



# ECOSIGN

## Ecodesign of Electronic Devices

### UNIT 2: European environmental standards and Directives on electronic devices

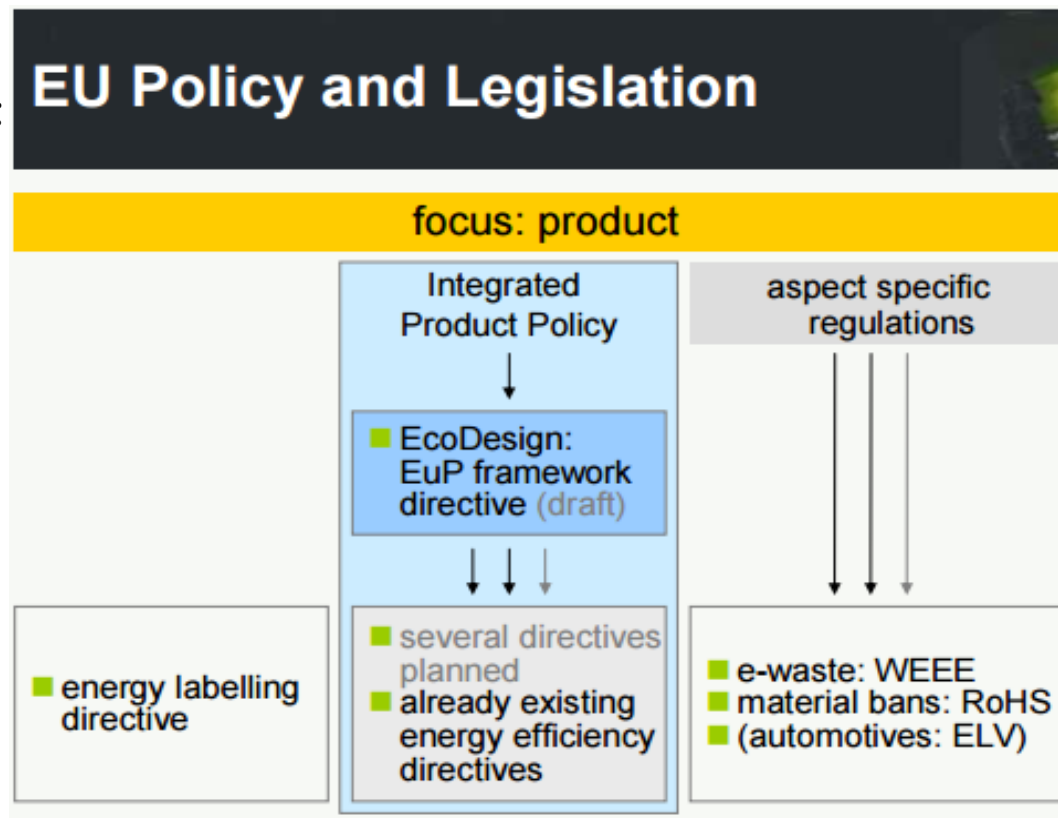


# Environmental standards and directives

- European policy and legislation on electronic devices can be divided into two major parts:
  - Integrated Product Policy (IPP), which includes product environmental product planning, a directive on efficient energy consumption and a clear indication of energy consumption of products.
  - Specific regulations are WEEE - Dehumidified Electronic Equipment Handling, RoHS - Directive on the Use of Hazardous Substances.

# Environmental standards and directives

Areas of European directives :



## Integrated product policy (IPP)

- IPP (Integrated Product Policy) is the European Commission's strategy to reduce environmental impact throughout the product's life cycle. The product life cycle is often long and complicated. It covers all areas from the acquisition of natural resources, design, manufacture, composition, sales, distribution to the use of the product and ultimately to waste.
- These include economic instruments, restriction of hazardous substances, voluntary agreements, labeling and guidelines:
  - Manufacturers must take into account the ecological product design, so that they are environmentally friendly.
  - Traders need to advertise green products and inform consumers about the existence of these products.
  - Users need to use green products carefully and discard them environmentally at the end of their lifetime.

## Integrated product policy (IPP)

- **Impact on the environment and the price of the product.** The market can play a key role in optimizing the environmental impact. IPP therefore introduces a lower tax rate for products that are equipped with eco labels.
- **Informing the consumer and choice.** The IPP strategy includes the education of consumers and businesses to achieve the use of a wide range of organic products. Consumers need to provide intelligible and credible technical information through product marking or through other sources. To reduce environmental impact, it is necessary to provide information to the consumer on the correct use of products.
- **Ecological Product Planning.** In order to extend ecological planning to a wider area, it is necessary to prepare and publish product information and their life cycle. Two instruments are concerned: Live Life Cycle (LCI) and LCA (Life Cycle Assessments).

## European environmental standards and electronics directives

- **European energy politics.** European energy politics coordinates balanced production and supply of all energy types. It analyzes prices and develops guidelines for the supply of cost-efficient energy and at the same time considers the competitiveness of European economy.
- **Internal energy market.** The primary goal is the establishment of a framework for supervision of whole energy market. Internal Market in Electrical energy Directive merges the production, transfer, distribution and supply guidelines. Another important directive is Transparency of Gas and Electrical energy Prices Directive which regulates price transparency for the end users.
- **Efficient energy use.** Directive on Electrical and Gas Means of Transport (charging stations) sets standard rules on the setup of the charging infrastructure in different European countries. It determines the minimal requirements for buildings which will enable the charging of electrical and natural gas automobiles. Until 2020, the Directive predicts establishment of electrical charging stations in densely populated areas.



# European environmental standards and electronics directives

- **Energy efficiency of office equipment: Energy Star program.**

The voluntary program for measuring energy efficiency “Energy Star” has been accepted together with the United States of America. Its function is to stimulate the production of energy efficient office equipment. The Energy Star label enables the consumers to identify equipment with low energy consumption.

European Union and the United States of America have signed the new Energy Star agreement on 28. December 2006. Its goal is that the manufacturers would voluntary use the agreed specifications for evaluating the energy efficiency of office equipment, such as computers, monitors, printers, copy machines, scanners, multifunctional devices, faxes, etc. the previous agreement was only valid until 2007, and it only included computers.



# European environmental standards and electronics directives

## ■ Renewable resources

- Ocean energy has immense potential. Currently, there are many different technologies for using the wave and tide energy, wind power on the sea and the conversion of temperature changes and salinity changes for the electrical energy.
- Wind power is created when wind turbines and generators are used for electrical energy production. In 2011, wind power in EU presented 6,3% share.
- Solar energy is produced with photovoltaic modules. In 2012, the network of all modules equaled to 17,2 GW photovoltaic modules.



## Energy efficient products

- In European Union, many everyday products carry ecolabels and are designed to be as energy efficient as possible. The results of ecodesign and labeling are reflected in energy saving, for example until 2020 we will save 175 Mtoe (Mtoe - Million Tonnes of Oil Equivalent) which equals to yearly primary consumption of Italy! For the consumers, this means saving 465 € per year on the electrical energy bill. Industry foresees a saving of 55 billion €.



# Energy efficient products

- **Energy consumption of products, informing consumers and labeling**

Energy labels help consumers to choose energy-efficient products. Labeling requirements for specific product groups are designed in accordance with Directive on energy labeling, which is lead by European Commission.

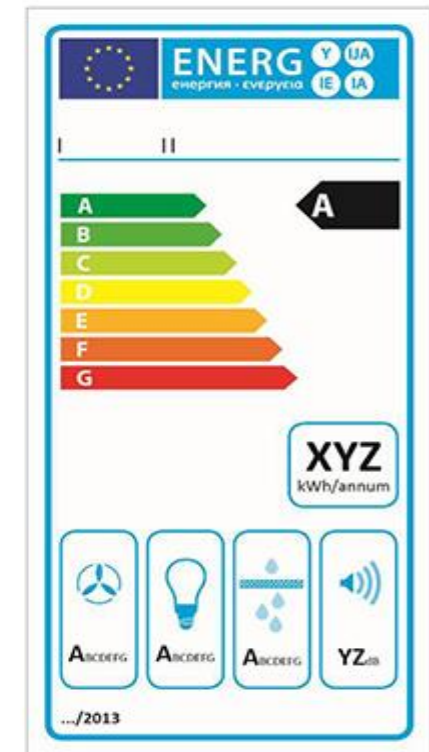
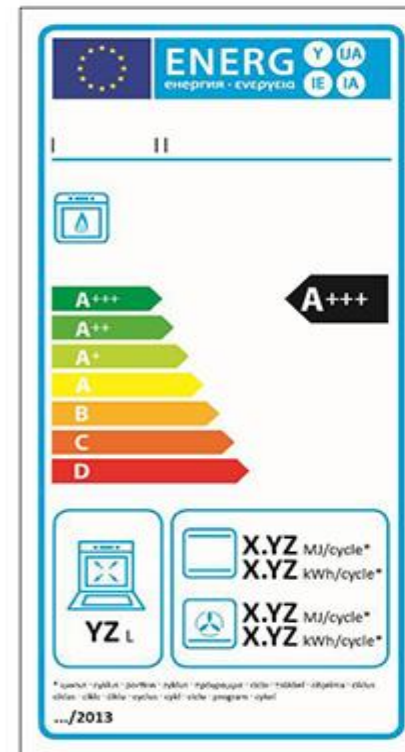
- **Which information must be submitted?**

Suppliers have to attach data about electrical energy consumption to their products. Technical documentation also has to contain: general product description, project calculation results, testing reports, references that enable identification of similar models.

# Energy efficient products

## ■ What function do the delegated acts serve?

Delegated acts have to monitor mainly: product description, measuring methods and standards, detailed technical documentation, form and content of labels. The product classification on the label has to be marked with a letter from A to G. The most energy efficient class is labeled with A+++. A scale of seven colors is in use, dark green equals to the highest energy efficiency. If the products, which are part of the public order, are included in the delegated act as stated in Directive 2004/18/EC then they need to be purchased in accordance with the high energy efficiency, declared in energy classes.



## Energy efficient products

- **Impact on the environment.** These three new labeling measures for cooking appliances and the state of preparedness of network equipment are estimated to reduce CO2 emissions by 15 million tones annually. This is the same as Bucharest's annual emissions. All Ecodesigned products and labeled energy labels save 166 million equivalent tons of petroleum energy.



# Ecodesigning products

- Directive 2009/125/ES, prepared by the European Parliament and Council on the October 21. 2009 regarding the establishment of a framework for determining energy related requirements on environmentally suitable product design. The Directive establishes a framework of minimal requirements for environmentally suitable design which products that use energy have to meet before they can be used or sold in EU. Directive is not in use for passenger or freight traffic.

## Key points:

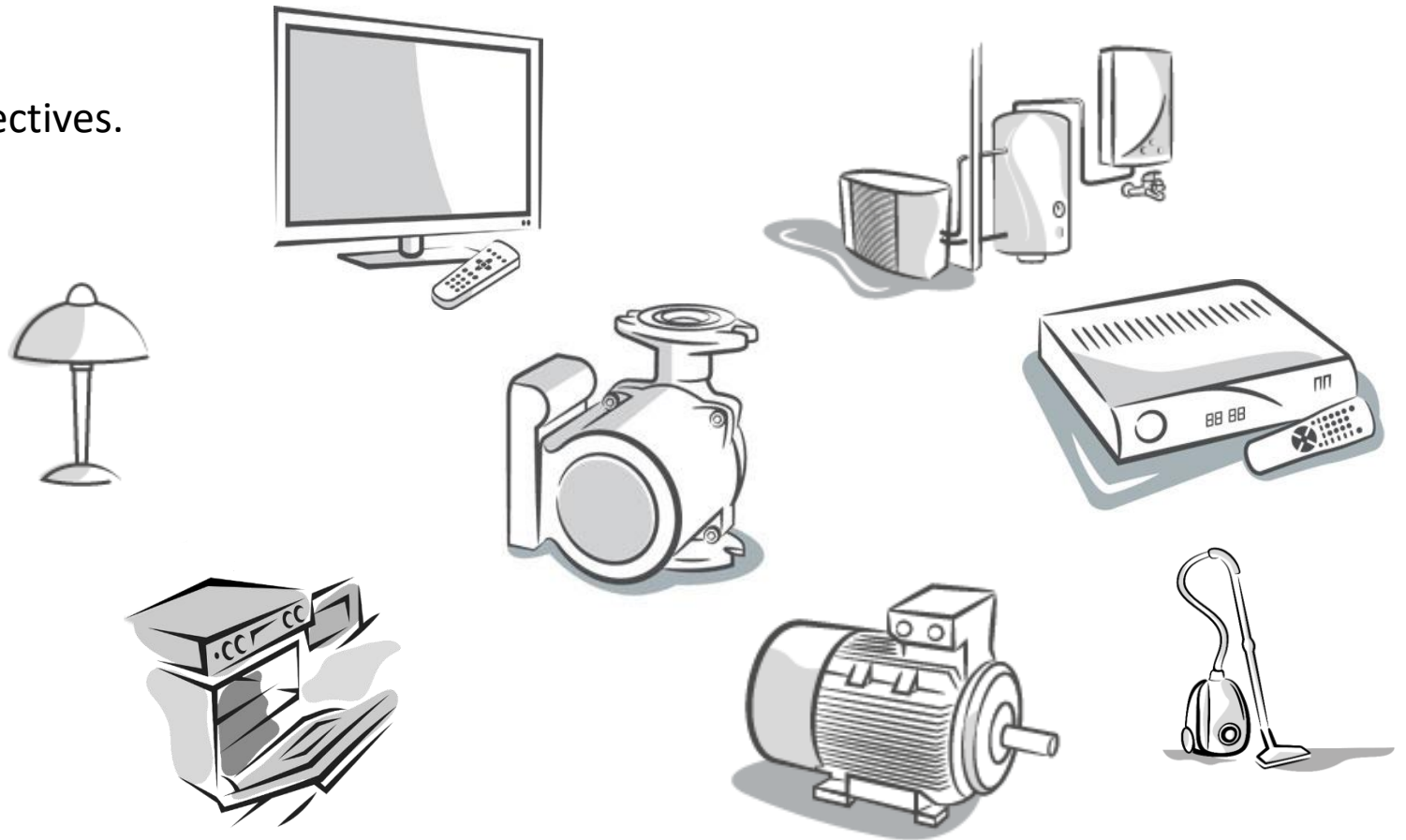
- Requirements for environmentally suitable design cover all lifecycles of the product, from resources, production, packaging to the use until the end of its lifecycle.
- For each of these cycles the institutes, chosen by EU countries, evaluate different environmental effects. These institutions check effects, such as materials, used energy, predicted emissions and waste, opportunities for reuse, recycling, and processing.
- Manufacturers have to create an ecological profile of their products and take them into account when they consider alternative construction options.



# Ecodesigning products

- Appliances included in the Energy Directives.

- Television apparatus
- Circulation pumps
- Cooking appliances
- Heating bodies
- Lighting bodies
- Electric motors
- Digital receivers
- Vacuum cleaners
- Standby mode and status off



## Specific directives: RoHS and WEEE

- **RoHS1 (Restriction of Hazardous Substances Directive)**

Directive on Restriction of Hazardous Substances in electrical and electronic devices was accepted by the European Union in February 2003. It came into use on 1. June 2006 and is now named RoHS 1. This directive restricts the use of six hazardous substances in manufacturing processes of different types of electronic and electrical equipment. RoHS Directive is closely connected to Directive WEEE (Waste Electrical and Electronic Equipment Directive 2002/96/EC), which defines recycling of electronic devices.



## Specifični direktivi: RoHS in WEEE

### ■ RoHS2

RoHS 2 (2011/65/EU) directive has developed from the previous version and was accepted on July 21. 2011 and applied on January 2. 2013. It restricts the use of the same substances as the original directive while it also improves regulation conditions and the clarity of legislation.

Differences between RoHS1 and RoHS2:

- The gradual introduction of RoHS for all electrical and electronic devices, cables and spare parts by July 22. 2019.
- Clarifies important definitions from RoHS 1.
- RoHS 2 introduces a methodology for evaluating new hazardous substances with the intent to restrict them.
- Gives the EU members the opportunity to suggest new restrictions.
- Clearer and more transparent rules on approving or deleting exceptions.





# WEEE (Waste Electrical & Electronic Equipment)

- Directive 2002/96/ES prepared by the European Parliament and Council on the January 27. 2003 on waste electrical and electronic equipment was approved with the intention to preserve, protect and improve the environment, protect the health and rational use of natural resources. The mentioned policy is based on the precautionary principle, the principle of preventive action and on the principle that environmental damages are precedently restored at the source as well as on the principle that the responsible for the pollution covers the costs.
- Directive WEEE includes a complex mix of materials and components with hazardous substances which are dangerous for the environment if not handled carefully. The production of modern electronic devices requires the use of rare and precious resources, for example; gold.

