How recyclability should be taken into account on measuring sustainability - Recycled material content or recyclability?

Toni Hemminki

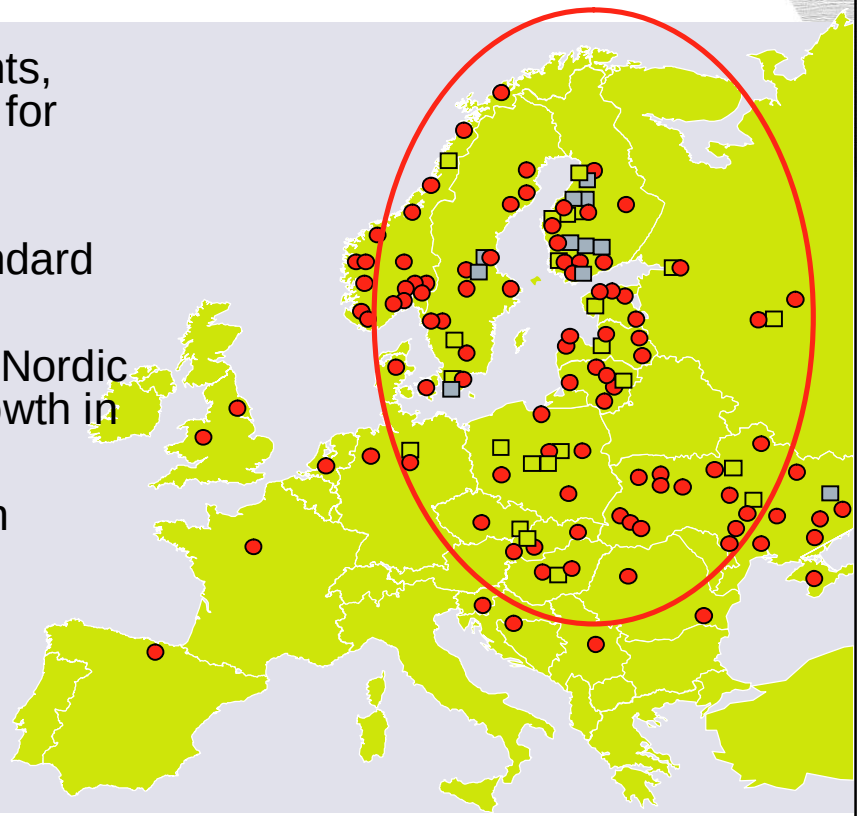
Vice President, Energy and Environment

Content of the presentation

- Ruukki today
- Question on recyclability
- Illustration of steel recycling – lately collected data
- Conclusions

Ruukki today

- Supplies metal-based components, systems and integrated systems for construction and engineering customers
- Provides a wide selection of standard and special steel products
- Strong base in nearby market in Nordic countries, focus on profitable growth in CEE, Russia and Ukraine
- Net sales in 2006 EUR 3.7 billion
- Approx. 13,000 employees in 23 countries



Production Processing Sales and service

How should materials' ecological sustainability be evaluated?

Easy part:

- When materials are recycled, some environmental burdens are avoided
  - i.e. when steel is recycled the environmental burdens of primary production are avoided, but on the other hand secondary production environmental effects are caused
    - difference is in most cases by far positive (= less burden/avoided impact)
  - ► hence recycling should be considered as positive aspect of materials and products at ecological sustainability evaluation

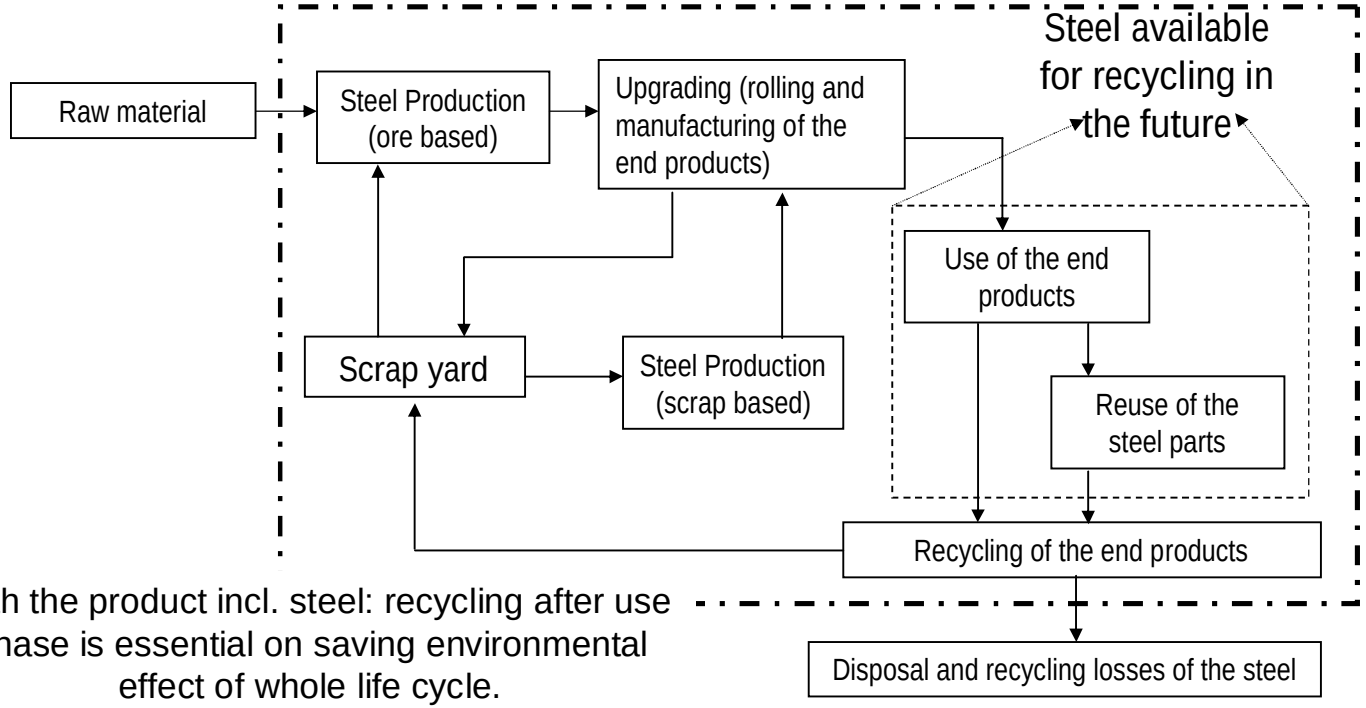
Then the hard part: What should be the indicators?

- recycled material content (used e.g. in many cases at the eco-labels)

or

- recyclability

Recyclability vs. recycling content: case steel



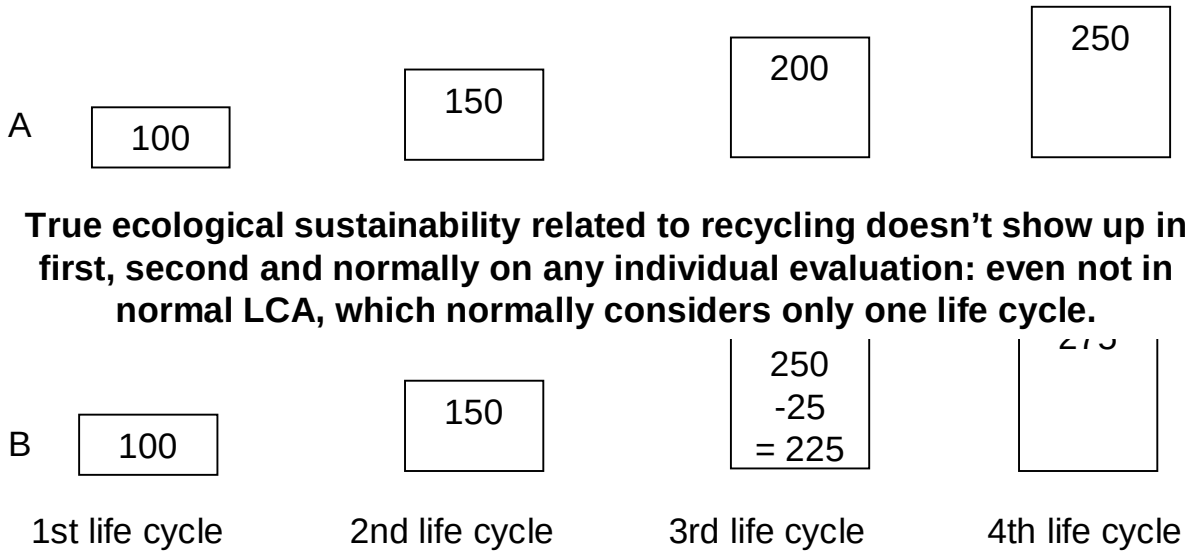
With the product incl. steel: recycling after use phase is essential on saving environmental effect of whole life cycle.

Recycled material content doesn't count, if consumption stays fixed.

Recyclability – over and over again without quality loss

- Lets assume material A and B, which are causing same environmental effect per functional unit when produced and manufactured first time
  - For material A it's possible to recycle without any loss of quality
  - For material B it's possible to recycle once without significant loss of quality and then there is some recovery to be done
  - For recycling the env. burden is on 50 % of prim. production
  - For recovery the avoided env. effect is about 25 % of prim. production

Recyclability – over and over again without quality loss

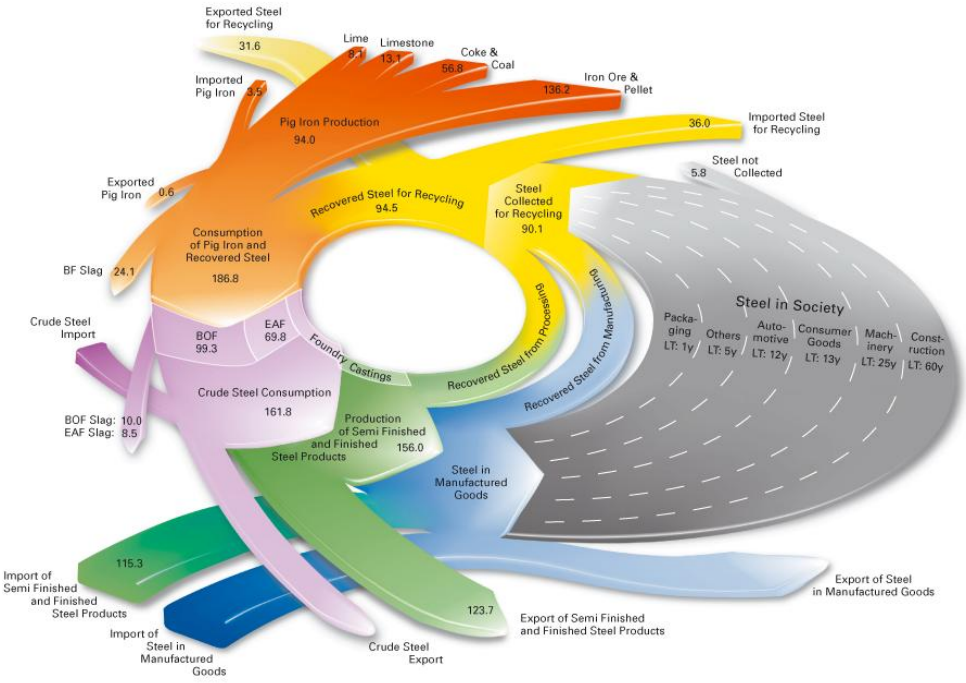


True ecological sustainability related to recycling doesn't show up in first, second and normally on any individual evaluation: even not in normal LCA, which normally considers only one life cycle.

Steel overall recycling rate on very high level: European steel MFA

Illustration of Steel Flows in EU 15 (2004)

EUROFER
European Confederation of Iron and Steel Industries



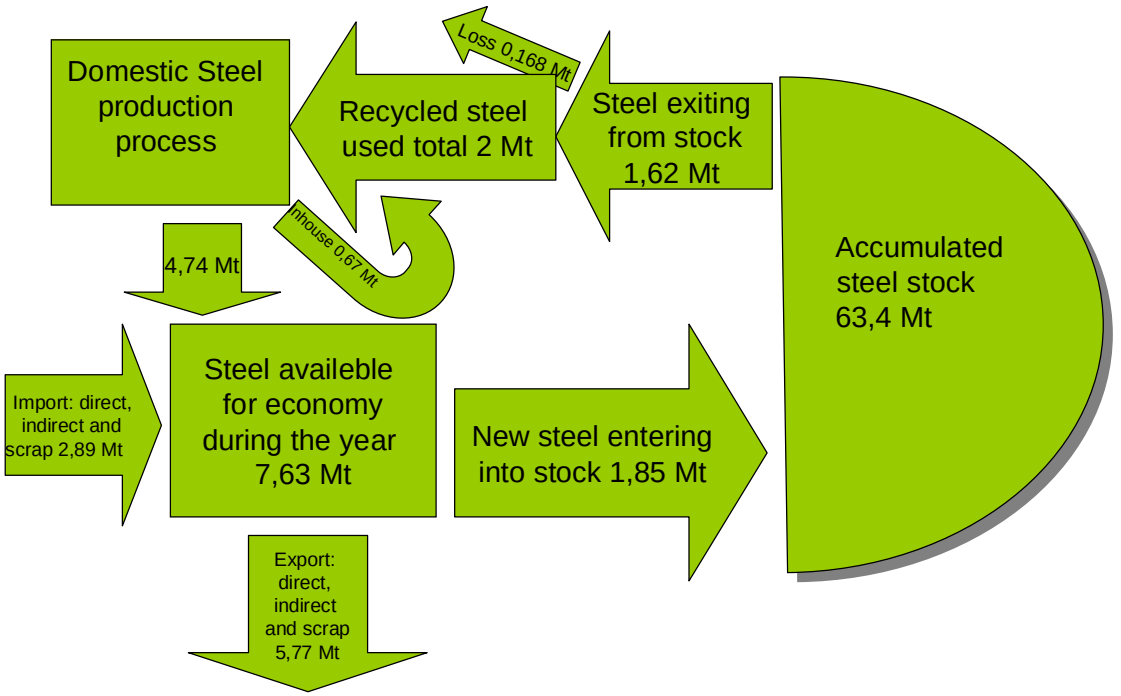
LT: Lifetime [years]
Values in Million Metric Tons

Data taken from the International Iron and Steel Institute (IISI), Steel Statistical Yearbook 2006, World Steel in Figures 2006, CAEF 2005, European Blast Furnace Committee 2006

ruukki

Steel MFA in Finland

Relationship between steel flows and accumulated steel stock in Finland 2005



Overall recycling rate in Finland

- Overall Recycling Efficiency Rate, 94 %

$$\text{Overall Recycling Efficiency Rate} = \frac{\text{Metal Recycled (from EOL \& New Scrap}}{\text{Metal Available for Recycling (EOL \& New Scrap)}}$$

Conclusions

- Recycling can have significant effect on production environmental burden over the product life cycle
- Recyclability is the correct indicator to measure sustainability related steel used in products
- Recycled material content might give some wrong signals
- Steel overall recycling rate is very high and has been for long time, thus it’s very often forgot in calculations