EU Ecolabel for food retail stores

Report 7

SUPERSMART

Public report

for the project:

SuperSmart - Expertise hub for a market uptake of energy-efficient supermarkets by awareness raising, knowledge transfer and pre-preparation of an EU Ecolabel

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Table of Contents

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Table of Figures

Page

Table of Tables

Page

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EXECUTIVE SUMMARY

This report is part of the training material developed for the second Work Package (WP2) in the SuperSmart project and covers the topic of "EU Ecolabel for food retail stores". One of the goals in the SuperSmart project is to prepare two underlying documents to support the proposal for an EU Ecolabel for food retail stores which will be submitted to the European Commission within the project duration.

In this report, information on the EU Ecolabel, the efforts what the development of an EU Ecolabel requires in general, and what the SuperSmart project aims to do to develop an EU Ecolabel for food retail stores, is given. Examples of existing ecolabels for food retail stores and their requirements are included in addition to case examples and golden rules.

There are several ecolabels for food retail stores, but no common label for the whole of the European Union. The existing ecolabels are strict, adapted to local climates and national regulations, and the requirements are updated regularly. Food retail stores must maintain a high performance in order to achieve and hold the labels. Independent groups of experts and stakeholders are involved in the making and upgrading of the requirements.

The EU Ecolabel is a Type I Ecolabel according to DIN EN ISO 14024, which takes the entire life cycle perspective into account. Therefore, the EU Ecolabel should not only require low environmental impact during construction of the store, but also during operation and demolition. This should include low, sustainable use of resources, such as low energy demand, waste reduction and recycling; as well as increasing the positive environmental effect by affecting the customers, through increasing their awareness of the label and its meaning. This could increase customers' awareness of environmental challenges and how their lifestyles can have a lower impact on the environment.

Therefore, requirements for the EU Ecolabel should comprise more than just criteria for high energy efficiency and reduced greenhouse gas emissions. Besides, general increase in awareness and attention related to the environment, the availability of recycling stations, easily available environmentally friendly transport to the store and encouraging customers to reduce their own environmental footprint should also be addressed. Increased awareness could be achieved through spreading information in the stores about the applied environmentally friendly solutions and clear promotion of the label and labelled and organic goods. Existing ecolabels for retail stores generally require use of non-toxic cleaning chemicals, organic/recycled materials during operation, waste reduction, training of the staff and monitoring of results. These measures should also be important for an EU Ecolabel.

In order to make demanding but achievable criteria, input from stakeholders in the entire value chain is important. The SuperSmart team will attend conferences, organize workshops and use their existing network to ensure that all the required types of experts will be included in the criteria development. The involvement and commitment of the food retail store stakeholders is crucial to ensure the future acceptance and success of the label. It will be important to take social, organizational and awareness barriers into account when developing the label. Besides the label development, there will be training, education and awareness-raising activities to remove these barriers in the food retail sector, and thus encouraging the stakeholders to apply for the label when it is officially introduced.

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1 INTRODUCTION

Efficient solutions for supermarket heating, cooling and refrigeration - such as integrated systems or the use of natural refrigerant-based equipment - are already available in the European market. However, their use is not yet widespread due to remaining non-technological barriers, including lack of knowledge and awareness, social, organizational and political barriers.

The European project SuperSmart aims at removing these barriers and additionally supports the introduction of the EU Ecolabel for food retail stores. The EU Ecolabel can encourage supermarket stakeholders to implement environmentally friendly and energy efficient technologies and thus reduce the environmental impact of food retail stores.

Within the project, several activities are carried out to remove the barriers: campaigns to raise the general awareness and spread the information about energy efficient and eco-friendly supermarkets, as well as training activities within the following specific topics:

1. Eco-friendly supermarkets – an overview
2. How to build a new eco-friendly supermarket
3. How to refurbish a supermarket
4. Computational tools for supermarket planning
5. Eco friendly operation and maintenance of supermarkets
6. EU Ecolabel for food retail stores

For each of the topics a set of training material is developed, which will be used in the training activities. The different kinds of training activities are:

1. Conference related activities
2. Dedicated training sessions
3. Self-learning online activities

Dedicated training sessions are free-of-charge for the different stakeholders in the supermarket sector. This means that highly-qualified experts from the project consortium will carry out a training session on a specific topic at the premises of the stakeholder. If you are interested in receiving such a training regarding any of the above mentioned topics, please contact the project partner via the project website: www.supersmart-supermarket.info.

The present report forms part of the training material for the topic *EU Ecolabel for food retail stores*. It can be used for self-studying and is freely available. There will be conferences, where this topic is included as a training activity. Information on conferences where members of the SuperSmart-team will be present as well as the planned training activities can be found on the project website.

1.1 EU Ecolabel for food retail stores

In general, food retail stores attempt to reduce their costs, and some retailers also aim to improve the energy efficiency of their stores knowing that this will reduce the operating costs. However, the investments and efforts are often not visible to the customers, and thus there is little reward for food retail stores to reduce their environmental impacts. For consumers, there is also no way to choose or even know which food retail stores are the most environmentally friendly.

The EU Ecolabel is a label that helps consumers to know which products and services are more environmentally friendly than the alternatives, and thereby promote the sales of such products and the use of these services. This in turn, should lead to a reduction in human impact on the environment, saving our resources for future generations.

The existence of ecolabels tend to encourage producers to make more sustainable products and services, and helps consumers choosing the most environmentally friendly options. An ecolabel for food retail stores could contribute to remove the non-technical barriers for implementation of environmentally friendly technology. One of the ambitions of the SuperSmart project is to prepare two underlying documents for a proposal for an EU Ecolabel for food retail stores. To make such a label,

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expertise in e.g. refrigeration, ventilation, efficient buildings and lighting is required, but cooperation with suppliers, supermarket stakeholders and governmental bodies is also necessary.

It is a goal to make a demanding, yet achievable label for all of Europe. Therefore, the project requires putting together a sufficiently multidisciplinary team and establishing expert panels for the criteria development. In addition, the project must manage to spread communication among retail store owners about the initiative, so that they can be included in the criteria development process. Input from supermarket stakeholders on their needs, what type of training is required and which limitations they have in their specific region are valuable input to make the label achievable and fitted for retailers across Europe. Suppliers, contractors, producers and service providers must be able to offer the components/services that environmentally friendly, efficient systems require. They can give input on realistic and affordable solutions. The knowledge of engineers, consultants and researchers regarding the better operation of the systems must be transferred to supermarket staff in order to be useful, and for the energy efficient systems to be truly efficient, as poor operation might deteriorate the performance.

The criteria for existing ecolabels for food retail stores can serve as a base when developing the criteria for an EU Ecolabel for food retail stores. There is no legislation enforcing a certain level of efficiency for food retail stores as a whole, but there are certain requirements for e.g. the building envelope and cabinets that have to be fulfilled. These requirements can also be used when developing the criteria for an EU Ecolabel for food retail stores.

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2 THE EU ECOLABEL – THE FLOWER

The EU Ecolabel is a Type I Ecolabel according to DIN EN ISO 14024, which means that it takes the entire life cycle perspective into account and that there is a third-party verification for achieving it. The EU Ecolabel exists already for a wide range of product groups relevant for food retail stores, for instance heat pumps. For each product group, there are a set of criteria to be met, developed by representatives from many expert groups, including representatives from relevant businesses. The label shall inform customers that the products have a low environmental impact from a life cycle perspective, and is known and acknowledged in all Europe. The goal of the Ecolabel is to sustain the environment for both todays and coming generations. It follows the goals of the 7th Environment Action Programme (European Commission 2016b):

- *to protect, conserve and enhance the Union's* ***natural capital***
- *to turn the Union into a* ***resource-efficient****, green, and competitive low-carbon* ***economy***
- *to* ***safeguard*** *the Union's citizens from* ***environment-related pressures*** *and risks to health and wellbeing*

...additional horizontal priority objectives complete the programme:

- *to make the Union's cities more sustainable*
- *to help the Union address international environmental and climate challenges more effectively.*

The label is managed by several entities:

- The European Union Ecolabelling Board (EUEB) is advisor and recommender for making and updating the requirements to achieve an EU Ecolabel. The board is composed of representatives from EU and European partners, including several European organizations for business.
- Finally responsible for the criteria is the European Commission, which shall also ensure that these are followed properly. However, other instances might carry out this task on behalf of the European Commission, yet they have the overall responsibility for compliance and making of the final requirement schemes. The European Commission also offers funding of activities that are aligned with its goals and policy.
- The term "Competent Bodies" is used for independent, neutral organizations who administer the label locally (on behalf of the European Commission) through controlling and ensuring correct implementation. They also take part in the European Union Ecolabelling Board for advising on how criteria should be set and continuously revised.
- Stakeholders are also involved in developing criteria, as all involved parts should be heard and included in the development and maintenance of these. Stakeholders are thus representatives from the relevant fields, for example from industry, trade, environmental and consumer protection associations, etc.
- The EU Ecolabel Helpdesk is the second instance to contact if help, advice or clarification is required (the first is the local Competent Body, normally on national level, which administers the label in different parts of Europe). The EU Ecolabel Helpdesk answers questions, aids the cooperation and communication between stakeholders and the European Commission and assists the European Commission with different topics, like promotion of the label.

2.1 Development of an EU Ecolabel for food retail stores

Almost any product can be proposed as a product group within the EU Ecolabelling system. The exceptions are medical products and plastic and packaging materials as well as food items.

A development process must be done in close cooperation with the EU Commission and requires on average two years. Any interested party (stakeholder, European Labelling Board, Commission, Competent Bodies, Member State...) can initiate the process by submitting a product group proposal for inclusion of a new product group in the EU Ecolabel scheme to the EU Ecolabel Helpdesk. The

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Commission examines the proposal and presents it to the EU Ecolabelling Board (EUEB) which decides whether the product group proposal should be adopted or rejected. If the proposal is adopted, they decide how the formal developing process of the label shall take place.

The proposer to lead the criteria developing process must demonstrate high knowledge about the product group proposed, ensure that several of the affected groups will be involved in the consortium and that sufficient leadership, in accordance with the vision of the EU Ecolabel, will be provided. Several analyses must be conducted: feasibility analysis, environmental and market studies, improvement analysis and revision of existing life cycle analyses, or implementation of a new analysis when necessary. The results are used when drafting the EU Ecolabel criteria. The criteria should be set at a level so that they are met by the 10 to 20% of the most environmentally friendly products currently on the market. The EUEB is part of the discussion around the criteria during their development. When the draft of the criteria has been made, it will be sent to relevant instances of the European Commission to be evaluated and must then be approved by the EUEB. The Regulatory Committee of national authorities approve the criteria by voting, and finally the criteria are adopted through a Commission Decision, and published in the Official Journal (European Commission 2016e).

Currently, food retail stores are not included in the EU Ecolabelling scheme. A proposal for appropriate criteria for such a product group will be made in the SuperSmart project. The high standards and strict demands for developing a new type of label will ensure its high quality. The existing ecolabels for food retail stores will be an important base for making the new EU Ecolabel.

As food retail stores have a great share of the energy demand in modern societies (>1 million supermarkets exist in Europe, using about 4% of the electricity in Europe (Orphelin and Marchio 1997)), the potential in reducing the environmental impact is large. To ensure a smaller overall environmental impact, the entire life cycle of food retail stores and its components/transport system and goods will be taken into account.

The goal is to reduce the environmental impact of food retail stores through e.g.:

- reducing the use of energy and other resources;
- reducing barriers for implementing new, energy efficient and eco-friendly solutions through the use of an acknowledged label;
- ensuring trained personnel in the stores;
- economic savings for the stores to enhance implementation;
- ensuring safe, comfortable conditions for both people and food inside the stores;
- increasing shelf life and thereby decrease waste and economical and resource losses;
- reducing pollution from all sources, including refrigerant leaks;
- reducing waste that represents losses of e.g. money, food or energy, that must be disposed of and/or is bad for the environment.

The proposed criteria considered are, among others:

- energy efficiency of the building envelope,
- energy efficiency of the energy consuming systems, including
    - refrigeration,
    - lighting,
    - heating (heat recovery etc.),
    - air conditioning,
- energy efficiency of the electrical equipment (cashier, weights, ovens etc.),
- environmental impact of the refrigerants,
- life cycle construction products,
- water consumption.

2.2 The SuperSmart project

When a new product group is proposed and developed within the EU Ecolabelling system, it requires a large amount of work from the initiators. As seen from the structure described above, it will require expertise from many fields to set and update the criteria. Food retail stores involve different technical systems such as cooling, heating, ventilation and the building envelope. The requirements to these

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systems depend to a high degree on climatic conditions and thus vary with region. National legislation is also different in European countries, and it might be necessary to customize some requirements in accordance with the national legislation. Therefore, experts from all over Europe should be included and special requirements must be adapted for different parts of Europe. This is why the SuperSmart team has members from all over Europe, and high competence within all the relevant technical fields, capable of providing good solutions in all these regions.

In order to make demanding yet achievable criteria, input from stakeholders in the entire value chain is important. The SuperSmart team will attend conferences, organize workshops and use their existing networks to ensure that all the required types of experts will be included in the criteria development. Technical experts and supermarket stakeholders will form a Labelling Board which will discuss the needs, requirements, concerns and questions regarding the criteria development. The first formal Labelling Board Assembly will be held at the Chillventa Exhibition in October 2016. Later on there will be Labelling Board assemblies at EuroShop 2017, the 7th IIR Ammonia and CO_2 Refrigeration Conference 2017 and ATMOsphere Europe 2018.

To ensure the future acceptance and success of the label, the involvement and commitment of the food retail store stakeholders is crucial. Several stakeholders will be invited to join the Labelling Board, in particular stakeholders who already have realised projects with members in the SuperSmart team, and the ones whose stores are already labelled with national ecolabels. It will be important to take social, organizational and awareness barriers into account when developing the label. Besides the label development, there will be training, education and awareness-raising activities to remove these barriers in the food retail store sector, and thus encouraging the stakeholders to apply for the label when it is officially introduced.

At the starting phase, when no or little stores have been labelled, many retailers might ask why they should develop or apply for such a label when "no other" supermarket is labelled. A solution can be to allow the shops labelled with the Nordic Swan Ecolabel, Good Environmental Choice or the Blue Angel to also achieve the EU Ecolabel. This will help the introduction of the label, and the gained positive environmental impact will increase.

After the first implementations of the label, the knowledge increase will be easier if clear promotion of the EU Ecolabel is a criterion, for example by having the label visible to customers. This should contribute to increase the number of labelled stores.

During the SuperSmart project, it will be important to raise the knowledge about the best available technological solutions to make sure that the criteria will be achievable for the different stakeholders. Demonstrating and documenting the reliability of new solutions with direct reference to existing/running systems is important to make retail owners consider this as an option, and in order to set the criteria at reasonable level. This is done through development of training materials such as the reports "D2.3 How to build a new eco-friendly supermarket" (Kauko, Kvalsvik et al. 2016), "D2.4 How to refurbish a supermarket" (Mainar Toledo and García Peraire 2016), "D2.5 Computational Tools for Supermarket Planning" (Fidorra 2016) and "D2.6 Eco-friendly operation and maintenance of supermarkets" (Ciconkov and Ciconkov 2016).

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3 EXISTING ECOLABELS FOR FOOD RETAIL STORES

There are several kinds of ecolabels, differing in their scope and the way they are managed. Those classified as Type I Ecolabel according to DIN EN ISO 14024, take the entire life cycle perspective into account and there is a third-party verification for achieving it. Only a few existing ecolabels incorporate criteria for food retail stores. Three examples of European labels for food retail stores are the Blue Angel, the Nordic Swan Ecolabel and Good Environmental Choice, which all are classified as Type 1 Ecolabel. The Energy Star has also an ecolabel for food retail stores, but is not used in Europe and is not a Type I Ecolabel. The criteria for the existing ecolabels for food retail stores include several technical specifications, and form a natural base for making an EU Ecolabel for food retail stores.

3.1 The Blue Angel (Der Blaue Engel)

The Blue Angel is a German ecolabel for about 120 different product groups, made to make environmentally friendly products more visible and help customers to make good choices considering the environment. The German Federal Minister of the Interior took the initiative to the label, and the Ministers of the Environment for the German federal states approved it. Firms outside Germany can apply for the Blue Angel as well. The label owner is the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety. Requirements to achieve the Blue Angel are developed by the German Environment Agency. The Environmental Label Jury, consisting of representatives from different fields and parts of the value chain, is the independent (third-party) decision-making body. The Jury decides which product groups shall be addressed in the ecolabel scheme and ratifies the award criteria of the product groups and service sectors. RAL gGmbH is the independent awarding body for the Blue Angel ecolabel and verifies the applications by companies (LATI 2007; BlaueEngel 2016a).

To receive this label for grocery stores, one must fill out an application and answer to some of 24 requirements/criteria. Half of them are mandatory (Table 3.1), the other twelve are called optional (Table 3.2), and one must fulfil a number of these, but can freely choose which ones. The number of optional requirements to be met depends on whether one builds a new or refurbishes an old store and whether one rents or owns the shop (Table 3.3). The label requires documentation of requirements fulfilled and information on the products and expected sales. A *Tegut...* store in Marburg-Cappel in Germany was the first supermarket to receive the label in October 2015, and is currently the only food retail store which has the label (BlaueEngel 2016b).

There are several possibilities for receiving help from experts on writing the application, which may be submitted in either German or English. Most requirements have an own annex to be used for documentation and applying. These and all information and criteria on the Blue Angel can be found on the webpage; www.blauer-engel.de/en.

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Table 3.1: Mandatory requirements for receiving the Blue Angel

Field	Requirement	
Energy requirement of the building	Existing buildings: > 0%	Primary energy reduction compared to reference building according to EnEV 2009[1]
	New buildings: > 30%	
Energy management system	Operation according to DIN EN ISO 50001	
Electricity procurement	Certified green electricity with proven additionality	
Energy efficiency of the refrigeration system	Old[2] system: ≥15%	Reduction in key energy efficiency indicator compared to existing refrigeration systems
	New system: ≥35%	
Heat recovery	Heat recovery with capacity of ≥75% of heating load installed	
Refrigeration cabinet covers	Low temperature cabinets: permanent cover	
	Medium temperature cabinets: night cover	
Refrigerants	≤ 5% fluorinated refrigerants in plug-in refrigeration equipment and cabinets	
	Only natural refrigerants in the central refrigeration system	
Foaming agents	No halogenated organic compounds/agents in any system containing refrigerant	
Artificial indoor lighting	≥ 90% switched off outside operating hours ≤ 15 W/m² maximum power consumption	
Location and accessibility	Sales area ≤ 1000 m²: ≥ 10 bicycle stands within 20 m distance	
	Sales area > 1000 m²: ≥ 20 bicycle stands within 20 m distance	
Printed advertising material	Advertising brochures on Blue Angel certified recycled paper	
Sustainable building	Building or renovation of own building(s) based on either Guideline for Sustainable Building[3] or the DGNB[4] criteria	

[1] EnEV 2009– Energieeinsparverordnung (English: Energy Saving Ordinance) is a German Ordinance describing minimum requirements for the energy use of new and renovated buildings in terms of insulation and energy efficient equipment. The requirements are based on a defined reference building.

[2] 2009 is the baseline.

[3] Guideline for Sustainable Building at http://www.nachhaltigesbauen.de/leitfaeden-und-arbeitshilfen/leitfadennachhaltiges-bauen.html.

[4] German Sustainable Building Council (DGNB) at http://www.dgnb.de/dgnb-ev/en/.

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Table 3.2: Optional requirements for receiving the Blue Angel

Field	Requirement	
Energy requirement of the building	Existing buildings: > 30% New buildings: > 50%	Primary energy reduction compared to reference building according to EnEV 2009
Energy management system	Operation of according to EMAS[5]	
Energy efficiency of the refrigeration system	Old[2] system: > 25% New system: > 45%	Reduction in key energy efficiency indicator compared to existing refrigeration systems
Refrigeration cabinet covers	Medium temperature cabinets: permanent cover	
Refrigerants	Only natural refrigerants	
Foaming agents	No halogenated organic compounds/agents allowed in the building	
Artificial indoor lighting	≤ 12 W/m² maximum power consumption	
Daylight	≥ 20% of total light, light-sensors installed	
Lighting concept	Detailed plan for optimal lighting: lamp types and number, power need, luminous flux and illumination (illuminance level)	
Photovoltaic systems	Covering ≥ 40% of the roof	
Location and accessibility	≤ 1 km from nearest public transport stop	
Sustainable building	Building or renovation of rented building(s) based on either Guidelines for Sustainable Building or the DGNB criteria	

Table 3.3: Number of optional requirements different types of grocery stores must achieve to receive the Blue Angel

Characterization of grocery store and ownership		Number of optional criteria that must be met
Rented	Existing	3
	New	4
Owned	Existing	5
	New	6

[5] Eco-Management and Audit Scheme (EMAS) at http://ec.europa.eu/environment/emas/.

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3.2 The Nordic Swan Ecolabel

The Nordic Swan Ecolabel, also called the White Swan or the Nordic Swan, is a label in the Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) for products that are more environmentally friendly than their alternatives from a lifecycle perspective. Similar to the Blue Angel, the purpose is to encourage consumers to choose environmentally friendly products. It was founded on initiative from the Nordic Council of Ministers and is administrated by own environmental labelling groups in each country, working on behalf of their governments. The Swan is awarded to products by a group composed of experts in the different fields, put together by the governments in all the Nordic countries and founded by the public, thus there are no commercial interests involved. To receive the label, one must fulfil some requirements, apply and pay a small fee to finance the labelling (NordicEcolabelling 2016a).

For food retail stores, more than 50% of the revenue must come from groceries in order to belong to this category. Currently, there are 233 supermarkets holding the label. There is a set of obligatory requirements (a simplified overview is given in Table 3.4), and a set of requirements that one must choose from (see Table 3.5). Fulfilment of these point score requirements gives credits, and a minimum point score of 29 out of 55.5 points must be achieved. A set of annexes provide help and work as templates for documentation of fulfilment. The criteria are updated regularly.

Important definitions in the requirements for the Nordic Swan Ecolabel are:

- "Ecolabelled" means in general that the product is certified by the Nordic Swan Ecolabel, the EU Ecolabel, BRA Miljöval (Good Environmental Choice, see section 4.3) or the TCO Certified mark[6].
- "Groceries" are goods that will be consumed/used within a short time frame, like food, hygienic articles, tissue paper and flowers.
- Organic food and drinks must fulfil Council Regulation (EC) No 834/2007[7] or later.

Documentation of that the criteria are fulfilled is required, and independent laboratories and experts test and inspectors come to control that the requirements are truly fulfilled. Requirements and application form is found for example at the international page www.nordic-ecolabel.org containing direct links to the homepages at national level. Most of the national instances for the Nordic Swan Ecolabel also administer the EU Ecolabels in their countries.

[6] A Swedish ecolabel for IT products, achievable in Scandinavia.

[7] Council Regulation (EC) No. 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No. 2092/91.

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Table 3.4: Obligatory requirements for receiving the Nordic Swan Ecolabel (NordicEcolabelling 2016b)

Obligatory requirements	
O1	Detailed description of the store
O2	Product range: the store must hold a high number of organic and/or ecolabelled products.
O3	Clear display of ecolabelled and organic products
O4	Target and calculated values for energy use and total equivalent global warming impact (including refrigerant leakage and reuse) Energy demand should not exceed the target by more than a given percentage, decreasing with time.
O5	Lighting should be minimized. Any light outside opening hours should be justified.
O6	Covers/air curtains on all disks coupled to central refrigeration system and on ≥ 80% of stand-alone units outside business hours.
O7	The quantity of unsorted waste must be below a limit dependent on the turnover of the store and the country.
O8	Waste is sorted into at least two of the categories cardboard, soft plastics and organic waste. These waste fractions have to be clearly displayed.
O9	Notices/brochures in the store explain where the nearest recycling station for packaging, batteries and hazardous waste is.
O10	The vehicles owned by the store must have plans for minimizing pollution.
O11	Cleaners and paper must be ecolabelled unless authorities have special rules preventing this.
O12	PVC and PVDC plastic film must not be used for centrally packaged own-brand products. PVC and PVDC plastic film used for in-store packaging and gloves must be free of phthalates.
O13	Reactive chlorine is avoided for cleaning as far as authorities allow.
O14	The store must have an environmental policy covering the operation of the store.
O15	Environmental targets and an action plan must be made and reviewed every 18 months.
O16	The store must appoint an environmental manager, a licence manager and a quality manager.
O17	All legislation in force must be followed.
O18	Documented procedure for the continual (at least annual) follow-up of compliance with criteria.
O19	Maintenance to minimize energy needs and prevent leaks is done at least annually.
O20	All permanent staff must know about ecolabels, policy, and environmental targets and use this in their work.
O21	Clear in-store information that the store holds the Nordic Ecolabel is necessary.
O22	Written statement how the store will decrease environmental impacts through choice, placement and prising of certain products
O23	The marketing of the Nordic Ecolabelled store shall comply with Regulations for the Nordic Ecolabelling of products.

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Table 3.5: Point score requirements for achieving the Nordic Ecolabel (NordicEcolabelling 2016b)

Point score requirements		Points
P1	A higher score for the product range of organic and/or ecolabelled products must be achieved.	≤9
P2	Yearly statistics on proportionate ecolabelled and/or organic foodstuff sales	≤1
P3	No sale of products containing more than 0.5% active chlorine	1
P4	No sale of herbicides (some exceptions are allowed)	0.5
P5	No sale of certain products containing PVC	1
P6	No sale of shell fish/fish on the WWF red list (except as ingredients in other products or produced following Council Regulation (EC) No 834/2007)	1
P7	Ratio of calculated energy need to target value is lower than required.	≤9
P8	Ratio of real to target total equivalent global warming impact is lower than required.	≤4
P9	Monitoring/energy analysis/renewable energy production.	≤4
P10	A high percentage of refrigerants used have GWP[8] < 1.	≤1.5
P11	The quantity of unsorted waste per million turnover in the country's currency is lower than the mandatory requirement (country and turnover dependent demand).	≤5
P12	Waste is sorted in more than two fractions.	≤2
P13	Customers are provided the possibility to sort and recycle waste in a clearly indicated place in or nearby the store.	≤1
P14	Organic waste is separated and biologically handled/recycled/refined into (an) other product(s).	1
	Organic waste is separated and used for animal feed.	0.5
P15	The major (volume or weight) carriers or a high share of product transports meet the obligatory requirement number 10.	≤2
P16	A given percentage of the trucks of the major carriers comply with a given Euro standard.	≤2
P17	Either one of the three major supplier `s vehicles uses ≥ 30% Nordic Ecolabelled fuel; or one vehicle the store owns run on such fuel: or all transport is electric; or the store does not own, lease or rent any vehicles.	1
P18	One of the three major carriers for refrigerated/frozen goods uses ≥ 95% of refrigerant with GWP[8] < 5 and ODP[9] = 0.	0.5
P19	Customers can charge electric vehicles "in the direct vicinity of the store".	0.5
P20	Plastic gloves in the store are not made of PVC or PVDC.	1
P21	PVC and PVDC film is not used for packaging in the store.	1
P22	Chemical cleaning agents are avoided, except for in rooms where these are necessary for hygiene (toilets, kitchens and lunch rooms).	1
P23	Products labelled with the Nordic or EU Ecolabel, the Good Environmental Choice label or other specified labels give points.	≤4
P24	Printed advertising is ecolabelled, minimized or avoided.	≤2

[8] Global warming potential

[9] Ozone depletion potential

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3.3 Good Environmental Choice (Bra Miljöval)

The Swedish Society for Nature Conservation (SSNC) has its own ecolabel called "Good Environmental Choice". The society started labelling laundry detergent and paper in 1988, and today, 11 product areas are included, and the label can be obtained in Sweden, Norway and Denmark.

To create a label for a new product group, experts make a proposal for criteria, using life cycle analysis of the product, but also end-users/industry and authorities are involved before the final criteria are set. Criteria should be strict but achievable. To widespread ecolabelling, SSNC states that it is important to start with criteria that are not too strict. This gives producers and users the possibility to see how it is possible to reduce the environmental impact. When the label has become established and a lot of products have met the requirements, the criteria can be tightened to make sure that the products become more and more environmentally friendly. The requirements are also updated because the life cycle analysis must be updated, as these are never complete. New information alters the results when calculating the impact of a product (Naturskyddforeningen 2016a).

SSNC finds it important to avoid abuse of the label. They perform random testing of those who hold the label to ensure that they still comply with requirements, and they also control when they suspect that criteria are not met. In addition, there are rules for how to use the label in advertisements. SSNC states that some companies are tempted to use their ecolabelled product in advertising to give the impression that the entire firm is ecolabelled.

As there is a life cycle perspective, more than one organisation is involved in the criteria development and there is a third-party to administer it, it is a Type I label. To ensure that the label has large impact and avoid that the effort to make a label has only low output, only products that are quite usual/extensively used and that have a significant environmental impact are labellled.

The criteria for achieving the label are divided into basic requirements and yearly requirements. The basic requirements are set to ensure a very good basic level of environmental effort, while the yearly requirements are set to devote special attention to different areas and adress new challenges every year. The basic requirements can be summarised as follows (Naturskyddforeningen 2016b):

- *the shop has a large range of organic groceries*
- *the shop has a large range of ecolabelled chemical products*
- *the shop has chosen not to sell products such as king prawns that are harmful from an environmental standpoint*
- *the shop carries out authentic environmental work of its own*

To achieve the label, all the basic requirements must be fulfilled. The yearly requirements are a list of measures that the shop should be able to accomplish to improve its environmental work within the area.

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3.4 Energy Star

There are also other types of labels for retail stores which promote energy efficiency. The Energy Star Score for supermarkets/grocery stores is applied in the USA, Canada, Australia, New Zealand and Japan. There also exists an EU Energy star, but not for supermarkets. The Energy Star defines supermarkets and grocery stores as stores selling mainly food and beverages. The Energy Star focusses only on the energy performance of the supermarket, other environmental aspects are not taken into account. In contrast to the Blue Angel, the Nordic Swan Ecolabel and other Type I Ecolabels, the Energy Star is just an informative environmental self-declaration, and there is no third-party verification for achieving it. For the moment, it is only relevant for stand-alone supermarkets. It takes into account the amount of workers, hours of operation, climatic conditions, the size of the building, the percentage of the area which is heated/cooled and how many plug-in refrigeration units there are (Energy Star 2015).

The objective of the Energy Star is to give a fair assessment of the energy performance of the supermarket. Normalized values for energy requirements based on the activity of peer buildings are made to calculate expected/normalized energy demands, and the actual demand is compared to this. Data for the peer buildings can be found in a database, made from an energy survey, the so-called Commercial Building Energy Consumption Survey. This survey was made by the US Department of Energy, in 1999 and 2003. The Energy Star has been updated once since its start in 2001. The second version is from 2008, and it will be updated periodically (Energy Star 2015).

3.5 Ecolabelled products

Many products relevant to food retail stores are already part of a product group in the existing ecolabels. As the use of these would be very beneficial for the environment and secure a high environmental standard without further documentation, it would be a good choice to include demands for the use of ecolabelled or organic products in order to receive an EU Ecolabel for food retail stores. The use of ecolabelled products (heat pumps, air conditioning systems, construction products etc.) could be a possible requirement when building/refurbishing a store. Another possibility is to require that a certain share of the products sold in the market must be ecolabelled or organic.

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4 STANDARDS AND LEGISLATION FOR COMPONENTS AND BUILDINGS

In addition to the existing ecolabels, there are standards and legislations that should be considered when determining the criteria. There exist several standards for measuring, documenting and comparing performance related to energy and temperature stability (and, to some extent, construction) of retail cabinets. The most common in Europe is the ISO EN 23953 which consists of two parts (Evans and Foster 2015):

- ISO EN 23953-1:2015 Refrigerated display cabinets – Part 1: Vocabulary
- ISO EN 23953-2:2015 Refrigerated display cabinets – Part 2: Classification, requirements and test conditions

This is valid for refrigerated display cabinets for foodstuffs. This, and other standards, include specifications for testing of the cabinets, using highly controlled environmental conditions in test rooms with given values and minimum accuracy of several climatic variables (Evans and Foster 2015). Details can be found in the standard and are not given here.

Different legislations require food safety, and the standards are a way to document that these regulations are met. Regulation (EC) 853/2004, and partially Regulation (EC) 852/2004, require that temperature control must be provided for food of animal origin. They state that there must be equipment for maintaining the temperature at satisfactory levels (Evans and Foster 2015).

Quick-frozen foodstuffs should be held at -18 °C or lower temperature, but may deviate to as much as -15 °C during transport and in retail cabinets, and deviations could allow -12 °C in retail cabinets provided that the EU member state in question allows it (Evans and Foster 2015).

The F-gas Regulation (Regulation (EU) No 517/2014 of the European Parliament and of the Council on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006) sets requirements to stationary cooling machines containing HFC or some other gases containing fluorine. Frequent checks and measurement equipment for revealing leakage must be ensured (European Parliament 2014).

From July 2016, mandatory labelling for professional storage cabinets and condensing units will be the rule for any new cabinet. Selling unlabelled products or cabinets with a too low energy efficiency index will be forbidden in the EU according to the Ecodesign Directive (Directive 2009/125/EC) and its implementing measures, Regulation (EU) 2015/1094 and Regulation (EU) 2015/1095. The testing shall be performed after a new developed standard, EN 16825: Refrigerated storage cabinets and counters for professional use - Classification, requirements and test conditions (European Parliament 2015a; European Parliament 2015b).

In addition to the new regulation for professional storage cabinets and condensing units, a new regulation for commercial refrigeration units is being processed. The regulation is not published yet, but the consultation forum was held in 2014. It will propose minimum energy performance standards that must be met, but neither these, nor the labelling requirements are completed in the moment of writing (European Commission 2016d).

Use of these requirements for minimum energy performance to receive the EU Ecolabel will be a natural choice, but must be considered more closely with all stakeholders involved.

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5 BEST PRACTICES AND CASE EXAMPLES

5.1 tegut...

A tegut... store in Marburg-Cappel in Germany was the first supermarket to receive the Blue Angel for being environmentally friendly. The market uses 30% less energy than similar, older, comparable markets (tegut... 2015; Günther 2016). The main measures to achieve the label were:

- energy demand of the building 55% less than the reference building according to EnEV,
- only natural refrigerants (CO_2 in central refrigeration system, propane and isobutane in plug-in units),
- highly energy efficient refrigeration system and cabinets, in total 45% more efficient than comparable existing systems,
- LED lights, yielding maximum electrical power consumption for lighting of only 8,57 W/m^2,
- a DIN EN ISO 50001 energy management system, controlling all components and optimizing their operation with respect to each other,
- all cabinets fitted with glass doors,
- energy production by photovoltaic modules covering 76% of the roof,
- only purchasing clean certificated electricity,
- only use waste heat for space heating (heat integration),
- commercials only printed on Blue Angel labelled recycled paper,
- bike parking places,
- accessible with public transport,
- offering free electricity charging for cars, only using clean electricity like purchased hydro power or solar power from the roof for the charging.

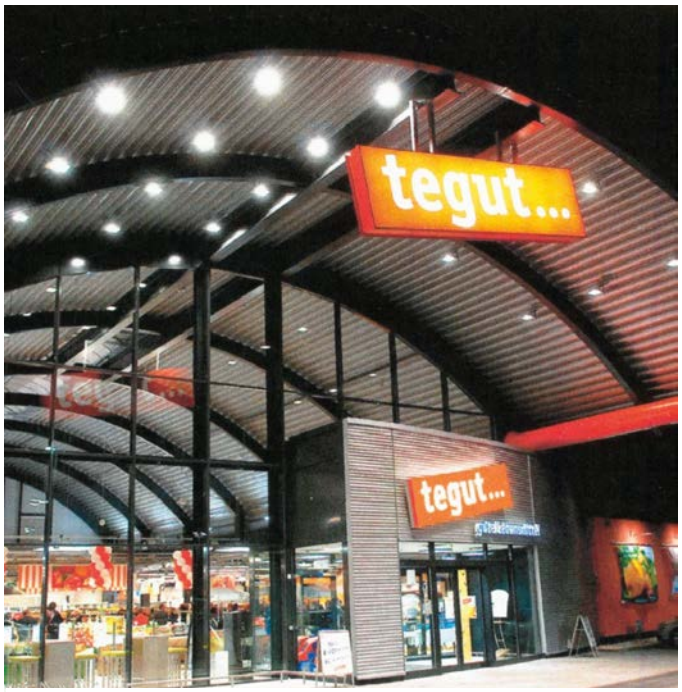

Figure 1: The only supermarket awarded with The Blue Angel, tegut... in Marburg-Cappel, taken from (Günther 2016)

5.2 Coop

The cooperation of different grocery stores, markets and production, Coop, received the Nordic Swan's price of honour in 2015, for having worked with and contributed to the implementation of ecolabelled products and food retail stores. Important in their work is the trade of organic and labelled goods, and making these clearly visible. They have worked with environmental goals for 25 years, since the very beginning of the Nordic Swan Ecolabel, and continuously extend their assortment of organic and labelled goods. In addition, the purchase of services, the operation of the store, administration and cleaning have been made carefully to ensure their compilation with environmental goals. More than 30 of their stores/markets are labelled, and Coop was also the first to establish such a market (Coop 2015).

Coop Obs! was also the first hypermarket to receive the Nordic Swan Ecolabel. In 2007, 14 of the 17 Swan labelled stores in Norway were Coop stores (dagligvarehandelen.no 2007), and the number is thus more than doubled from 2007 to 2015.

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6 GOLDEN RULES AND CHECKLISTS

For developing the EU Ecolabel for food retail stores:

- Have one set of mandatory requirements and some optional ones, whereof a minimum should be met.
- Make the requirements dependent on the local climate.
- National requirements, or a new standard, could be used as a reference for improvement, as some countries have much lower standards than others, despite the climates being similar.
- Allow deviations from requirements if the government in the country has some special regulations that must be accounted for.
- Include requirements to inform the users about the environmentally friendly measures.
- Set the requirements high, but achievable, so that more food retail stores might try to achieve it.
- Include supermarket owners in the making and updating of requirements in order to make the demands achievable.
- Identify areas of potential improvements for future updating of requirements.
- Require that an employee is appointed for following up locally and report.
- Require that staff is trained in their role to make the store environmentally friendly.
- Recommend or require use of ecolabelled and/or organic products.
- Include requirements for garbage and recycling.
- Make sure that waste of food is strongly reduced, for example through requiring a certain price reduction when approaching the date of expiration.
- Increase the positive environmental impact through requiring that stores must display clearly all labels, organic food and other environmentally friendly products, as well as food close to expiration.
- Existing labels, standards and legislations should be used as a basis of the requirements.

For achieving a label:

- Apply for funding before planning and building.
- Keep all documentation.
- Use other ecolabelled products when establishing and during operation of the store.
- Display all environmentally friendly or labelled brands, organic food, and food close to expiration clearly.
- Think holistically: include building, operation (refrigeration and HVAC, lighting, paper use, cleaners…), transport (both goods and customers), and disposal of waste etc. in the planning.

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7 CONCLUSIONS

The EU Ecolabel is a Type I Ecolabel, which means that it takes the entire life cycle perspective into account and that there is a third-party verification for achieving it. The label is known and acknowledged in all of Europe, and shall inform customers that the products have a low environmental impact. The goal of the EU Ecolabel is to sustain the environment for both today's and coming generations, and the label helps consumers to see which choices they can make to reduce their own environmental impact.

The development of an EU Ecolabel for food retail stores requires that stakeholders from several affected groups are involved in the criteria development. A Labelling Board will contribute in this process to ensure that demanding, yet achievable, criteria will be set. It is important that food retail store stakeholders are involved in order to ensure the future acceptance and success of the label. The SuperSmart team will attend conferences, organize workshops and use their existing network to ensure that a multi-disciplinary team of experts will be included in the criteria development.

Existing ecolabels for food retail stores will serve as a natural base when developing criteria for an EU Ecolabel for food retail stores. The Blue Angel, the Nordic Swan Ecolabel and Good Environmental Choice are examples of existing ecolabels in Europe. The requirements of the existing labels for retail stores are strict, regularly updated and overlooked by various, independent groups. Experts within the latest technologies and stakeholders in all parts of the value chain are involved. The existing labels have some mandatory requirements and a set of optional ones, of which a certain part must be fulfilled. For the Blue Angel, the number of optional requirements that must be fulfilled depends on the age and the ownership of the building. Requirements to the buildings are often based on the countries' existing low energy building standards. Deviations from the requirements are allowed if there are regulations from authorities that demand less environmentally friendly solutions.

The requirements for the existing ecolabels for food retail stores include more than just energy efficiency. Information, clear labelling, promotion of organic goods and general focus on increasing the customers' environmental awareness are important, too. For supermarkets, this includes e.g. the availability of recycling stations and easily available environmentally friendly transport to the store and also encouraging customers to reduce their own environmental footprint. The ecolabels for retail stores generally require the use of non-toxic cleaning chemicals, organic/recycled materials during operation and waste reduction. Last but not least, training of the staff and monitoring of results should be prioritized to hold an EU Ecolabel.

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