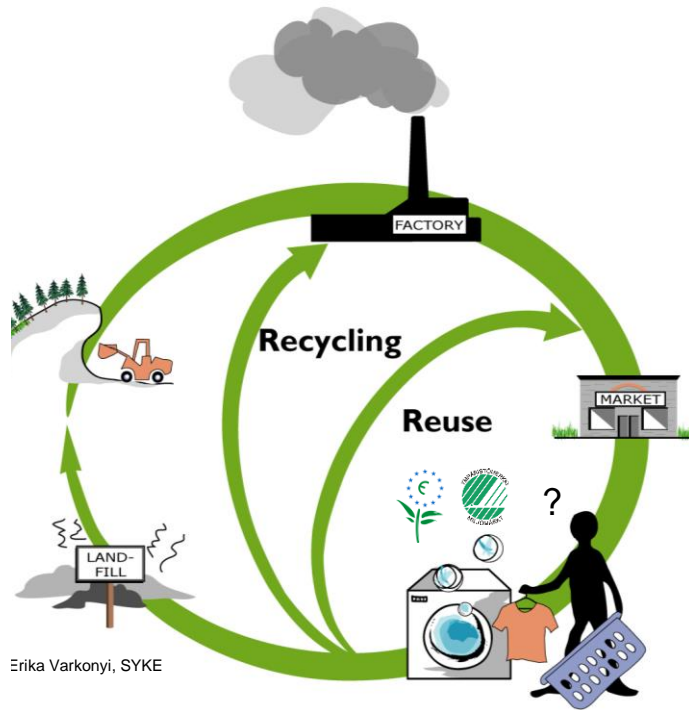


# Do ecolabels extend product service times?

- An Analysis of the Product Group Specific Criteria of the European Union and Nordic Ecolabels



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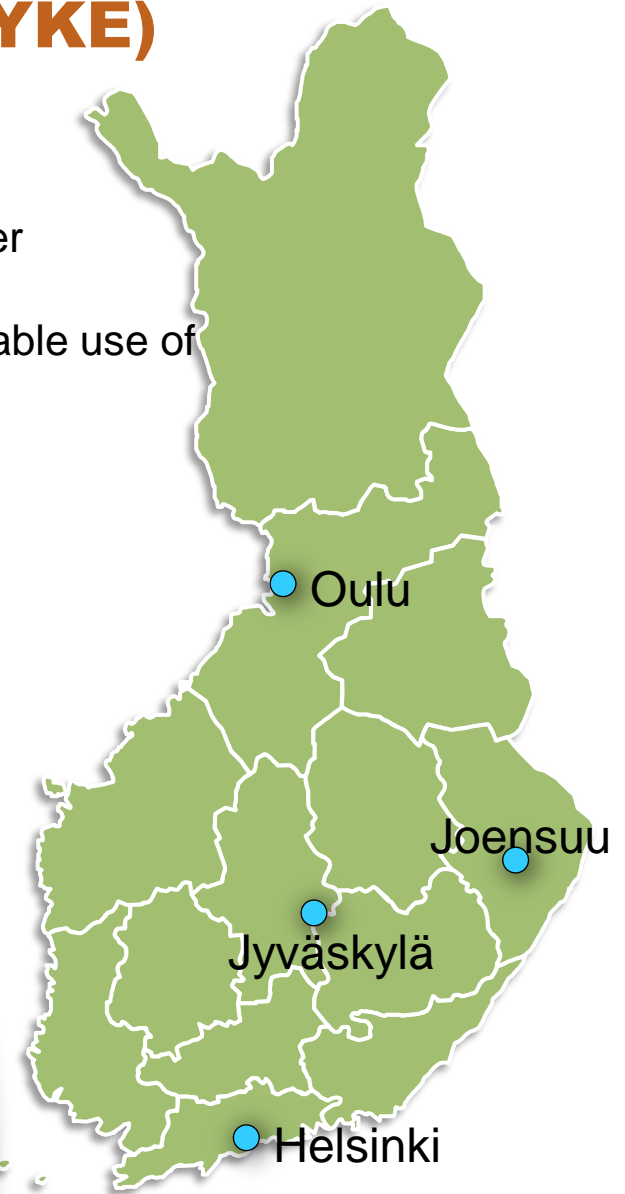


*First author Johanna is on mother leave until autumn 2018*

# Finnish Environment Institute (SYKE)

## Themes

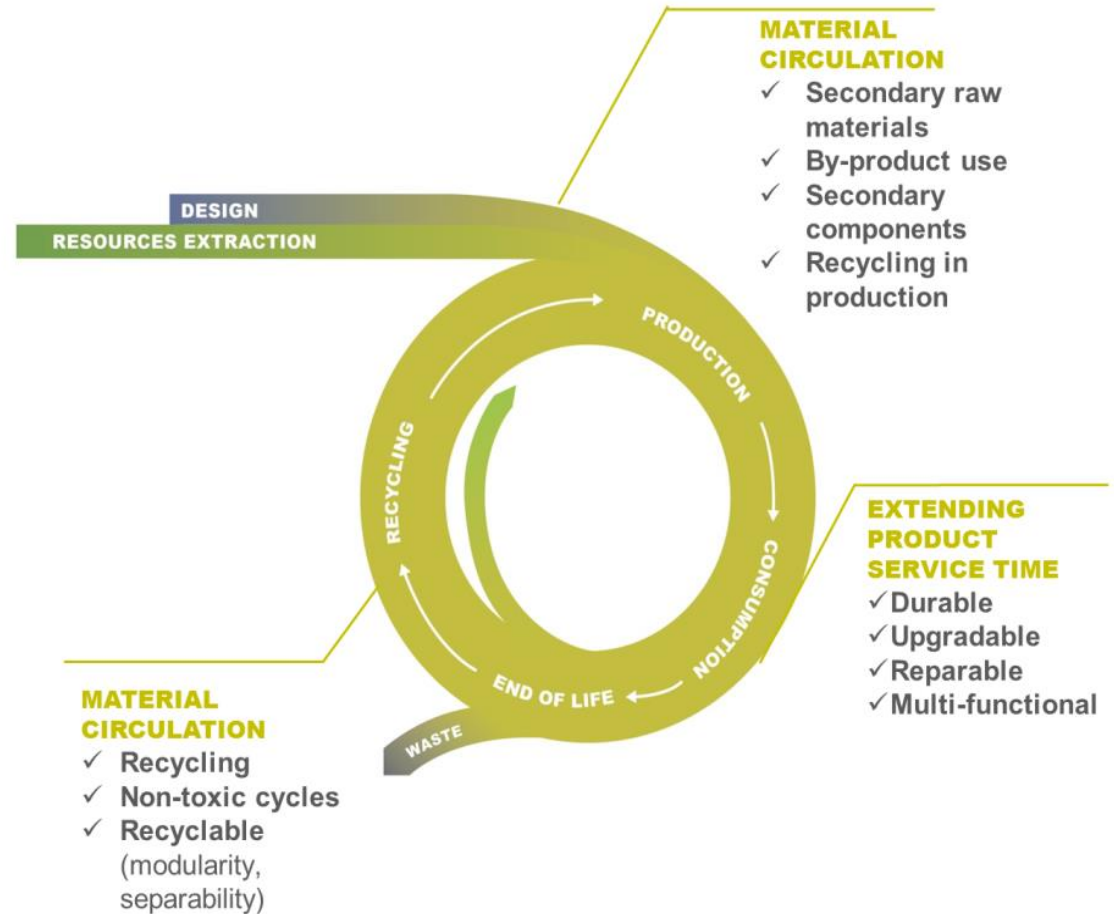
- Climate change mitigation and adaptation
- Sustainable management of the Baltic Sea and freshwater resources
- Sustainability of consumption and production and sustainable use of natural resources
- Sustainability of land use and the built environment
- Ecosystem services and conservation of biodiversity
- Producing and exploiting environmental information



# Theoretical framework: Factors in a Circular Economy

The conceptual starting point:

- Circular Economy aims to minimise residues from economic activity (Pearce and Turner 1990).
- Value is created by increasing the amount of time during which a resource provides value (Franklin-Johnson et al. 2016:592).



## Theoretical setting: Product Service Time Extension in a Circular Economy

- Need for better material circulation and improved physical and use life time of products for reducing the material throughput in society
  - Circular economy literature refers to longer lasting or durable products (e.g. Allwood et al. 2011), resource longevity (Franklin-Johnson et al. 2016), and multiple life cycles products, implemented through e.g., remanufacturing and reuse (Asif et al. 2015:1265).
  - Durability, reparability, and upgradability of products are considered as factors that extend a product's service time (Ellen MacArthur Foundation, EC 2015).
- Ecolabels can act as a market pull for sustainable products (e.g. Cordella & Hidalgo 2016: 65) and thereby evidently have the potential to steer the market towards greener products.





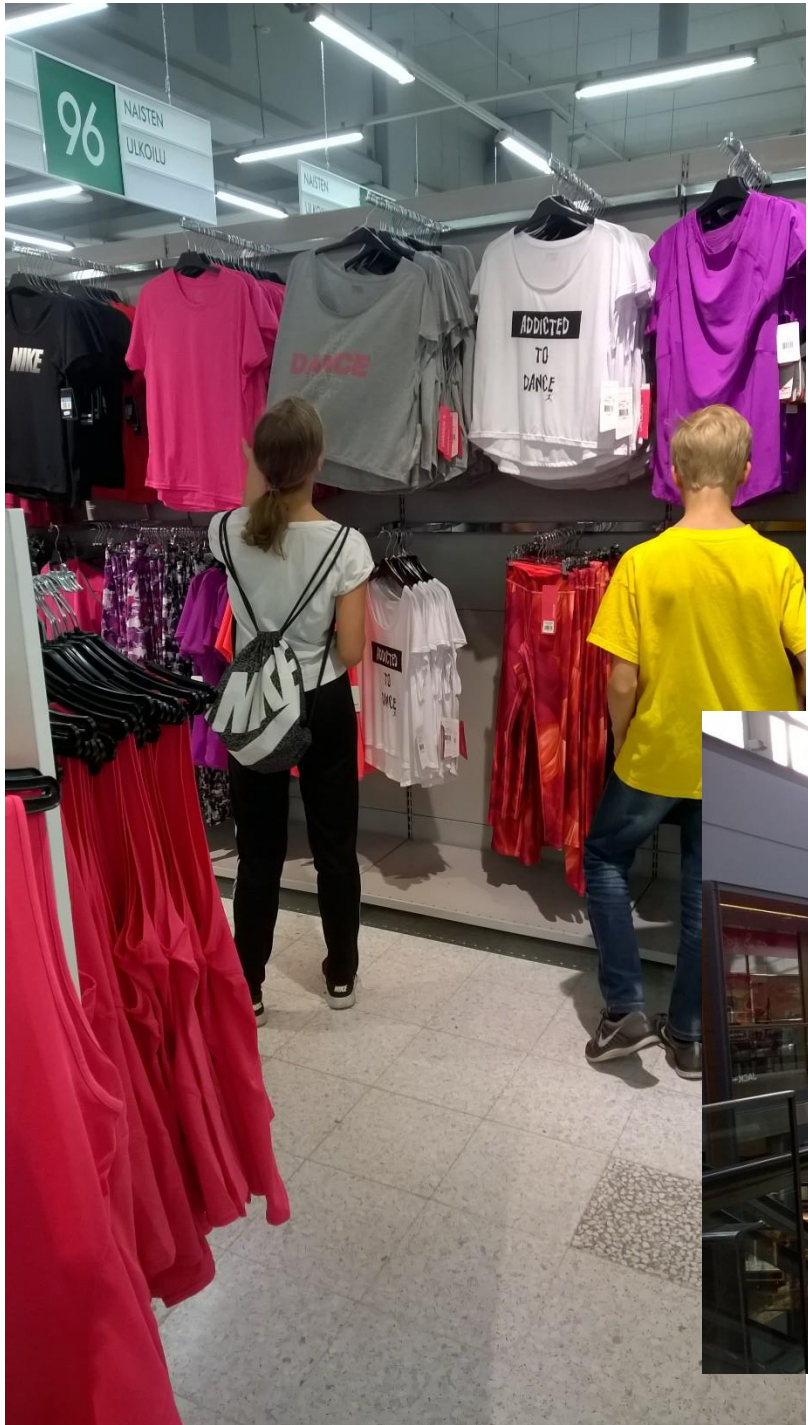


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## Theoretical setting: Product Service Time Extension in a Circular Economy / 2

- **Reparability:** “product design that allows maintaining the product function, including easy access to parts, fault diagnostics, part inter-changeability, identification of components and leads as well as information on repair (Ellen MacArthur Foundation Circular Economy Toolkit).
- **Upgradability:** ability of a product to continue being useful by improving the quality, value, and effectiveness or performance (Bocken et al. 2016:311).
- **Multi-functionality:** product features by which the product serves several uses, which is a factor that can increase ***the use of a product during its lifetime*** (i.e. it does not extend the ***life time*** of a product).







Photo: Ari Nissinen, SYKE



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# Results



Aspect	Product Groups / Nordic Swan	Product Groups / EU Ecolabel
<b>Durability</b>	Furniture and Fitments, Windows and Doors, Durable/Resistant Wood for Outdoor Use Floor Covering, Construction and Façade Panels, Closed Toilet Systems, Suppliers for Microfibre based cleaning, Toys, Outdoor Furniture, Boilers for Solid Biofuels, Stoves, Textiles, Hides, Skins and Leather, Rechargeable Batteries, White Goods, Compost Bins, Imaging Equipment, TVs and Projectors, Office and Hobby Supplies.	Flushing Toilets and Urinals; Sanitary Tapware; Water Based heaters, Imaging Equipment, Computers, Televisions, Furniture, Mattresses, Textiles and Footwear.
<b>Reparability</b>	White Goods, Furniture and Fittings, Compost Bins, Closed Toilet Systems, Boilers for Solid Biofuels, Imaging Equipment, TVs and Projectors and Computers.	Flushing Toilets and Urinals; Sanitary Tapware; Heat Pumps; Water-based heaters; Imaging equipment; Computers; Televisions; Furniture and Mattresses.
<b>Upgradability</b>	Computers	Computers; Televisions; Mattresses
<b>Multi-functionality</b>	Rechargeable Batteries	

## Examples: Durability

- **EU Flower 11-Imaging Equipment\_ CELEX\_32013D0806\_EN\_TXT**:
  - Criterion 10: "The design of the cartridge recommended by the manufacturer (OEM) for use in the product shall promote its durability". Criterion 14: "Warranty, guarantee of repairs and supply of spare parts". The applicant shall provide a guarantee (or warranty) for repair or replacement of minimum 5 years.
- **Nordic Swan: Furniture and Fitments (Version 4.11, 17 March 2011 – 30 June 2019) R53** :
  - "Durability: Furniture textiles, i.e. textiles for seating, must have abrasive resistance corresponding to the rupture of the maximum of two threads at a minimum of 20,000 wear revolutions for domestic use and 40,000 for public use".



## Examples: Reparability



- **EU Flower 14-Furniture\_CELEX\_32016D1332\_EN\_TXT:**
  - Criterion 9.3. Provision of spare parts - for 5 years.
  - 9.4. Design for disassembly with a view to facilitating repair reuse and recycling, including simple and illustrated instructions.
- **Nordic Swan TVs and projectors (Version 5.5 20 June 2013-30 June 2020) (013):**
  - “Requirements regarding life-time extension: ...The availability of compatible electronic replacement parts shall be guaranteed for seven years from the time that production ceases.”



# Examples: Upgradability

## EU Flower 12- Computers\_CELEX\_32016D1371\_EN\_TXT / 1:

### 3(d) Upgradeability and Repairability

For the purpose of upgrading older components or undertaking repairs and replacements of worn out components or parts, the following criteria shall be fulfilled:

(i) *Design for upgrade and repair:* The following components of computers shall be easily accessible and exchangeable by the use of universal tools (i.e. widely used commercially available tools such as a screwdriver, spatula, plier, or tweezers):

- Data storage (HDD, SSD or eMMC),
- Memory (RAM),
- Screen assembly and LCD backlight units (where integrated),
- Keyboard and track pad (where used)
- Cooling fan assemblies (in desktops, workstations and small-scale servers)



Photo: Ari Nissinen, SYKE

# Examples: Upgradability

## EU Flower 12- Computers\_CELEX\_32016D1371\_EN\_TXT / 2:

i) *Rechargeable battery replacement:* The rechargeable battery pack shall be easy to extract by one person (either a non-professional user or a professional repair service provider) according to the steps defined below <sup>(1)</sup>. Rechargeable batteries shall not be glued or soldered into a product and there shall be no metal tapes, adhesive strips or cables that prevent access in order to extract the battery. In addition, the following requirements and definitions of the ease of extraction shall apply:

— For notebooks and portable all-in-one computers it shall be possible to extract the rechargeable battery manually without tools;

— For sub-notebooks it shall be possible to extract the rechargeable battery in a maximum of three steps using a screwdriver;



## Examples: Upgradability

- **Nordic Swan Computers (Version 7.4, 23 October 2013 - 30 June 2020):**
  - A computer must fulfil among other requirements the following: “are easy to upgrade, dismantle and recycle”. In addition (07): “Upgradability: A category A, B, D or F computer must be modular. The user shall be able to replace the modules without the use of special tools and it shall be possible to upgrade the computer by primary memory expansion installation, exchange and expansion of mass storage, installation and/or exchange of CD ROM, DVD and hard disk drive, at least one additional interface for external storage media and other peripheral devices”.

## Examples: Multi-functionality

- **Rechargeable Batteries (Version 4.5, 07 December 2010 - 30 June 2018) (O6):** “Charger, battery sizes: If the rechargeable batteries are sold together with a charger, the charger will be of high quality and capable of charging several sizes of battery”.



Photo: Ari Nissinen, SYKE



## Conclusions

- The ecolabelling schemes include criteria that promote durability of the product:
  - quality requirements
  - warranties and guarantees.
- Some product groups include obligations that enhance reparability and upgradability. Extending these kinds of requirements to other product groups with a view to increase the resource use time within a product system, are a means to enhance product life times.



## Conclusions /2

- Ecolabelling schemes are designed in a way that they drive a market based change towards more sustainable consumption and production patterns. It is the role of ecolabelling to point out the best-performing products within a product category.
  - **Ecolabels can be a suitable tool** for influencing the current trend where product life spans are decreasing. To counter this trend, physical life spans of products need to increase.
  - **An assurance that the product is durable, repairable and upgradable fits well in this role.** Product service time can be extended if the product is by ecolabel requirements assured to be durable, repairable or upgradable or has maximised use intensity through multi-functionality.
  - Low number of labelled products in many product groups, but used as benchmarks – what are the real effects to eco-design and product service times?

## Recommendations

- **For Ecolabelling Schemes:** Future revisions of product-specific criteria-sets present an opportunity to apply circular economy relevant requirements on upgradability and reparability in a broader suite of product groups.
- **Possible future research topic:**
  - Quantification of the expected and actual use times and physical life times of ecolabelled products, in comparison to products without an ecolabel. Consider also the level of ambition of the warranty periods required by ecolabel schemes in comparison with the legal requirements and commercial warranties.
  - What effects eco-label criteria have to eco-design and product service times, considering the low number of labelled products in many product groups, but at the same time the use as benchmarks in eco-design?



# Further Information

## Project: The Nordic Swan Ecolabel, Circular Economy, and Product Environmental Footprint (SCEPEF, 2016-2018)

[www.syke.fi/projects/scepef](http://www.syke.fi/projects/scepef)

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### NORDIC WORKING PAPERS

#### Nordic Swan and PEF

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The logo for the PLATE conference, featuring the text 'PLATE conference' and 'Delft University of Technology' above a stylized globe icon. Below the globe, it says '8-10 November 2017' and 'Product Lifetime And The Environment'.

#### Do ecolabels extend product service times? An analysis of the product group specific criteria of the European Union and Nordic ecolabels

Suikkanen J. and Nissinen A.

**Keywords**  
Ecolabel  
Product Service Time Extension  
Durability  
Reparability

**Abstract**  
Ecolabels are an established means of guiding consumer choices towards product and service options with better environmental performance. The life cycle approach based assessment criteria of ISO Type I product-specific ecolabels aim to steer the product into the market in an environmentally less harmful direction. In this paper, we present an analysis of Product Group Specific Criteria Documents of two ISO Type I Ecolabelling Schemes: the Nordic Ecolabel and the EU Ecolabel. The examination of the product group specific criteria documents indicates that requirements on durability, upgradability and reparability can well be set, and are already included in ecolabel requirements. While durability is already present the criteria for a variety of different product groups, upgradability and reparability are currently required for fewer products, such as computers and televisions mentioned above. Future revisions of product-specific criteria set present an opportunity to apply circular economy relevant requirements on upgradability and reparability in a broader suite of product groups. Further research on product life spans of ecolabelled products is needed.

#### Introduction

The current model of consumption and production, where items are produced from extracted natural resources, used for a short time and thrown away, cannot be sustained in the long run. Product life spans have decreased steadily and simultaneously material flows through society have been increasing (Bakker et al. 2014). By minimizing matter and energy flow in the system, environmental deterioration can be minimized without restricting economic growth or social or technical progress (Stahel, 1982 in Linder and Rashid, 2016:37). The Circular Economy discourse has been developing in recent years as a response to resource scarcity and the limitations of the Earth's carrying capacity. It proposes a model for minimizing the use of virgin materials for economic activity (Ulmer Andersen (2007), p.133), and for maintaining the value of natural resources contained in consumable items (e.g. Ghisellini et al. 2016 and Franklin-Johnson et al. 2016).

The conceptual starting point introduced by Pearce and Turner (1990) is that a Circular Economy, as opposed to an open-ended economy, aims to minimize residues from economic activity. Value is created by increasing the amount of time during which a resource provides value (Franklin-Johnson et al. 2016:502). In addition to designing for material circulation, the physical and use life time of products plays an important role in reducing the

material throughput in society and is a factor in Circular Economy. Recent circular economy literature refers to longer lasting or durable products (Allwood et al. 2011, in Linder and Rashid 2016:44) resource longevity (Franklin-Johnson et al. 2016), and multiple life cycle products, implemented through e.g., remanufacturing and reuse (Araf et al. 2015:126).

Durability, reparability, and upgradability of products are considered as factors that extend a product's service time (Ellen MacArthur Foundation, EC 2015). Reparability is understood as 'product design that allows maintaining the product function, including easy access to parts, fault diagnosis, part inter-changeability, identification of components and leads as well as information on repair (Ellen MacArthur Foundation Circular Economy Toolkit).

Upgradability is defined as the ability of a product to continue being useful by improving the quality, value, and effectiveness or performance (Bocken et al. 2013:311).

Multi-functionality is seen as product features by which the product serves several uses, which is a factor that increases the use of a product during its lifetime. This

p. 387

The logo for the Nordic Council of Ministers, featuring a stylized blue and white graphic of a person or a wave, with the text 'Nordic Council of Ministers' to its right.

## CIRCULAR ECONOMY AND THE NORDIC SWAN ECOLABEL

An Analysis of Circularity in the Product-Group-Specific Environmental Criteria