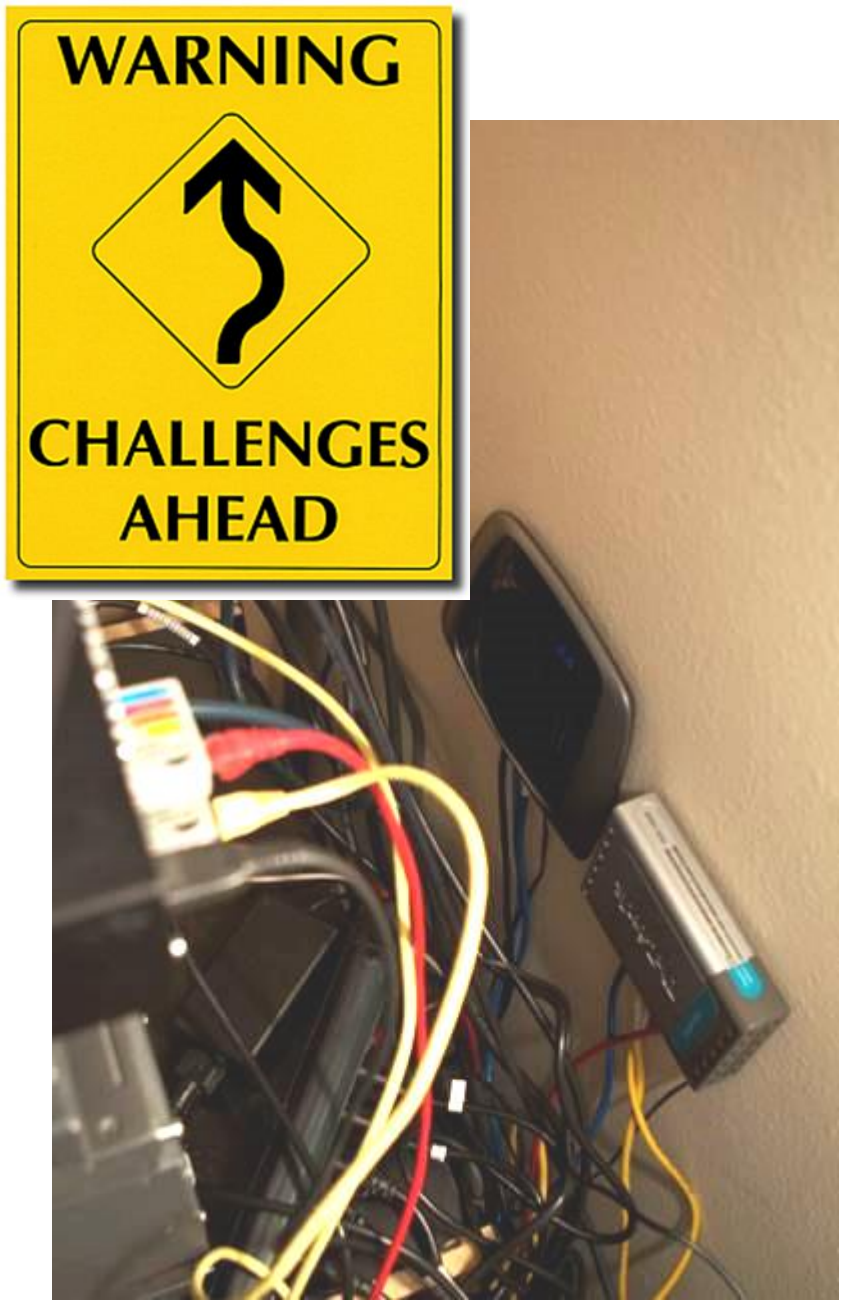


Netherlands Enterprise Agency

The Ecodesign Directive and energy efficiency: achievements, concerns and the need to find alternatives to the least life cycle cost standard

eceee workshop

24-25 January 2018 - Brussels

Hans-Paul Siderius

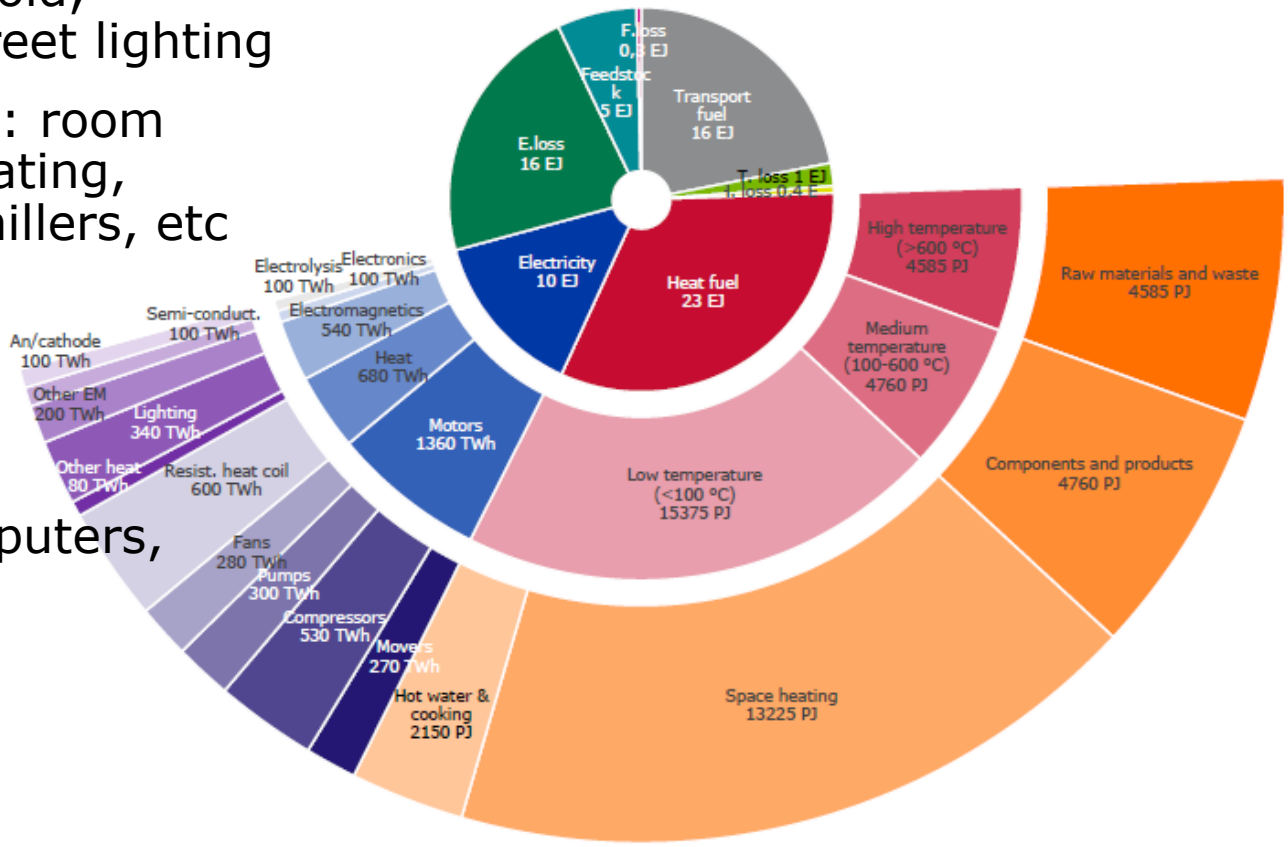
Netherlands Enterprise Agency

Overview

- Coverage of ecodesign and energy labelling
- Challenges in regulating ICT products
- A new approach for regulating ICT products
- Final remarks

Coverage of ecodesign and energy labelling

- **Lighting**: household, commerial and street lighting
- **Heating/cooling**: room heating, water heating, airconditioners, chillers, etc
- **Motion**: motors, pumps, fans, compressors
- **Information processing**: computers, televisions



Source: R. Kemna et al, Study on Amended Working Plan under the Ecodesign DirectiveFinal Report Task 1 & 2, 2011

Impact of ecodesign

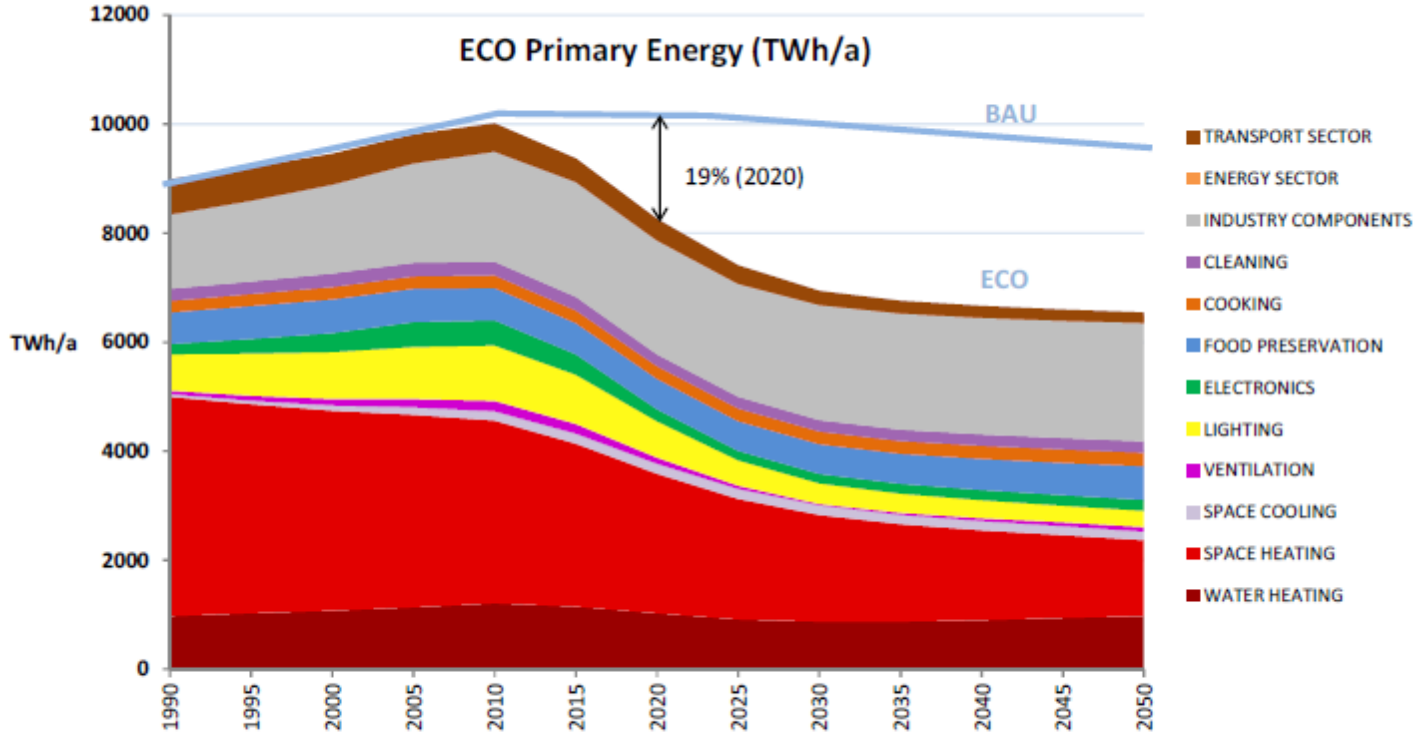
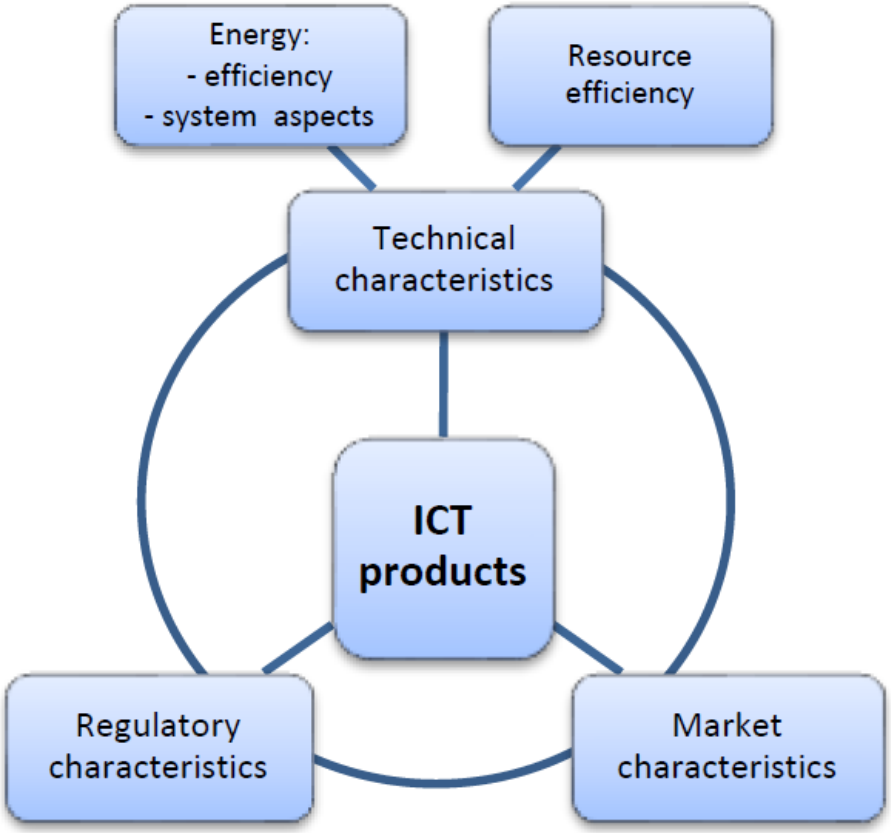


Figure 6. Primary energy consumption of products included in ecodesign impact accounting, status 1 Nov. 2013 (energy sector impact not shown)

Source: R. Kemna, Ecodesign Impact Accounting – Part 1 – status Nov. 2013, 2014

Why are ICT products hard to regulate?



ICT products or ICT characteristics?

- General trends:
  - Software (programmable): functionality defined by the software
  - Connectivity: product connnect to a network and functionality is dependent on other (network connected) products
  - Virtual products: the function that the product provides is produced outside the product that is operated by the end user
- Software and connectivity:
  - Products with multiple functions or large variety of subfunctions
  - Better control of the product, e.g. react to changes in load
  - Functions can be easily updated through software updates
- Market characteristics:
  - IC developments drive product development
  - Higher performing products are generally more *efficient* (but may have a higher power consumption)

Challenges to regulate ICT products

- Requirements shall aim for least life cycle cost point; however relation between efficiency and price is flawed for many ICT products.
- Methodology requires insight into (future) design options: https://www.youtube.com/watch?v=eywi0h_Y5_U. Consequence: Multi-tier requirements less suitable.
- Process for setting requirements (mandatory or voluntary) takes times.
- Difficult to assess savings potentials of ICT products:
  - Difficult to estimate product and market developments;
  - Improvements happen without regulatory intervention?

Why regulate ICT products?

- Large and increasing volume of ICT products
- Limited power consumption per product

- Improving energy efficiency comes at no or very little material cost
- Variation in efficiency exists

A new approach for regulating ICT products

1. Defining the product group to be regulated
2. Setting minimum efficiency targets, including the timing
3. If enough variation in efficiency is left, define energy label classes
4. Estimate savings

Use a broad product definition to avoid loopholes, set relatively relaxed minimum targets to accomodate for a variety of (secondary) functions and apply an energy label to identify the most efficient products.

1. Defining the product group

Definition of ICT product (according to Regulation (EC) 1275/2008):

'information technology equipment' means any equipment which has a primary function of either entry, storage, display, retrieval, transmission, processing, switching, or control, of data and of telecommunication messages or a combination of these functions and may be equipped with one or more terminal ports typically operated for information transfer;

Use ***functions*** of ICT products to define product groups: display, storage, processing, switching (routing), etc.

2. Setting minimum efficiency targets and timeline

- Check relation between price and efficiency; in case no relation is present, three alternative approaches can be used to set minimum efficiency targets:
  - Minimum efficiency approach: cut off 20 % of the market
  - Average efficiency approach: cut off 50 % of the market
  - Top Runner approach: cut off 80 % of the market

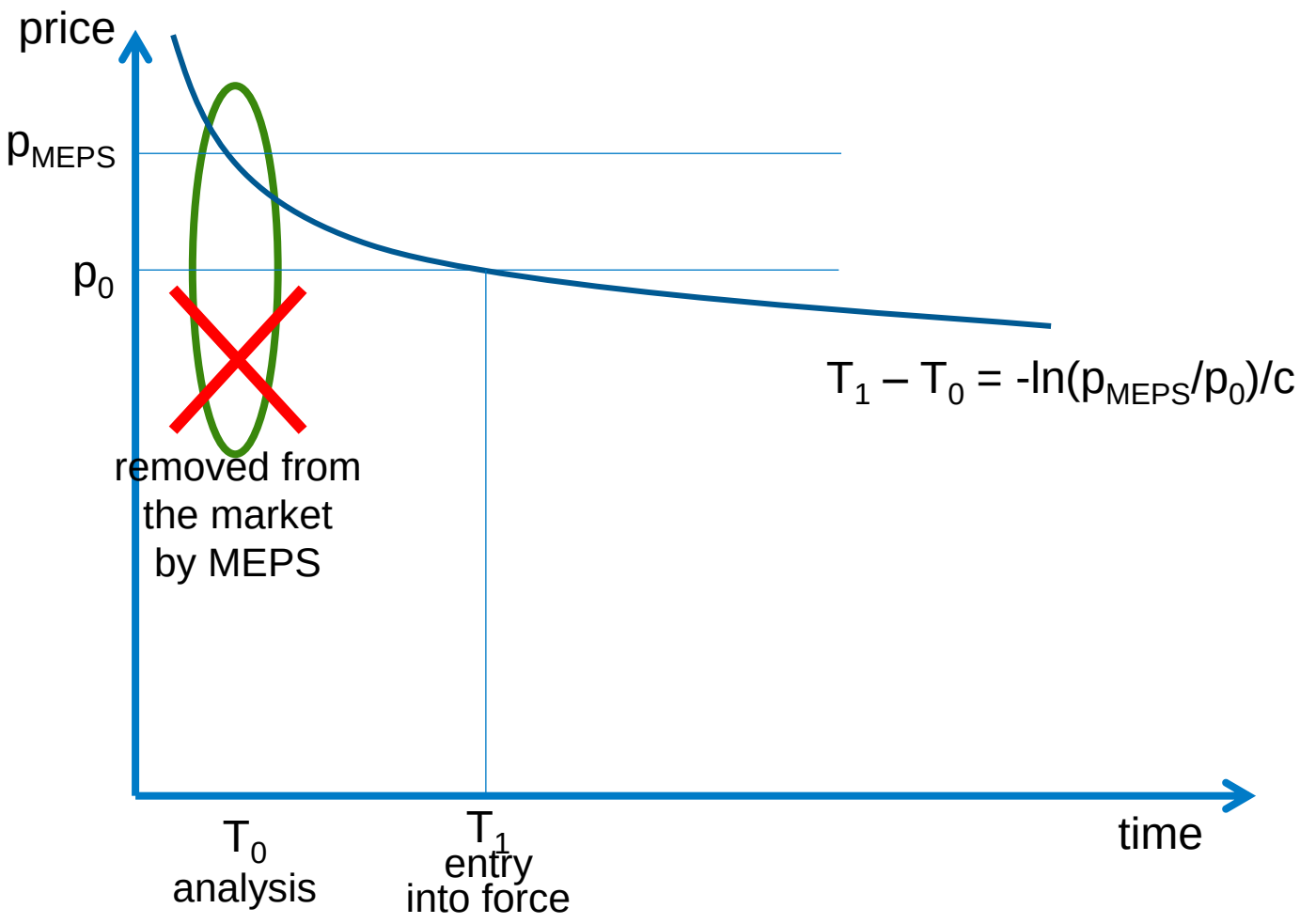
- Select the appropriate entry into force date, related to the (expected) price decrease of the product:

  $T_1 - T_0 = -\ln(p_{MEPS}/p_0)/c$,

  where p_0 is the average price at time of analysis

  p_{MEPS} is the average price of products that meet the target

  c is a time constant (default: -0.30)


price
p_{MEPS}
p_0
$T_1 - T_0 = -\ln(p_{MEPS}/p_0)/c$
removed from the market by MEPS
T_0 analysis
T_1 entry into force
time

2a. Revision of targets

Consistency and a long term approach to secure persistent savings. Therefore regularly revision of targets.

Revision steps:

Ia. Assess variation in efficiency on the market.
Ib. Check appropriateness of product definition and efficiency metric.

II. If both are positive, repeat procedure under 2.

III. If one is negative (not enough variation, definition and/or metric not up to date), carry out more elaborate study.

3. Define energy label classes

- Assess variation in efficiency, based on an energy efficiency index.
- If enough variation exists, set class boundaries (note that Energy Label regulation allows for labels with less than 7 classes)

4. Estimate savings

- Savings: difference between BAU (without measures) and situation with measures.
- Savings: energy consumption of products according to original market distribution ***minus*** energy consumption of products according to situation where the least efficient 30 % is improved to the minimum requirement (calculated over the life time).

  Impact of energy label: removing another 20% of the products.

Final remarks

- Least life cycle cost methodology is more a guidance than an exact calculation method.
- Cost decrease of (new) technologies can be taken into account (learning curves).
- Other variables also influence decisions on minimum efficiency levels: energy prices, affordability.
  The more ambitious the targets are, the more they will be scrutinized.

Thank your for your attention.

Questions?

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