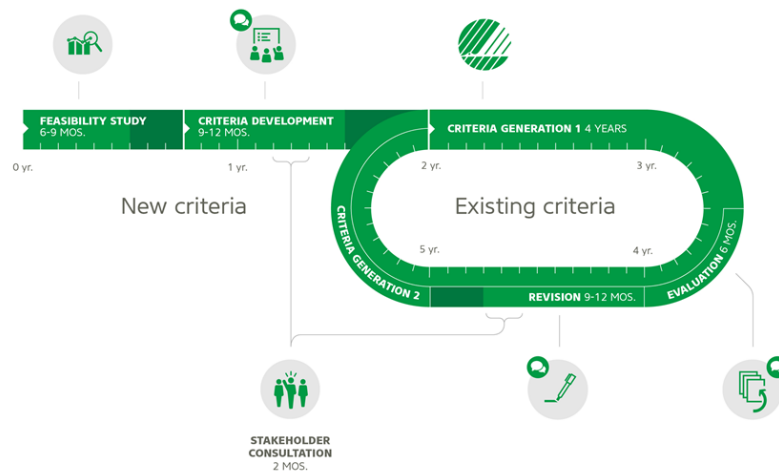
The Nordic Ecolabel sets the criteria according to the processes and principles defined in ISO 14024:1999 and the general principles of “Goals and Principles for the Nordic Ecolabel” (22/10/2014)²³. The product groups are chosen on the basis of:

- Potential environmental benefits;
- Consumers’ and purchasers’ need for guidance with regard to environmentally sound products

Potential license-holders, different stakeholders and internal working processes suggest new product groups. Criteria are developed in a process headed by the Nordic Swan Ecolabel, taking into consideration the general principles.

Figure 2 summarises the Nordic Ecolabel criteria development process.

Figure 2 Project flow for criteria development for Nordic Swan Ecolabelling²⁴



²³ Nordic Ecolabel (2014). Goals and Principles for the Nordic Ecolabel. Available online:

<http://www.nordic-ecolabel.org/about>

²⁴ Figure produced by the Nordic Ecolabel.

The multi-stakeholder process includes expert groups' expertise (e.g. energy, nanotechnology etc.) and assessment, a broad public consultation and approval of the criteria by the Nordic Ecolabelling Board.

The criteria are developed by experts from Nordic Ecolabelling organisations. Studies (feasibility study, "light RPS" study and pre-study) support the definition of Criteria. Stakeholders, including industry and NGOs, are consulted during the process. When a draft is finalised there is an open consultation process, and all incoming comments are considered and the response to the comments are publicly available²⁵. A common Nordic Ecolabelling board approves the proposed Criteria and carries out judgement on potential "gray zones"²⁶. A similar process is applied to revisions of criteria, which take place approximately every 4-5 years²⁷. Where justified and approved by the Ecolabelling board, the criteria may be changed during the validity period²⁸.

2.2.3 Methodological Approach for Assessing Product Environmental Performance

Criteria are set through a process referred to as "RPS". It is an analytical tool used to prioritize environmental challenges and to clarify where the ecolabel can make a difference²⁹.

- **Relevance** (R) identifies the extent of the environmental problem for the product group;
- **Potential** (P) determines what can be done about the problem;
- **Steerability** (S) identifies how well the Nordic Swan Ecolabel can influence the problem³⁰.

In order for the Swan to adopt a requirement all three of these factors must be positive, *i.e.*, the environmental challenge must be relevant for the product group, there is potential to influence the problem and the Nordic Ecolabel is seen to have an influence on the challenge. The RPS assessment hence necessitates a prioritization of environmental param-

²⁵ Nordic Ecolabel (2000). Environmental Philosophy, p.20. Internal Document

²⁶ Karin Bergbom, comment 12 December 2016

²⁷ Nordisk Miljømerking & Husbanken (2016). Rapport til Husbanken Baerekraftige materialvalg I kriterier for svanemarket renovering, p.9

²⁸ Comment by Elisabeth Magnus, 31 January 2017

²⁹ NCM (2014). Goals and Principles for the Nordic Ecolabel (22/10/2014) <http://www.nordic-ecolabel.org/about>

³⁰ Nordic Ecolabel (2015). Nordic Swan Ecolabel Annual Report, p.6-7. Available online: https://issuu.com/svanen123/docs/nordic_ecolabeling_annual_report_20

eters so that the focus of criteria requirements is on those that results in a maximum environmental benefit.

The Swan has adopted a method called “**MECO**”, which stands for **M**aterials, **E**nergy, **C**hemicals and **O**ther, to assess the most significant environmental impacts in the life cycle of a particular product. Performed by the Swan project leader in charge of the criteria development process, and potentially supported by the Swan’s LCA Task Force, the MECO assessment is qualitative, quantitative or a mix of the two, and relies on readily available LCA studies, and other sources such as reports on Best Available Techniques (BAT), Environmental Product Declarations (EPDs), research reports etc.³¹.

The MECO analysis consists of a three-step process for determining the most relevant environmental impacts from a Life Cycle Perspective. As a first step the Purpose of the MECO analysis is defined. This includes defining whether the study will be qualitative or quantitative. The step also includes definition of the Functional Unit and Reference Flow required meeting the Functional Unit, as well as a description of the system boundaries. The second step aims at collecting data on all the material environmental aspects in the product’s Life Cycle, based on readily available life cycle information and other qualitative inputs. In the third step the data is formulated row by row in the MECO chart (not obligatory) which is shown in Table 1.

Table 1 The MECO Chart

	Raw materials	Production	Use	End of Life	Transport
Materials					
Energy					
Chemicals and Emissions					
Other					

The analysis categorizes environmental impacts by at least four main underlying causes:

- **Material:** The materials needed to produce, use and maintain the product (in kg);

³¹ Nordisk Miljømærkning (2013) MEKA Vejledning for Nordisk Miljømærkning, p.3 and p. 8

- **Energy:** the energy used during the product's life cycle, including the use of energy during the supply of materials, indicated as energy use (kWh or MJ) and energy source (renewable/non-renewable). Includes own production and purchased energy;
- **Chemicals:** Chemicals added to the products, or used in the production processes or user phase according to their environmental hazard level on the basis of European chemical regulations³² or other lists for chemicals of concern³³. It includes emissions from all life cycle phases;
- **Other:** Environmental impacts that do not fit into the other categories are described in this category. Examples can be biodiversity, land use, quality, ethical issues or special conditions regarding noise or odors that are not included in the other sections.

The chart gives an overview and there may be sub-charts for individual environmental aspects. Calculations are done for the functional unit, defined by the reference flow³⁴. Table 2 shows the likely quantification of different aspects during the MECO process.

Table 2 Data detail in MECO Analysis according to MECO Guide

Environmental parameter	Required level of detail
Materials (resources)	Where the product has a high resource consumption, the data for the most important materials shall be quantified. Also qualitative aspects are considered.
Energy	It is often relevant to quantify energy.
Chemicals	A qualitative assessment is often relevant for chemicals. It is relevant to quantify emissions of greenhouse gases.
Other	Often a qualitative description

Readily available LCA and other studies provide guidance for determining the most relevant life cycle stages and environmental impact categories. The information helps ensure that the criteria address environmen-

³² EC Regulation No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), and Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP Regulation)

³³ For example: Listen Over Uønskede Stoffer (LOUS) (Denmark), Kemikalieinspektionen (KEMI) laget en guide (PRIO) for risikohåndtering av utpekte farlige stoffer (Sweden), Prioritetslisten (Norway) Other lists from different standards, NGO's, SinList (Substitute it Now!), as well as publications of new emerging chemicals etc.

³⁴ Nordisk Miljømærkning (2013). MEKA Vejledning for Nordisk Miljømærkning, p. 4-14

tal impacts that are relevant to the product group, and that there is no imbalance between environmental problems. The information is used by the Nordic Ecolabelling to identify the best ways to influence the processes with the highest potential for environmental gains³⁵. It also helps to ensure that criteria do not induce burden shifts between different environmental aspects³⁶. A more detailed LCA may follow the MECO analysis³⁷.

Qualitative expert judgments complement the quantitative data in particular for social and ethical issues, not currently assessed by a traditional LCA³⁸. An interpretation of the data in the MECO Chart indicates where in the life cycle the resource burden and energy use are the largest, and therefore “relevant” for the product group and also pinpoints chemicals of concern that are also “relevant” to address in the criteria. It is possible to identify “Potential”, i.e. potential for improvements, by comparing with another product³⁹.

The Goals and Principles for the Nordic Ecolabel (§6.2) identifies the following environmental issues: Raw materials, use of hazardous chemicals, use of energy and resources, emissions to all kinds of recipients, health aspects, noise and waste treatment associated with production, transport and final disposal, as well as lifespan, reparability, reuse and recycling⁴⁰. An earlier guiding document – the Environmental Philosophy from 2000, lists categories of environmental impacts that guide the Swan criteria development process, but the Swan no longer automatically considers the original environmental impact categories (refer to Annex I). It may use for instance the International Union for Conservation of Nature (IUCN) red list of threatened species or chemicals restriction lists to identify relevant issues.

In terms of resource use, the process assesses the necessity to set requirements for the use of renewable and/or recycled materials, etc.⁴¹ In addition, despite being an environmental label, the Swan includes the social and equity pillar of sustainable development.⁴²

³⁵ Nordic Ecolabel (2000). Environmental Philosophy, p.17 and Nordisk Miljømærkning (2013) MEKA Vejledning for Nordisk Miljømærkning – version 1.0

³⁶ Nordisk Miljømærkning (2013). MEKA Vejledning for Nordisk Miljømærkning – version 1.0, p.3

³⁷ Nordisk Miljømærkning (2013). MEKA Vejledning for Nordisk Miljømærkning – version 1.0, p. 5

³⁸ Nordic Ecolabel (2000). Environmental Philosophy, p.20 (Internal Document)

³⁹ Nordisk Miljømærkning (2013) MEKA Vejledning for Nordisk Miljømærkning – version 1.0, p. 19

⁴⁰ NCM (2014). Goals and Principles for the Nordic Ecolabel, p.3

⁴¹ Nordisk Miljømerking & Husbanken (2016). Rapport til Husbanken Baerekraftige materialvalg I kriterier for svanemerket renovering, p.9

⁴² Nordic Ecolabel (2000). Environmental Philosophy, p.17

2.3 Participating in the Nordic Swan Ecolabelling Scheme

2.3.1 *Applying for an Ecolabel*

Following ISO14024, applicants that fulfil the criteria are awarded an ecolabel. An applicant has to meet the requirements and may need to make changes in its production process or the product, in order to meet all requirements. An applicant is furthermore required to provide documentation proof based on its product, and value chain, to support its application. The Swan National organisation checks that the requirements are met through onsite audits, and the ecolabelled products and services are thereby third party certified⁴³. In addition, the Swan performs tests of Swan-labelled products on the market.

The criteria for the applicant of the Nordic Swan Ecolabel reduced environmental impact and are set on processes that manufacturers or the suppliers can influence and therefore it is expected that the applicants use primary data. Only in exceptional cases, secondary data are used as part of the documentation, for example, by using a calculation method commonly used in the industry⁴⁴.

2.3.2 *Communication of Environmental Performance*

The published Criteria Documents and Background Documents are publicly available on the Nordic Ecolabelling website. The names of ecolabelled products and license-holders (companies) are furthermore available on the Nordic Ecolabelling website. The license-holders may use the Nordic Swan on the product and in marketing material.

⁴³ Finnish Website of the Nordic Swan Ecolabel: <http://www.joutsenmerkki.fi>

⁴⁴ Comment by Elisabeth Magnus, 12/12/2016

2.4 Product Environmental Footprint

2.4.1 Introduction

The European Commission commenced the PEF/OEF pilot as a response to the confusing range of choices of methods and initiatives available for companies wishing to market a “green” product and a confusing range of “green” claims and labels presented to consumers⁴⁵. The PEF method has been developed by the European Commission aiming to develop a common measure of environmental impacts for products. It takes into consideration environmental assessment guidelines and standards such as BP X30323, ISO14044, ISO14067, Greenhouse Gas Protocol (WRI/WBCSD), the ILCD Handbook, PAS2050 and the Ecological Footprint methodology⁴⁶.

The Environmental Footprint (EF) of Products denotes a measure of the environmental performance of product over its life cycle. The EF is a modelled representation of the impacts. It is a measure, and does not by itself make reference to the environmental preferability of a product. PEF intends to streamline previously confusing (diverse and incomparable) environmental information presented to consumers. For producers it will make it easier to market green products by reducing the burden of fulfilling various different requirements of different national schemes for measuring product environmental, in use in different member states⁴⁷.

The following sections introduce the PEF, including its background, goals and the methods used to determine the environmental preference of products. The information presented here acts as a basis for the comparison of the Swan and PEF.

2.4.2 Policy Background and Guiding Documents

The policy mandate for the Product Environmental Footprint (PEF) is based on a number official European Union documents presented in Figure 3⁴⁸.

⁴⁵ EC Single Market for Green Products <http://ec.europa.eu/environment/eussd/smgp/>

⁴⁶ PEF Guide, version 5.2 p. 19

⁴⁷ EC Single Market for Green Products- Website
http://ec.europa.eu/environment/eussd/smgp/policy_footprint.htm

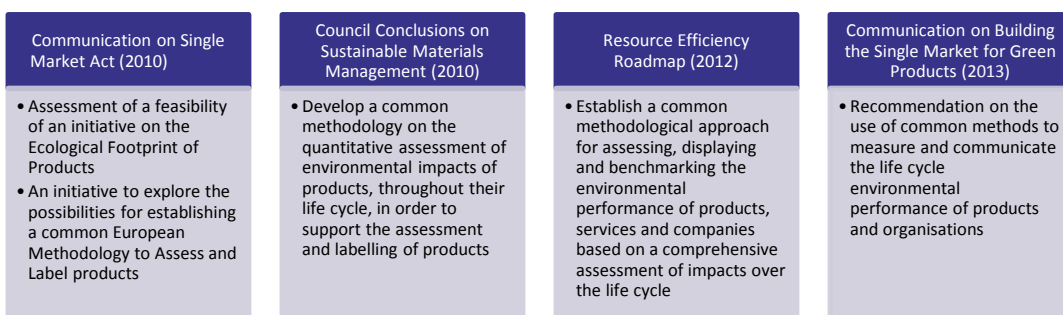
⁴⁸ EC Single Market for Green Products- Website, available online:
http://ec.europa.eu/environment/eussd/smgp/policy_footprint.htm

The “Single Market for Green Products”- Initiative comprises a pilot phase to establish two methods to measure environmental performance throughout the lifecycle. The Commission Recommendation 2013/179/EU recommends the Product Environmental Footprint (PEF) and the Organisation Environmental Footprint (OEF) for use by Member States, companies, private organisations and the financial community. Moving towards the implementation of PEF and OEF includes a three-year multi-stakeholder pilot testing period for developing product and sector specific rules. The pilot phase will be finalised in 2017.

During the PEF Pilot phase the following guidance document is used:

- Environmental footprint pilot phase, PEFCR Guidance document, - Guidance for the development of Product Environmental Footprint Category Rules (PEFCRs), version 6.1, April 2017 (and its previous versions)

Figure 3 Policy Background for PEF



2.4.3 Goals

The goal of PEF is to provide a common, streamlined method and a consistent set of rules for calculating environmental impacts for products within the same category, enabling comparisons and setting principles for communicating environmental performance and supports international efforts towards more coordination in methodological development and data availability⁴⁹. It aims at improving the availability of clear, reliable and comparable information on the environmental performance of products and organisations to all relevant stakeholders, including to players along the entire supply chain⁵⁰.

The objective is to develop a harmonised European methodology for environmental footprint with a broad suite of relevant environmental performance criteria⁵¹. It is expected that PEF studies will support internal functions, B2B and B2C communications and benchmarking applications (Commission Recommendation 2013/179/EU).

2.5 Product Environmental Footprint Category Rules Development

The Product Environmental Footprint Category Rules (PEFCRs) complement general environmental footprint methodology guidance (PEF Guide) by providing specification at the product group level. They aim at providing detailed technical guidance on how to conduct a product environmental footprint study for a particular product group⁵². The PEFCRs provide specific guidance for calculating and reporting a product's life cycle environmental impacts. The structure and the process for a PEFCR are defined in the Product Environmental Footprint Guidance (Version 6.0- November 2016), referred to as a "PEF Guide".

⁴⁹ EC Single Market for Green Products Website <http://ec.europa.eu/environment/eusd/smgp/>

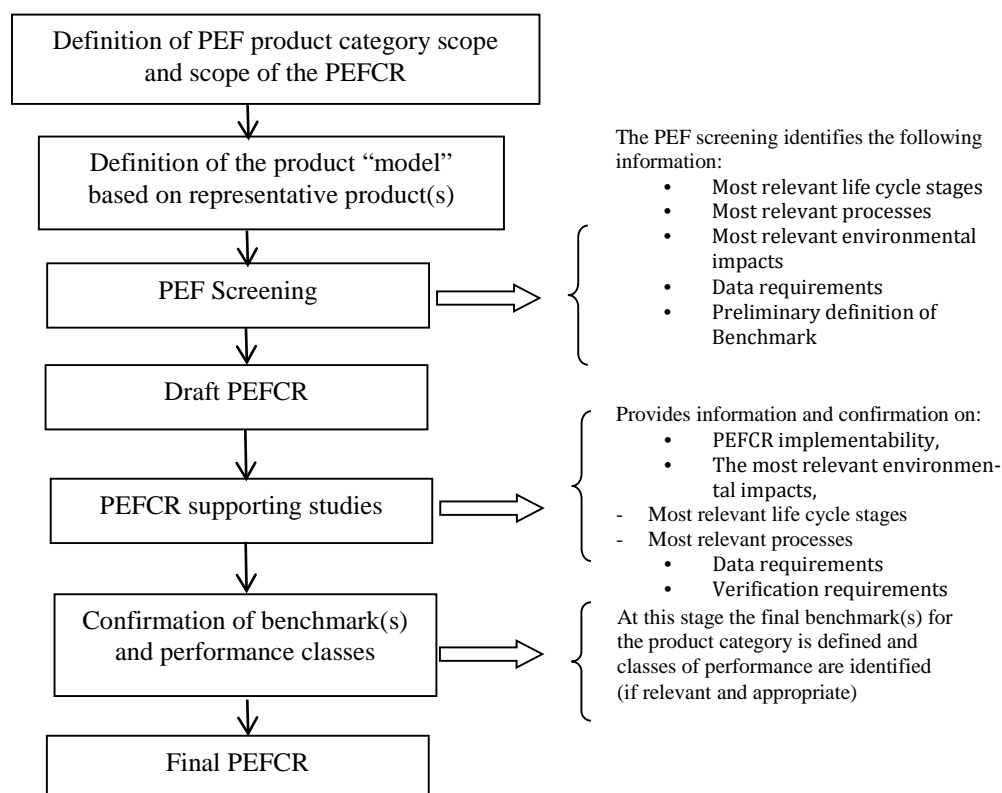
⁵⁰Communication from the Commission to the European parliament and the Council: Building the Single Market for Green Products Facilitating better information on the environmental performance of products and organisations (COM/2013/0196 final). Available online: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013DC0196>

⁵¹ Chomkhamsri & Pelletier (2011) JRC-IES Analysis of Existing Environmental Footprint Methodologies for Products and Organisations, p.3

⁵²Single Market for Green Products: http://ec.europa.eu/environment/eusd/smgp/dev_methods.htm

During the PEF Pilot phase (2013-2017), the process for developing product- and sector-specific rules is tested⁵³. PEFCRs are developed, through a process involving the preparation of a Screening Report, Stakeholder Consultations and supporting studies. Figure 4 presents the process for preparing a PEFCR.

Figure 4: PEFCR Development Process according to PEF Guide (vs 5.2, p. 25)



Respective Technical Secretariats (TS) for the different pilots coordinate the process, which is expected to be open and transparent according to ISO14020:2000 and a virtual consultation is included. The major competitors/their representatives covering at least 75% of the EU market and ensuring that industry stakeholders cover at least 51% of EU market (both in terms of yearly turnover of production) and that SMEs, and consumer and environmental associations participate in the process

⁵³ Single Market for Green Products <http://ec.europa.eu/environment/eussd/smgp/>

for piloting and testing the PEFCRs. Only then would the Steering Committee be able to approve the PEFCR⁵⁴.

At the end of the pilot project, a third party review panel, consisting of at least one LCA expert, one NGO representative and one industry representative, will review the draft PEFCR and provide guidance for the Technical Secretariat. The purpose is to ensure that the PEFCR is consistent with the PEF Guide, the functional unit, allocation and calculation are adequate, the data used is relevant, representative and reliable, and the LCIA indicators (and any additional information) are appropriate⁵⁵.

In 2017 the final PEFCRs for 21 product groups and two organisation groups (copper manufacture and retail) will be approved⁵⁶.

2.5.1 Methodological Approach in PEFCRs

PEF is a Life Cycle Assessment (LCA) (ref. ISO14040:2006⁵⁷) based method to quantify environmental impact of products and organisations. The PEF Guide gives guidance on how to develop sector-specific Category Rules. PEFCRs set directions for quantifying the relevant environmental impacts of products (goods and services) building on existing approaches and international standards. At the centre of the process is the identification of most relevant impact categories, life cycle stages, processes, and elementary flows⁵⁸.

The most relevant life cycle stages, impact categories and hotspots are determined for a representative product. In theory a representative product is either a virtual (non-existent) or a real product⁵⁹ but in the pilot phase all pilots have been using virtual products. A virtual product is calculated on the average sales-weighted characteristics of all existing

⁵⁴ PEF Guide, Version 5.2(2016), p.44

⁵⁵ PEF Guide, Version 5.2 (2016), p. 44

⁵⁶Single Market for Green Products: http://ec.europa.eu/environment/eussd/smgp/dev_methods.htm

⁵⁷ "Life Cycle Assessment is the compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle (ISO 14040:2006)"

⁵⁸ PEG Guide v.6.0 p. 1

⁵⁹ PEF Guide v.6.0, p.19-20

technologies/materials covered by the scope of the PEFCR or weighted average based on mass (tons) or product units (pieces). The process requires a bill of material, flow diagram, and assumptions regarding transport, and use and end of life scenarios⁶⁰.

The quality levels for data quality are defined by the PEF Guide (very good, good, fair, poor, very poor)⁶¹. Readily available generic data (life cycle inventory databases etc.) can be used, but a minimum of “fair” quality (according to the definition in PEF Guide) is required for data contributing to at least 90% of the impact estimated for each EF impact category. Generic data used in the first round can be replaced with specific data and other more representative (specific) databases along the process⁶². The EC’s Joint Research Centre’s Helpdesk, together with partners, have produced supporting guidance on modelling, e.g., agriculture, construction, packaging, transport and end-of-life which are inserted in the PEF Guidance.

2.5.2 Environmental Impact Categories

The following Environmental Impact Categories are addressed in PEF⁶³: climate change, ozone depletion, human toxicity-cancer effects, human toxicity-non cancer effects, acidification, particulate matter, freshwater ecotoxicity, ionising radiation, photochemical ozone formation, eutrophication (terrestrial), eutrophication (freshwater), eutrophication (marine), land use, resource depletion (water), resource depletion (mineral, fossil). To the best of our knowledge, the EC is currently developing the weighting method which will be implementable in May 2017.

However, the three toxicity-related categories are currently only included in the inventory analysis. They are excluded from the procedure to find the most relevant impact categories until a new method based on REACH data is completed in collaboration with the European Chemicals Agency (ECHA).⁶⁴ To the best of our knowledge, the new method will be available by 2018.

⁶⁰ PEF Guide v.6.0 p.19

⁶¹ PEF Guide v.5.2 p.84

⁶² PEF Guide v.5.2, p. 32-33

⁶³ PEF Guide v. 5.2, p.47

⁶⁴ PEF Guide v.6.1, p. 29, footnote 11

A PEF study for B2C purposes a minimum of three of the most relevant impact categories must be identified. PEFs targeting B2B communication, the number is decided during the process. For intermediate products all environmental impact categories are considered⁶⁵.

During the PEF Pilot phase, the respective Technical Secretariats for each of the pilot projects are in a position to define – using a process described in the PEF Guide- which impact categories shall be considered most relevant, and which shall then be addressed in the PEF study for that product group. The TS also specifies whether other environmental aspects, such as biodiversity, shall be included in “Additional Environmental Information”⁶⁶. It has been indicated by one study that the guidance for this information is not particularly or potentially even sufficiently well defined by the PEFCRs⁶⁷.

2.5.3 Conducting a PEF study

The PEFCRs define the process for conducting a PEF study which includes defining goals and scope, creating a resources use and emissions profile (RUaEP), and conducting an environmental footprint impact assessment, as well as interpretation and reporting⁶⁸. The PEFCR guides the preparation of a PEF study. The goal of the PEF study is to identify the “most relevant” impact categories, life cycle stages, processes and elementary flows. In PEF, “most relevant” impact categories refers to those that cumulatively contribute to at least **80%** of the total environmental impact (excluding toxicity related impact categories).⁶⁹

The scope for a PEF study is defined in the PEFCR for a product group. The scope for the analysis is defined for a measure expressed as a functional unit and in terms of NACE/CPA codes. A function based approach, according to ISO14025:2006 (a group of products fulfilling equivalent functions), allows comparisons between products.

⁶⁵ PEF Guide v.5.2, p. 38

⁶⁶ PEF Guide v.6.0 , p. 41

⁶⁷ Ojala *et al.* (2016) p. 1097

⁶⁸ PEF Guide v. 6.0

⁶⁹ PEF Guide-version 6.1 (14.2.2017), p.29 and PEF Guide version 6 (2016), footnote on p. 23.

The PEFCR specifies the minimum set of processes for which company specific data needs to be used, including requirements for how data quality should be assessed. Semi-quantitative assessment must be done for data covering 70% of the contributions to each impact category. The remaining 30% of the data is to be assessed by expert judgment. Primary data have to be assessed at the input flow level, and secondary data may be assessed as well at the input flow level or at the process level⁷⁰. Although it is possible to use primary and secondary data for PEF studies, the PEFCRs determine the exact secondary data to be used, which to ensure comparability⁷¹. After 2017 datasets are being made available by the European Commission.

2.5.4 Communication of Product Environmental Footprint Performance

The output of the PEF study is a “Resource Use and Emissions Profile” (RueEP) or a “PEF Profile”. The way in which it is communicated depends on the target group and objective of the communication. Reporting and communication approaches are being tested as part of the PEF Pilot phase. Options included publicly available or non-public reports, declaration, label, etc. but a final decision on the communication vehicle will not be decided until a later stage of the pilot phase⁷². To the best of our knowledge, there is no consensus or conclusion on communication or performance classes so far. The testing will continue until Autumn 2017.

Recommendations on the most available communication vehicles will be available at the end of 2017.

In earlier versions of the PEF Guidance, a 5-class benchmark system (A-E) was proposed for development during the pilot phase. In this system the virtual representative product would correspond to class C. The proposal has been taken out of the most recent PEF Guidance (V. 6.1)⁷³.

⁷⁰ PEF Guide quoted in Ojala *et al.* (2016).

⁷¹ PEF Guide v. 5.2, p.34-35

⁷² PEF Guide v. 5.2, p. 39-40

⁷³ PEF Guide 6.1. has no mention of communication. In addition, there is a reference to classes of performance on page 110, saying “this may be added at a later stage”.

There are requirements for verification of the PEF studies, including onsite visits and reviewing calculations⁷⁴. To the best of our knowledge the new version of the verification chapter will be disclosed to the public in the near future.

⁷⁴ PEF Guide v. 5.2, p. 42

3. Case Studies

3.1.1 Introduction

This section aims to illustrate some of the parallels and differences in the analytical approaches used by the Nordic Swan Ecolabelling Scheme and the PEF Pilot Project. The focus of the comparison is the Product-group specific award criteria documents of the Nordic Ecolabel and the PEF Category Rules. Comparing some of the core methodological questions through product-group specific case studies aims to illustrate how methodological differences feature in practice. This may be helpful in further determining how the two systems can complement each other.

For this Working Paper we focus on three product groups: Textiles, Intermediate Paper and Rechargeable Batteries. They were selected because they are product groups that exist as part of the Swan Scheme and also form a part of the product groups chosen for the PEF Pilot.

Product Category definitions for these three product groups according to the relevant PEFCR and the Criteria Documents are presented in Table 3.

Table 3 Product Category Definitions

	PEFCR	Swan Criteria
Textiles	“T-shirts, singlets and other vests, knitted or crocheted”(CPA Code: C14.14.3)	Textiles, hides, skins and leather
Rechargeable Batteries	High energy rechargeable batteries used in mobile application for the following three application fields: e-mobility, ICT and cordless power tools (CPA 27.20.23)	Portable batteries that are rechargeable in accordance with the definition provided in the European Union’s Batteries Directive (2006/66/EC, Sept 2006).
Intermediate Paper	Intermediate paper (CPA C.17.12)	Pulp and paper production

3.1.2 Unit of Analysis

The analysis in PEF is based on a functional unit, which makes it possible to compare the environmental performance of products with a similar function. The Swan uses the product as the unit of analysis. The units of analysis applied in the PEFCR and in the background studies of Swan for the three product groups are presented in Table 4 Functional Units.

Table 4 Functional Units

	PEFCR	Swan Criteria
Textiles	To wear a T-Shirt for one year	No functional unit defined. For some processes, e.g. washing and dyeing emissions can be calculated per kg of fibre or textiles. ⁷⁵
Rechargeable Batteries	1kWh of the cumulative energy delivered over service life (quantity of Wh, obtained from the number of cycles multiplied by the amount of delivered energy over each cycle)	One battery. One charger.
Intermediate Paper	One tonne (1000 kg) of saleable [graphics, packaging papers or tissue] paper at the paper mill's gate. Additional units of analysis can be used in parallel with the mandatory functional unit.	One tonne pulp or one tonne paper.

⁷⁵ E.g. in relation to chemicals, decisions are independent of the amount

3.1.3 Identified relevant environmental aspects/impacts

The review of the most relevant environmental impact categories appearing as “most relevant” in the PEFCRs and the environmental aspects mentioned in the Criteria Documents in relation to the three product groups indicated that in practice there may be rather significant differences. In PEF, “most relevant” impact categories refers to those that cumulatively contribute to at least **80%** of the total environmental impact (excluding toxicity related impact categories).⁷⁶

As shown in Table 5, the most relevant environmental impact categories differ significantly for the textiles/T-shirts and Rechargeable Batteries. One main reason for this may be the different focus on chemicals related impact categories between the two schemes.

In this particular case, the intermediate product group (paper) showed the least differences. In PEF, intermediate products are required to consider all environmental impact categories⁷⁷. Many of the environmental aspects appearing in the Swan Criteria document, also appear in the “Required additional information” of the PEFCR.

Table 5: Environmental impact categories appearing as “most relevant” PEFCRs and featuring in Criteria Documents

	PEFCR	Swan Criteria Documents
Textiles/T-Shirts	Climate change, particulate matter, eutrophication, resource depletion	Pesticides, organic production, chemicals, biodiversity.
Rechargeable Batteries	Climate Change, ozone depletion, particulate matter, photochemical ozone formation, eutrophication	Spread of heavy metals, energy, overuse of batteries, E-o-L
Intermediate Paper	Particulate matter, acidification, climate change.	Fibre sourcing, energy and CO ₂ , chemicals, emissions to water and air

⁷⁶ PEF Guide- version 6.1 (14.2.2017), p.29 and PEF Guide –version 6 (2016), footnote on p. 23.

⁷⁷ PEF Guide- version 5.2 (2016), p. 40

3.1.4 Life Cycle Stages

Both systems aim to pinpoint the stages of a product’s life cycle with the biggest burden on the environment. The PEF methodology identifies so called “most relevant” life cycle stages, where “most relevant” refers to life cycle stages which together contribute to at least 80% of any of the most relevant impact categories identified⁷⁸. We compared PEFCRs to those stages that feature in the Swan criteria documents. These are presented in Table 6.

The review of the life cycle stages compared for the intermediate product are identical.

Table 6 Life cycle stages featuring in Criteria or in PEFCR as “most relevant”

	Rechargeable Batteries		Intermediate Paper		Textiles/T-Shirts	
	PEFCR	Swan	PEFCR	Swan	PEFCR	Swan
Raw material	x		x	x	x	x
Production		x	x	x	x	x
Transport					x	x
Use	x	x			x	x
E-o-L	x	x	x	x		x

While the raw material acquisition phase does not feature in the Nordic Swan Ecolabel criteria document for Rechargeable Batteries (Version 4.5, 7 December 2010- 30 June 2018), it is recognised in the background document for rechargeable batteries⁷⁹. This is a good example of the selection that is made by the “RPS” process, i.e. in this case the ecolabel is not considered to be the right instrument to address (or “steer”) this aspect and therefore it is excluded.

⁷⁹ Nordic Ecolabelling of Rechargeable Batteries Version 4.4, Background for Ecolabelling, 16 June 2015

4. Comparison of the Nordic Swan Ecolabel and the PEF

4.1 Introduction

This Chapter provides some observations relating to the perceived similarities and differences in approaches of the Nordic Swan Ecolabelling Scheme and the PEF Pilot phase. The main objective was to prepare background material for an expert workshop discussion. The topics addressed include: standards, the process, methods for assessment, data, impact categories, making conclusions and verification.

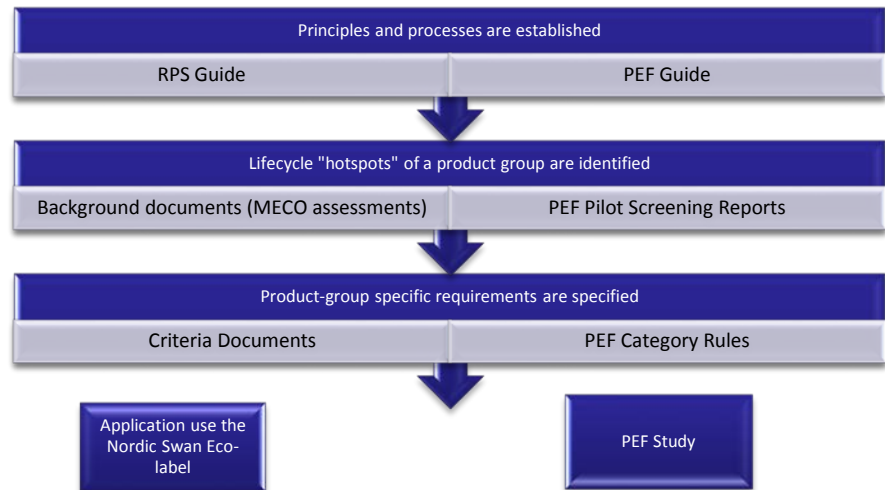
4.2 Main Observations

Standards: There are international standards behind both schemes. Type 1 Ecolabels base on standards ISO14020 and ISO14024 whereas LCA standards 14040 and 14044 are among the guiding standards for the development of the PEF methodology. Also the standard on EPDs (ISO14025) is relevant for PEF.

Process: In both systems, there is a preparatory phase, involving background research, which results in either Background Documents (Nordic Swan Ecolabel) or a Screening Report (PEF). The background research provides information and gives justification for defining the product-group specific requirements: for the Swan this means Criteria Documents and for PEF the PEFCRs. A company is obliged to use Swan Criteria and PEFCR for fulfilling the product-group specific requirements for their respective purposes, according to the two schemes. An applicant within the Swan Scheme will – by fulfilling the requirements- obtain a license to use the Ecolabel in communicating environmental performance in B2B and B2C. A PEF study will be prepared on the basis of product category specific rules, for potential use in communicating environmental performance in B2B and B2C applications.

A comparison of the two schemes at a system level is illustrated in Figure 5, which describes the process and guidance documents for the two schemes. See chapter 2 for an explanation of the terms.

Figure 5 A Comparison of the Nordic Swan Ecolabel and the PEF process



Goals: Generally speaking, both schemes strive for promoting environmentally sound products. However, the specific definitions differ. The purpose of the Swan is to have a multi-criteria, third party verified system of setting the benchmark for the environmentally best performing products (ISO14024), with a focus on the Nordic market. The primary objective of PEF is to fix a consistent set of calculation rules for use by companies in defining and communicating environmental performance and thus it aims to increase comparability between assertions made about products fulfilling the same function.

Methods for assessment: The approaches differ a lot from methodological perspectives. It is noteworthy to indicate that PEF is an LCA tool, whereas the Swan applies a Life Cycle Perspective. The PEF is based on the International Reference Life Cycle System (ILCD) methods and necessitates Life Cycle Assessment to identify the most relevant life cycle stages and environmental impacts, based on pre-defined relevant environmental impact categories. The Swan applies a pragmatic approach relying on an assessment of “Relevance”, “Potential” and “Steerability” (RPS) where readily available life cycle analysis data supports the as-

assessment of relevance and potential of the various environmental aspects, leading to the setting of criteria. The Swan assessment is supported by expert judgment and non-quantifiable information. These methodological differences can cause differences in the results.

Data Quality: This review of the current guiding documents would indicate that both schemes have a similar approach with respect to stringent data quality requirements from companies. The use of company specific data is prioritised by both schemes. As per PEF Guidance – Version 6.0 one core purpose of each PEFCR is to specify the minimum list of processes to be covered by company-specific data, with a view to avoiding the use of default data sets⁸⁰. Datasets specified in a particular PEFCR may be used due to unavailability of data. In addition, preparing a PEF study involves an assessment of data quality, for primary and secondary data. The Swan requires supply chain specific data from the license applicants, and means of verification. Only in certain defined cases, and exceptional cases, if supply chain specific data is not available, secondary data may be used.

Environmental Aspects: Both two schemes address multiple environmental impacts. The PEFCRs define which “most relevant impact categories” (accounting for at least 80% of overall product environmental impact), out of a predefined list of 16 impact categories, need to be addressed by the user. The Swans Goals and Principles (2014) defines Environmental Aspects but is more flexible about the analysis, taking into consideration non-quantifiable environmental issues, emerging environmental issues and quality and social issues as well as other relevant issues.

The importance of chemical related issues is underlined by the Nordic Swan. Regarding PEF, at the time of writing this report, the three toxicity related categories are temporarily excluded from benchmarking and communication applications of PEF, until the model is finalised (expected by 2020)⁸¹.

However, the Technical Secretariats of the PEF Pilot Projects are in a position to include requirements for “Additional Environmental Infor-

⁸⁰ PEF Guide – v.6.0 (2016), p. 6-7

⁸¹ PEF Guide Version 6.0 (2016), p.23 and materials of Nordic Workshop Regarding Product Environmental Footprint, Stockholm 23 February 2017.

mation” on those aspects that are currently not quantifiable, such as toxicity or biodiversity⁸².

As a summary, despite the seeming similarity in the approaches, our product group related review indicated some differences in the environmental categories selected for specific product groups. This may have eventual implications in terms of which products are regarded as the most environmentally sound ones.

Communication: At the time of writing this report, the European Commission’s PEF Pilot phase was ongoing and no decisions regarding the communication vehicle had been taken. Different communication vehicles have been tested by the pilots. The communication vehicle will be used to communicate the PEF profile, which is the outcome of the PEF study. A mandatory or voluntary label is only one option, and the outcome of that decision will greatly influence the assessment of synergies between the two schemes.

⁸² PEF Guide Version 6.0 (2016), p.41

5. Key questions to be addressed in the workshop

The following questions were prepared to guide the expert discussion during the Workshop in Helsinki (4 May 2017). The outcomes of the discussions will be used as input to the next extended version of this report. The aim is to consider the synergies, opportunities and challenges in the use of environmental information between PEF and Swan.

1. To what extent can the PEF Screening Studies, PEF Category Rules or PEF profiles be used in setting or revising criteria for the Nordic Swan Ecolabel's product groups?
 - And should a 'good PEF-value' be one requirement in the Swan criteria set?
2. How could the PEF-information prepared by companies be used by applicants of the Nordic Swan Ecolabel?
 - What are the special requirements by Swan for the PEF-studies?
 - What are differences in data quality requirements of Swan and PEF?
 - Verification of data?
 - Accepting secondary data?
 - Requiring product-chain specific data?
 - What implications can the differences have?
3. How can we avoid situations where the two schemes give "disagreeing results"?
 - If they cannot be avoided, what to communicate to consumers and companies about the reasons for the differences?

Below are some other questions that have arisen during the process. Some of these may also be discussed in the workshop.

4. How can the non-quantitative information dealt with the Swan-criteria be addressed by PEF (e.g. sustainable forestry)?
 - can it be in the “Additional Environmental Information” of PEFCRs?
 - more generally, could some Swan criteria complement the Additional Environmental Information in PEFCR’s?
5. Is there any other way in which the assessments of environmental information (for Swan and PEF) can complement each other?
6. Could the Nordic Swan Ecolabel Criteria be helpful in defining benchmarks for PEFs?
 - is this question of relevance, considering that PEF probably will have its own method for defining benchmarks?
7. What kinds of possible implications there are of the various proposed communication vehicles (e.g. like energy label, or traffic light scale) on the Nordic Swan?
8. From the producers’ point of view, what are the implications of the two schemes for product environmental information and labelling?
9. From the consumers’ / purchasers’ point of view, what are the implications of the two ‘official but profoundly different’ ecolabels?
10. What are the possible synergies between the two systems?
 - Focus on the methods behind the two schemes, and product environmental information.
 - What are the implications for the experts developing the Ecolabel criteria or PEF Category Rules?

6. Conclusions

There are perceivable similarities in terms of the intentions of the two schemes, as follows:

1. Both schemes aim to steer the market for green products through information. Ultimately both schemes aim at providing consumers with a tool that supports “greener” purchasing decisions.
2. The guidance for Swan and PEF both lay emphasis on the quality of data, and there are stringent requirements on data and verification specified by both schemes.
3. Both schemes have included an option to provide additional information besides the default environmental categories. The “Other” category of the MECO analysis of the Swan ecolabel looks at both quantifiable and unquantifiable matters such as biodiversity, quality and ethical issues as well as emerging environmental issues. PEFCRs may require information about “Additional Environmental Issues”, such as biodiversity.

The operational approaches of the two schemes differ, which in itself is a difference and which limits the meaningful methodological comparison. As a result, the following differences could be noted:

1. PEF is an LCA tool, whereas the Swan applies a Life Cycle Perspective. PEFCRs define the rules for companies wishing to prepare an LCA-based EF study on a set of predefined relevant impact categories. Swan Criteria are set based on readily available LCAs but the quantifiable results are complemented with a “RPS” assessment tool and a multi-stakeholder process setting the criteria at a realistic level. As a result, some of the environmental concerns recognised in the LCA studies may not feature in the Swan Criteria. Also, some environmental aspects, which would not feature in an LCA study may be relevant in the Swan Criteria.

2. The MECO methodology used by the Swan identifies the relevant environmental aspects in terms of material use, energy, chemicals and “other”. PEFCRs define “most relevant” impact categories from a list of 16 impact categories and provides a set of models for the assessment of environmental impacts.
3. A comparison of the PEFCRs and Criteria Documents of three product groups illustrated that the environmental impact categories appearing in the Swan Criteria are to an extent different from the “most relevant” environmental impact categories of PEFCRs. To a lesser extent also different life cycle stages were highlighted.
4. There are differences in type of data and information (quantifiable/non-quantifiable) that is used. The Swan uses both quantifiable and non-quantifiable information. In PEF non-quantifiable information may only be included in the section on additional information.

At the time of writing this report the PEF Pilot phase are ongoing until the end of 2017 and some decisions regarding recommendations are yet to be taken by the European Commission. The following open matters can be considered important:

1. Whether or not the PEF will eventually result in a voluntary or a mandatory scheme, will affect any eventual conclusions or recommendations on the synergies in the context of an eventual co-existence of the PEF and the Nordic Swan.
2. The eventual recommendation on PEF communication and whether or not it will include levels of performance for benchmarks is important for understanding how the two systems would eventually be understood by the consumer. A label is only one option among many and there may eventually be differences in the choice of a communication vehicle, depending on the target audience (B2B and B2C).
3. Toxicity related impact categories are currently, until at least 2020, excluded from the quantitative characterisation/weighting procedure of selecting the most relevant environmental impacts in PEF. The extent to which the PEF studies could be used as input to the Nordic Swan on this aspect should be clarified later.

This Working Paper provides an overview that can be leveraged further to obtain a deeper understanding of product environmental information in the two schemes. We hope that this will help pave the way for identifying possible synergies and cooperation.

All in all, the large body of product-category specific information that would eventually be produced within the scope of the PEF scheme, could feed into the criteria development process of the Swan, e.g. in terms of the relevance (R) of environmental impacts and potential (P) to reduce them. In addition, it may be relevant to consider whether PEF studies prepared by companies could act as a first point of entry for Swan for verifying the information on a product's performance, in terms of carbon footprint, for example. The Swan may eventually wish to put requirements on the supply-chain specificity (i.e. requirements on primary data) for verification purposes.

Furthermore, the Swan criteria could provide information to the Technical Secretariats on the topics that could be relevant to include in the "additional environmental information" sections of the PEF CRs and may contribute to translating the PEF impact categories to requirements on product features. In addition to these few first examples of how these systems may use the product environmental information collected in the system, it is expected that there are other possibilities.

This analysis will be further developed using the discussions of the Helsinki Workshop, on 4 May 2017 and the new materials that the EU PEF Pilot project produce during the second part of 2017. We aim to publish it as a more comprehensive TemaNord Report in the beginning of 2018.

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Annex I

Table 7 Comparison of Environmental Aspects defined in the PEF Guide and Nordic Swan Ecolabel's Environmental Philosophy.

PEF Guide 6.0 (2016)	Nordic Swan Ecolabel (2000)
Climate Change	Climate Change
Ozone Depletion	Ozone Depletion
Ecotoxicity for aquatic fresh water	Emission of chemicals hazardous to the environment and heavy metals
Human toxicity- cancer effects	Emissions of chemicals hazardous to human health
Human toxicity- non-cancer effects	
Particulate matter/respiratory inorganics	Local air emissions and noise
Ionising Radiation- human health effects	Radioactive radiation
Photochemical ozone formation	Ground-level ozone formation
Acidification	Acidification
Eutrophication- terrestrial	
Eutrophication- aquatic	Water Pollution and Eutrophication
Resource Depletion – Water	Overdimensioned Land and Water use
Resource Depletion- Mineral, Fossil	Excessive use of scarce resources and non-renewable scarce commodities
Land Use	Overdimensioned Land and Water Use
	Waste
	Spread of alien organisms
	Biodiversity loss
	Use of hazardous technology