

# Standardisation of eco- efficiency assessment within ISO TC 207/SC5

Bengt Steen, Chalmers University of Technology,  
Sweden

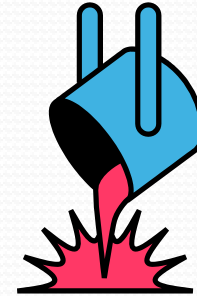
Reginald Tan, National University of Singapore,  
Singapore

# Introduction

- In June 2008 ISO TC 207, Environmental Management, decided to establish a working group on eco-efficiency assessment on product life cycles, ISO TC 207/SC5 WG7. The standard is now on the CD level and is scheduled to be ready July 2011
- Its purpose is to harmonise terminology and procedures, but not to specify any particular methods for eco-efficiency assessment.
- Considering the many ways of characterizing and using eco-efficiency, flexibility is beneficial, but only if the results are possible to communicate. Transparency is therefore a key issue. The standard is a framework standard.

# Why a life cycle approach?

If the steel maker raises the price of steel, the eco-efficiency of steelmaking increases (Less impact per value created)



When the steel maker raises the price of steel, the eco-efficiency of car making decreases (More impact per value created)



But no change has occurred in the environment !

A life cycle approach, shows no change in product system value and thus product system eco-efficiency

# Scope of the standard

- the goal and scope definition of the eco-efficiency assessment
- the environmental assessment
- the product system value assessment
- the calculation of the eco-efficiency results
- interpretation (including quality assurance)
- reporting
- critical review of the eco-efficiency assessment

# Normative references

- ISO 14040:2006, Environmental management – Life cycle assessment – Principles and framework
- ISO 14044:2006, Environmental management – Life cycle assessment – Requirements and guidelines

# General description of eco-efficiency

- Principles of eco-efficiency
  - Life cycle perspective
  - Iterative approach
  - Transparency
  - Comprehensiveness
  - Scientific approach
- Key features of an eco-efficiency assessment
  - Tool for managing environmental and value aspects in parallel
  - The result of the eco-efficiency assessment relates to the product system of a product, not the product per se

# Goal definition

- The purpose of the eco-efficiency assessment
- The intended audience
- The intended use of the results

# Defining the scope of the assessment

- The product system to be assessed
- The function and functional unit
- System boundary of the product system
- Allocations to external systems
- Environmental assessment method and types of impacts
- Value assessment method and type of product system value
- Choice of eco-efficiency indicator(s)
- Interpretation to be used
- Limitations
- Reporting and disclosure of results

# Environmental assessment

- According to the LCA standard in ISO 14040 and 14044, but with additional requirements on weighting:
- If weighting is used for eco-efficiency assessment, additional requirements to those in ISO 14044 apply. The following shall be described:
  - Weighting principles;
  - Weighting factors;
  - How the weighting factors were determined including;
  - Methodology;
  - Which stakeholder values have been used to determine the weighting factors.

# Product system value assessment

- Consider full life cycle of the product system
- There are many ways to assess the product system value, including functional, monetary, aesthetic
- Value changes in the product life cycle is more practical to assess than absolute values
- Examples of methods used:
  - cost changes in a single value chain process that do not affect other parts of the value chain is equal to products system value changes
  - Functional value to an end user is used as a proxy for the product system value

# Calculation of eco-efficiency results

- For eco-efficiency assessments intended to be communicated to the public an eco-efficiency profile shall be determined by relating the LCIA profile to the product system value

# Other issues

- Trade-off between environmental and value indicators
- Extensive demand on documentation at comparative assertions
- Critical review similar to the LCA standard
- Annexes give examples on light bulb, vacuum cleaner etc.



Thank you for your attention!