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Basic Concepts on Ecodesign

Unit 10: Introduction to Ecolabelling. Communication

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On completion of this unit a learner will:

–Know the different options to communicate the environmental performance of a product.
–Know the three types of eco-label: Type I, II and III.

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10.1 Ecolabelling

Ecolabels appear to give an answer to the need of organisations for a system that allows them to advertise environmental qualities of their products. In doing so, organisations may identify their products for the consumers and compare them with their competitors.

The wish of consumers was to reduce their environmental impacts through consumption. Nevertheless, there were neither standards to communicate the environmental information, nor independent third parties involved in developing and allocating ecolabels. Consumers were uncertain about the veracity of the information. There were so many symbols that the task of identifying them was confusing and complicated.

In order to solve this communicative problem between organisations and the market in terms of environmentally sustainable consumption, three kinds of mechanisms regulated by international standards were officially created and defined.

International standards are:

- ISO 14020:2000. Environmental labels and declarations. General principles.
- ISO 14024:1999. Environmental labels and declarations. Type I environmental labelling. Principles and procedures.
- ISO 14021:2016. Environmental labels and declarations. Self-declared environmental claims (Type II environmental labelling).
- ISO 14025:2006 Environmental labels and declarations. Type III environmental declarations. Principles and procedures.

ECOLABELLING is, according to ISO 14020, a set of voluntary tools with the aim of boosting the demand of products and services with less environmental effects by providing essential information on their life cycle to meet the buyer's demand for environmental information.

10.2 Objectives of Ecolabels

The main objectives of ecolabels are listed below:

- To promote the defense and protection of the environment, reducing the environmental impact of products or services.
- To inform and encourage consumers to choose products and services with less impacts on the environment.

- To encourage manufacturers to produce labelled products or services due to the demand of products with labels, and to continually improve the environment.
- To encourage designers to apply ecodesign principles in the design and product development processes.
- To improve sales and/or the image of a product, as an "environmental marketing" and distinction strategy among products that cannot get the distinctive.

10.3 Types of Ecolabel

10.3.1 General Aspects

To select an environmental recognition system, organisations consider the following factors:

- Possible legislation that obliges organisations to certify the product with any kind of symbology related to product's environmental problems.
- Scope of labelling (local, regional, state, global, etc.).
- Environmental requirements to accomplish (scope, complexity, etc.).
- Need for an independent third party to verify the veracity of the provided information to the competent body which issues the label.
- Viability of the organisation to meet requirements (resources, competence to act on the product design, etc.).
- Internal and/or subcontracting costs for compliance with the requirements.
- Cost of certification (initial rate, annual rate, dependence factors, etc.).
- The organisation's aim in possession of such certification must be in line with the scope and opportunities provided by the label.

The International Organization for Standardization (ISO) has classified the existing environmental labels into three types (I, II and III), and they are described in the following paragraphs.

TYPES OF ECOLOGICAL LABELS ACCORDING TO ISO:

- Type I Ecolabel – Ecolabels (ISO 14024).
- Type II Ecolabel - Self-declared environmental claims (ISO 14021).
- Type III Ecolabel - Environmental Product Declarations (ISO 14025).

Another type of well-known and widely used ecolabels are those catalogued as "semi-type I". They follow regulations which are not in line with the ISO 14020 group of standards. These standards affect to one or more characteristics or aspects of a product, but not to the entire product.

10.3.2 Type I Ecolabel - Ecolabels (ISO 14024)

Type I ecolabelling is a "voluntary system that officially identifies and certifies that certain products or services, regarding their entire life cycle, have less impact on the environment".

To obtain these ecolabelled products and services, certain sustainable consumption criteria must be fulfilled.

Ecolabels are awarded by an independent third party, who acts as a certifier body. This system meets the specific requirements of standard ISO 14024.

Summary of characteristics of type I ecolabels:

- A voluntary, multicriteria programme developed by a third party.
- It indicates that a product is more environmentally suitable according to considerations based on its life cycle.
- Environmental criteria established by product categories. Criteria must set achievable limits, considering the relative environmental impacts, and also the capability for measurement and accuracy.
- Compliance with environmental legislation.
- The aptitude for use must be considered.
- Environmental criteria and functional requirements must be reviewed in a periodic and defined way.
- Transparency through all stages of their development and operation involving all interested parties.

Advantages of type I ecolabels:

- Credibility (Certified by an accredited third party. Scientific methods and LCA methodology are used).
- They are reliable and differentiating (Certification ensures that the functionality is as good as other products with greater environmental impact).
- Visibility (logo on the product packaging).

If it is accompanied by other tools, other advantages are derived as:

- In an EMS, the ecolabelling criteria may be used as improved significant environmental aspects. EMS credibility is increased.
- Green purchasing. For public and private buyers, having an ecolabel displays easily that the requirements are met.
- Normally, there are subsidies to support the costs of ecolabels.
- The ecodesign team may use the ecolabels criteria to look for opportunities of improvement.

EXAMPLES OF TYPE I ECOLABELS:

There is a wide variety of ecolabelling programmes in general or specific types (depending on use or composition).

Some of the best known "type I ecolabels" are:

TYPE I LABEL EXAMPLES		
European Ecolabel (Europe)	Nordic swan (Nordic countries)	Blue angel (Germany)
French ecolabel (France)	Dutch ecolabel (Netherlands)	Hungarian Ecolabel (Hungary)
Environmental Choice (New Zealand)	Environmental Choice (Australia)	Ecomark (Japan)

THE EUROPEAN ECOLABEL

The European Ecolabel (EU Ecolabel) is a voluntary ecolabel scheme promoted since 1992 by the European Union as an important part of the EU policy on voluntary instrument for helping associations and consumers improve their environmental performance.

Organisations must prove their manufacturing and services to be environmentally friendly to the competent environmental body of administration of the State, which will audit and verify, based on the applicable product's criteria defined in the regulations, that requirements are met.

Currently, there are regulations for a wide variety of products, mainly for the industrial sector.

Objective of the European Ecolabel (type I ecolabel):

- Promoting products that can reduce adverse environmental effects compared to other products in the same category, contributing to an efficient use of resources and a high level of environmental protection.
- Provision of guidance and accurate, non-deceptive and scientifically based information on such products to consumers.

Groups of products for which the EU issued regulations:

EU Ecolabel Product Groups	
Group	**Subgroup**
DO-IT-YOURSELF	Paints and varnishes.
HOUSEHOLD APPLIANCES	Water-based heaters, heat pumps.
ELECTRONIC EQUIPMENT	Imaging equipment; personal, notebook and tablet computers; televisions.
GARDENING	Growing media, soil improvers and mulch
LUBRICANTS	Lubricants for several types and uses.
FURNITURE	Wooden furniture.
OTHER HOUSEHOLD ITEMS	Sanitary tapware, flushing toilets and urinals.
PERSONAL CARE PRODUCTS	Rinse-off cosmetic products, absorbent hygiene products.
CLEANING UP PRODUCTS	Detergents for dishwashers, laundry detergents, soap, shampoos and conditioner, hand dishwashing detergents, multi-purpose cleaners.
PAPER PRODUCTS	Converted paper, newsprint paper, printed paper, copying and graphic paper, tissue paper.
COVERINGS	Wood-based coverings, hard coverings.
CLOTHING AND TEXTILES	Textiles, footwear.
SERVICES	Tourist accommodation services.

Source: http://ec.europa.eu/environment/ecolabel/products-groups-and-criteria.html

10.3.3 Semi Type I Ecolabel

Before the public institutions established the ISO 14020 family, labels were created to provide information on environmental characteristics of products. Sectoral or manufacturer associations, social organisations, etc., defined environmental criteria on certain priority aspects, setting boundaries for compliance and certifying it with a label. Schemes established by the ISO 14020 family are not followed by those criteria.

A great number of such systems have reached equal and even higher recognition than type I ecolabels and enjoy prestige, tradition and recognition from the society. They have constructed themselves an independent group to bring together different groups such as: agriculture and food, energy consumption, building materials and sustainable building, textile products and use of wood.

Objective of the semi type I ecolabel:

- To get as much products as possible certified by the system.
- To achieve the highest possible recognition by consumers.

EXAMPLES OF SEMI-TYPE I LABELS:

SEMI TYPE I LABELS EXAMPLES		
Chain of custody Certification (Standards by country)	**Chain of Custody Certification (Standards by country)**	**Oeko-Tex (Switzerland)**
U.S. Green Building Council (America)	**Energy Efficiency (America)**	**100% Green Energy (Italy)**

10.3.4 Type II Ecolabel – Self-declared Environmental Claims (ISO 14021)

Environmental indication (logo, text) supported by the same manufacturer or packager, usually referred to one stage of the life cycle or a particular aspect of a product ("biodegradable", "recyclable", etc.). Standard ISO 14021 specific requirements are met. In this system, there is no independent certification for the third party.

This standard provides guidance on the use of certain environmental terms, symbols or charts that describe environmental product characteristics, such as: compostable, biodegradable, designed for disassembly, extended life product, recovered energy,

recyclable, recycled content, reduced resource consumption, reduced water consumption, reusable, refillable, and waste reduction.

Summary of characteristics of type II ecolabels:

- Voluntary self-declaration by the organisation.
- Non-mandatory verification or certification by independent third party. The declarant has full responsibility for his declaration.
- Usually one criterion.
- 18 general guidelines for environmental messages.
- No testing methodology.
- They are statements, symbols or charts that describe specific environmental characteristics of the product.
- They must be accurate and neither misleading, nor cause misunderstandings.

Precisely these labels are those that bring most confusion to consumers and organisations who wish to check the certainty of their claims.

Therefore, terms such as the listed below should be avoided by the consumer:

- "Environmentally-friendly", "green", "environmentally safe", "earth friendly", "non-polluting", etc. Imprecise expressions where reality is not reflected.
- "Sustainable" is a complex term to be used.
- "Without...", "...-free" only if demonstrable.

And terms must be considered that:

- Use accurate and non-misleading statements.
- Relate to relevant environmental aspects related to the stages of a product's life cycle.
- Provide substantial verified and verifiable information.
- Make clear if the statement refers to the entire product or only to parts of it.
- Consider the transfer of environmental impacts between the different stages of the life cycle.

Advantages of type II ecolabels:

- Visibility.
- They are more economical because they require no third party certification or validation.

Disadvantages of type II ecolabels:

- A lack of certification/validation reduces credibility.
- Consumers confuse their meaning or their interpretation is difficult.
- Low information content.

Different attributes of products that may be used are defined:

Term	Description
Compostable	A characteristic of a product, packaging or associated component that allows their biodegradation, generating a relatively homogeneous and stable, like humus.
Degradable	A characteristic of a product or container that, following specific conditions, allows its fragmentation up to a specific size in a given time.
Designed for disassembly	A characteristic of a product's design enabling the product to be taken apart at the end of its useful life in a way that allows components and parts to be reused, recycled, recovered for energy or in some other way diverted from the waste stream.
Extended life product	A product designed to provide prolonged use, based on either improved durability or the presence of a feature enabling it to be upgraded, and resulting in reduced resource use or reduced waste.
Recovered energy	A characteristic of a product that has been made using recovered energy (i.e. energy which otherwise would have been disposed of as waste), state the type and quantity of waste used for the recovery.
Recyclable	A characteristic of a product, packaging or associated component enabling it to be diverted from the waste stream through available processes and programmes and to be collected, processed and returned to use in the form of raw materials or products.
Recycled content	Mass ratio of recycled material in a product or packaging.
Recycled material	Material that has been processed from material recovered by means of a manufacturing process and made into a final product or as a component for incorporation into a product.
Waste Reduction	Reducted amount of material entering the waste stream as result of a change in product, process or packaging.

Reduced energy consumption	Reducing the amount of energy associated with the use of a product that performs the function for which it was conceived when compared with the energy used by other products performing an equivalent function.
Reduced resource use	A reduction in the amount of material, energy or water used to produce or distribute a product or packaging.
Reduced water consumption	Reduced water and energy consumption with the use of a product that performs the function for which it was conceived compared with the amount of water used by other products that perform an equivalent function.
Reusable and refillable	A characteristic of a product or packaging that has been conceived and designed to accomplish in its life cycle, a certain number of trips, rotations or uses for the same purpose for which it was conceived.

SOME EXAMPLES OF TYPE II LABELS:

MÖBIUS STRIP

It indicates that the product or the packaging is recyclable and is convenient to deposit the product in a collection point. If it has a number in the center is containing certain % of recycled material.

Recyclable

% of recycled material

RECYCLABLE ALUMINIUM

The can or container made of recyclable aluminium. Soda cans, food cans, etc.

RECYCLABLE PLASTIC

Symbols found in plastic containers of different types, are numbered 1 to 7.

Symbol	Description of Symbols of recyclable plastics
1: PET or PETE (Polyethylene terephthalate)	Lightweight plastic, recyclable and not expensive. Typical in food and beverage containers. Once recycled, it may be used in furniture, textile fibers, automobile parts and, occasionally, in new food packages.
2: HDPE (High Density Polyethylene)	Versatile plastic with chemical resistance. It is used, specially, in cleaning products or industrial chemicals packaging (shampoo, detergent, chlorine, etc.), milk, juices, yogurt and water cartons, garbage bags and supermarket. It is recycled in many different ways, tubes, bottles of detergents and cleaners, garden furniture, oil cans, etc.
3: PVC or V (Polyvinyl Chloride or Vinyls)	Very tough. It is widely used in window cleaners, detergent, shampoo and oils bottles, and hoses, medical equipment, windows, drainage pipes, building materials, sheathing for cables, etc. Although not often recycled, it is used in panels, pallets, road gutters, carpets, etc. The PVC can release some toxins (it must not be burned or allowed to get in contact with food), so it is preferable to use other natural substances.
4: LDPE (Low Density Polyethylene)	Strong, flexible and transparent plastic. It is used in some bottles and diverse (shopping or frozen food, etc.) bags, some furniture and carpets, among others. After recycling, it can be used again in containers and bins, envelopes, panels, pipes or tiles.
5: PP (Polypropylene)	Its high melting point allows containers to be able of holding hot liquids and foods. It is used in manufacturing of medical containers, yoghurt, drinking straws, ketchup cans, lids, some kitchen containers, etc. Once recycled, light signals, battery cables, brooms, brushes, ice scrapers, bike racks, rakes, buckets, trays, etc. may be obtained.
Symbol	**Description of symbols recyclable plastics**
6: PS (Polystyrene)	Its low melting point makes possible to melt in contact with heat. It is used with disposable plates and cups, egg cups, meat trays, aspirin bottles, CD cases, etc. Some environmental groups stress that it is a difficult material to recycle (although in this case various products may be obtained) and it may emit toxins.
7: Other (Uncatalogued plastic waste)	A wide diversity of plastics that are very difficult to recycle are included. With these materials some kinds of water bottles, bulletproof materials, DVD, sunglasses, MP3 and PC, certain food containers, etc., are made.

GREEN POINT

The package company pays a fee, both for its collection and for its waste, which is generated in a recycling circuit, avoiding the contamination of the environment. We find it in plastic containers, metal containers, tetrabrik, cardboard, paper and glass.

SIGRE

Equivalent green dot on the packaging of pharmaceuticals. The laboratories, under this system, ensure that the packaging and products will be managed to prevent them damaging the environment.

In the following chart examples of type II self-declared environmental claims made by some associations are displayed:

EXAMPLES OF TYPE II LABELS	
LABEL	**NAME**
	The Basque organisation EZARRI, manufacturer of glass mosaics, has tested and certified by the symbol Möbius its statement in reference to "100% of the glass used as raw material is recycled glass".
	The organisation uses this symbol to facilitate the recognition of RICOH products with environmental characteristics. Proving the use of more than 40% by mass of reused parts of the product and the total recyclability of more than 90%.
	Renault. CO2 emissions below 140 g/km or compatible with biofuels. Valuable (recyclable and/or reusable) by 95% at the end of its life.
	-*Grupo Forlasa*. CO2 emissions offset through compensation system. -Reuse/Recycle 100% of the industrial water.

10.3.5 Type III Ecolabel – Environmental Product Declarations (ISO 14025)

An increasingly widespread demand customer-supplier is to have a standard of comparison between different products. A standard that takes into account the most significant environmental aspects of a particular type of product, without going into value which is more or less sustainable, but showing an objective and verifiable information about the environmental problems of the product/service it provides.

In order to respond to this demand, the ecolabelling systems type III - Environmental Product Declarations (EPD), regulated by ISO 14025, are created. And its application is voluntary. A verification is carried out by an independent third party.

Environmental product declarations (type III labels), as defined by ISO 14025, facilitate the objective, comparable and credible communication of the environmental performance of products.
Based on different standards, offering comprehensible quantitative environmental information is their aim. An inventory of quantified environmental data of a product, with predetermined categories of parameters based on the standard series ISO 14040, concerning Life Cycle Assessment (LCA).

Summary of characteristics of type III ecolabels:

- Voluntary Environmental Declaration.
- Mandatory verification by third party.
- They provide quantified information of the life cycle (according to ISO 14040), and comparable with other products that perform the same function.
- Inform about the environmental impact of a product throughout its life cycle. There are some environmental indicators defined by product category. They are classified by impact category.
- Unlike type I labels, type III neither define the environmental preference of products nor establish minimum requirements to meet.

Optionally, there are certification programmes of EPD, which specify, for different groups of products, the most detailed way to carry out the LCA and EPD. Such programmes allow the use of a symbol added to the report which works as an environmental certificate.

These programmes are created according to the requirements established in ISO 14025, and develop working rules or procedures contained in documents called: Product Category Rules (PCR).

PRODUCT CATEGORY RULES (PCR):

- The PCR collect the minimum necessary data to be included in the LCA study, the methodology of impacts to use and the contents of EPD.
- If there is no PCR defined for a group of products, the programme may decide to develop them together with the collaboration of the manufacturer and interested third parties.
- By their very nature, this kind of systems are suitable for exchanges of information between organisations and their customers, and not to the standard final consumer as the information contained in the EPD is very technical and detailed.
- There are several entities worldwide with the purpose of developing PCR to certify the EPD.
- The aim of these organizations is that market EPD follow common "rules" regarding its elaboration and drafting.
- Unlike type I labels, type III neither define the environmental preference of products nor establish minimum requirements to meet

Advantages of type III labelling:

- For manufacturers, importers and suppliers: to provide quantitative information, objective and reliable (LCA methods are used), and open to all products/services.
- For buyers, retailers and customers: to be a source of comparable information, the calculation methods are common and credible thanks to inspection, review and monitoring by an independent verifier.

They can also integrate with other tools:

- Green purchasing. Public or private buyers can use type III labels as a base to define environmental requirements in the agreed criteria. Buyers can use it to obtain an environmental benchmarking of suppliers.
- In EMS, the ecolabelling criteria can be used as improved significant environmental aspects. It increases the credibility of the EMS.
- There are synergies between the processes used and the required data among the three types of label. By exploiting these synergies, costs are reduced and different types of customers are satisfied (end and industrial consumers, and public buyers).
- To obtain ecolabels, LCA must be carried out. The results can be used as an opportunity for improvement in Ecodesign.

SOME EXAMPLES OF TYPE III LABELS:

Different examples of the type III labels are displayed below:

TAG	NAME
	"The International EPD Consortium" is a global programme, based in Sweden. Born with the intention of becoming the international system default for the development and certification of EPD. EPD format is therefore applicable worldwide.
	Created by "The Japan Environmental Management Association for Industry-JEMAI" this label is divided into three different categories: - P.E.A.D. (Product Environmental Aspect Declaration). Essential product information including a summary of environmental impacts in their life cycle. - P.E.I.D.S. (Product Environmental Information Data Sheet). Information on numerical values of all environmental impacts in their life cycle. - Product Data Sheet. Basis of the information to obtain results of Life Cycle Assessment on PEIDS.
	Managed by the "Korean Ecoproducts institute KOEKO" and the "Korean Ministry of Environment". This Korean programme aims to provide environmental comparable, transparent and accurate information about products.
	The Confederation of Norwegian Enterprises (NHO) established a programme for the development of EPD in 2000. Currently, the system is managed through the "Norwegian EPD Foundation". Through this foundation, Norway also collaborates with other Scandinavians in developing countries EPD.
	Managed by the "Institute Construction and Environment (IBU) e.V.", it focuses on certifying building products. By the time PCR offers the following items: - Building Metals. - Floor coverings PCR. - Reinforcement Glass Mesh PCR. - Wood Materials PCR. http://bau-umwelt.de/hp481/Environmental-Product-Declarations-EPD.htm
	College of Quantity Surveyors, Technical Architects and Construction Engineers of Barcelona (CAATEEB), is the administrator of the system and the Government of Catalonia, as a support, they report in an objective, verifiable and disaggregated way the consumption of natural resources (water, energy and renewable resources), atmospheric emissions, dumpings to water and soil in the process of manufacturing.

ENVIRONMENTAL STATEMENTS OF CARBON FOOTPRINT

The carbon footprint is used to describe the calculation of emissions of all greenhouse gases (GHG) emissions associated with organizations, events or activities or the life cycle of a product in order to determine their contribution to climate change. It is expressed in equivalent tons of CO_2.

The well-known methods for Calculating the Carbon Footprint of products (or services) are:

- ISO/TS 14067:2013 (Greenhouse gases. Carbon footprint of products. Requirements and guidelines for quantification and communication).
- PAS 2050: 2011. Specification for the assessment of the life cycle greenhouse gas emissions of goods and services.
- GHG Protocol. Product standard.

The standard ISO/TS 14067, specifies principles, requirements and guidelines for quantification in whole or part, the product carbon footprint (PPC), taking as reference the international standards of life cycle assessment such as ISO 14040 and ISO 14044.

Requirements for subsequent communication of the PPC through environmental labels and declarations is also included, based on ISO 14020, ISO 14024 and ISO 14025. In order to provide credibility, transparency and consistency to the model, an independent third party verifies it, but it is not certifiable.

"GHG Protocol for product" and the standard "PAS 2050:2011" issued by the BSI Standard Solutions are other well-known standards for calculating the carbon footprint, although the latter one has the standard type II ecolabel as a reference, different to the standard ISO/TS 14067 with the type III.

Advantages of the carbon footprint:

- The communication of carbon footprint allows transparent information to consumers.
- It gives value to the product as a differentiator element against others that do not calculate their footprint.

→ Unit 10 includes a video on "carbon footprint" to approach this environmental statement in detail.

10.4 Difference between Ecolabels and Product Ecodesign

In Unit 9, Ecodesign in the environmental management, the integration of environmental management was studied in the process of designing a product to be environmentally improved.

After studying the "environmental labelling", to make a comparison between those two studies is relevant to identify the main differences and clearly differentiate their applications.

ECOLABEL	ECODESIGN
Certification associated with a product	Certification associated to the management system (design process)
Evidence that a product meets pre-established environmental criteria and ensures, with that label, that every product from different manufacturers have the same characteristics.	It allows the organization to choose freely, among the properties of their product or service, where the environmental improvement is carried out through design.
Ensures compliance with certain requirements set in technical specifications (standards) that do not vary over time.	It is based on continuous improvement. That is, the systematic introduction of successive improvements or new product designs is ensured and, therefore, the evolution of the same in terms of sustainability.
A product image improvement.	An improvement of the product image and the system management of the organisation.