

Life Cycle Thinking for Local Authorities

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Presentation

- HVC groep
- Life Cycle Assessment
- LCA for Local Authorities

HVC N.V.

Mission: To assist our shareholders in realizing their climate and recycling targets

Shareholders: 52 municipalities representing 850.000 hh

5 water authorities

Input: 10% of the municipal waste

25% of the sludge

Collecting: 33 municipalities representing 470.000 hh

HVC waste to energy



Alkmaar

HVC waste to energy



Dordrecht

Waste Processing at HVC





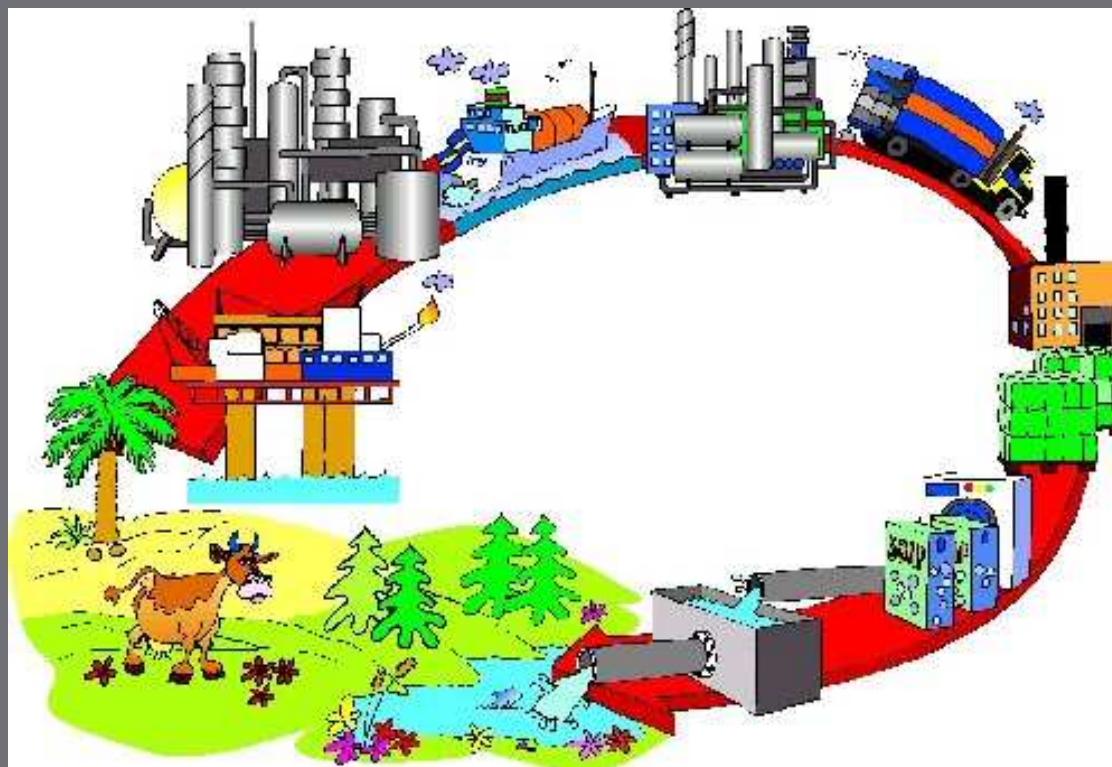
HVC
for
sustainable
energy



Life Cycle Assessment according to ISO 14040

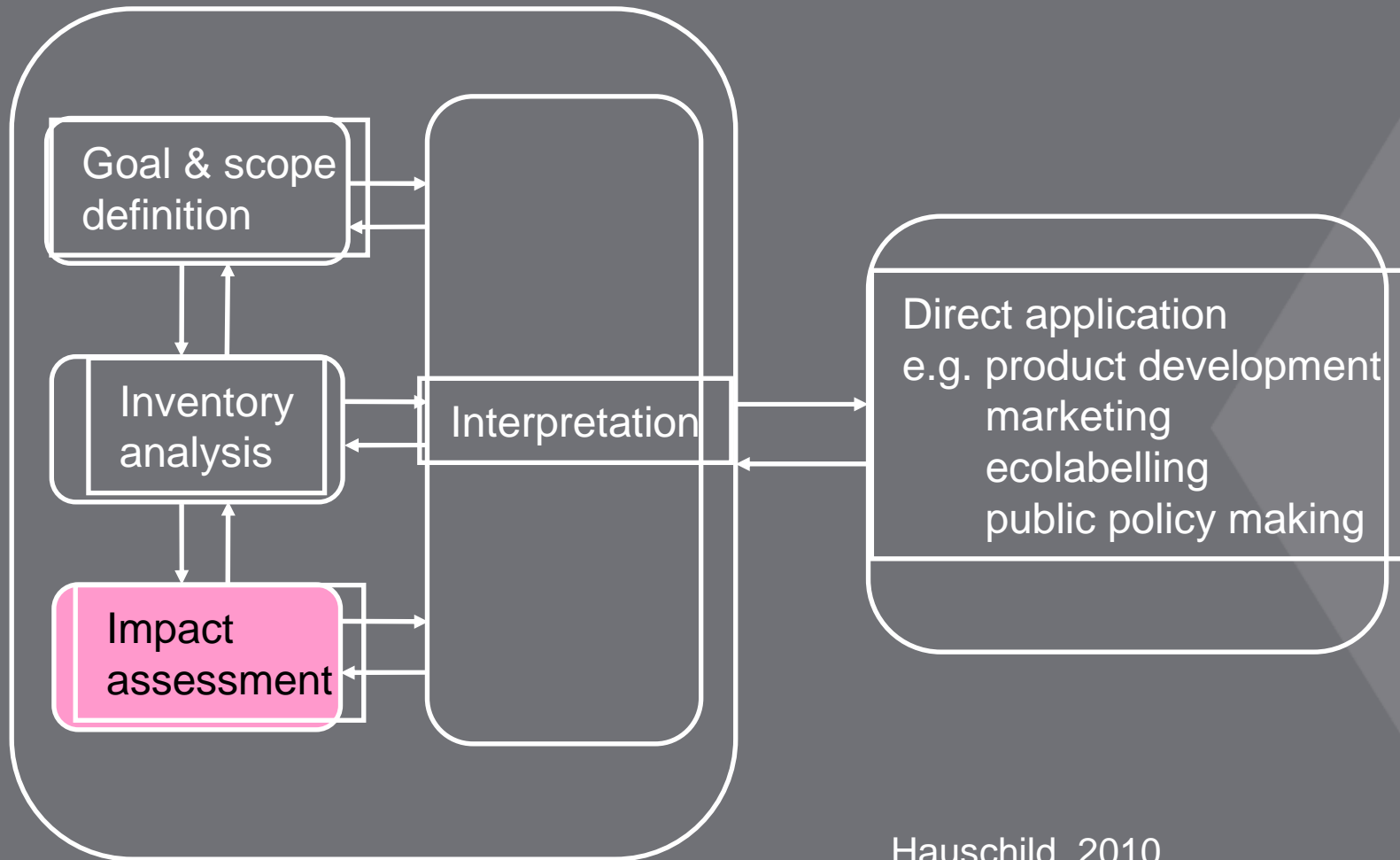
A systematic set of procedures for compiling and examining the inputs and outputs of materials and energy and the associated environmental impacts directly attributable to the functioning of a product or service system throughout its life.

Life Cycle



Driving forces for LCA evolution

- Government regulations
- Unsustainable production and consumption
- Producers initiatives
- Damage to nature



Hauschild, 2010

LCIA Steps

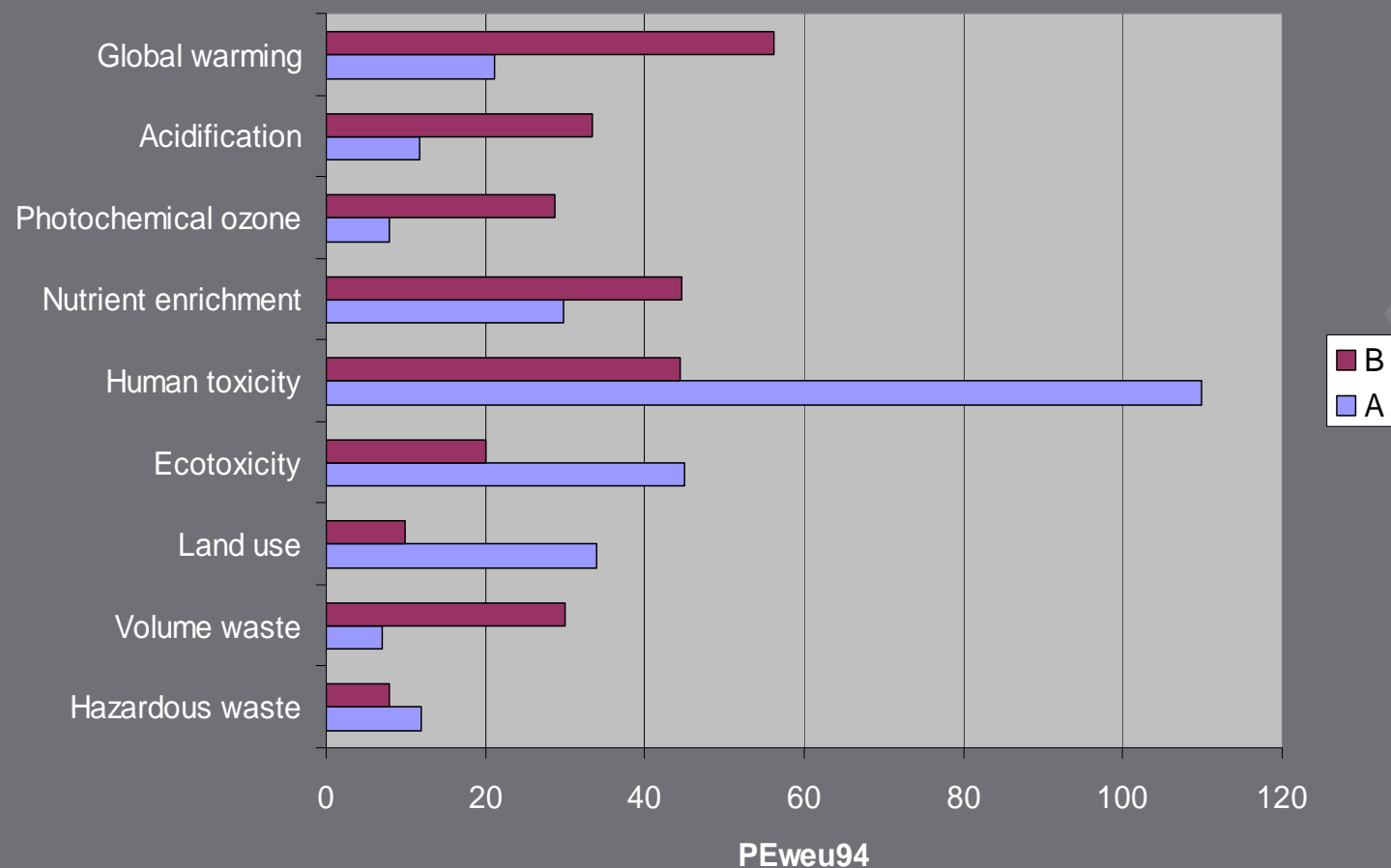
- **Classification**
- **Characterisation**
- **Normalisation**
- **Valuation**
- **Interpretation**

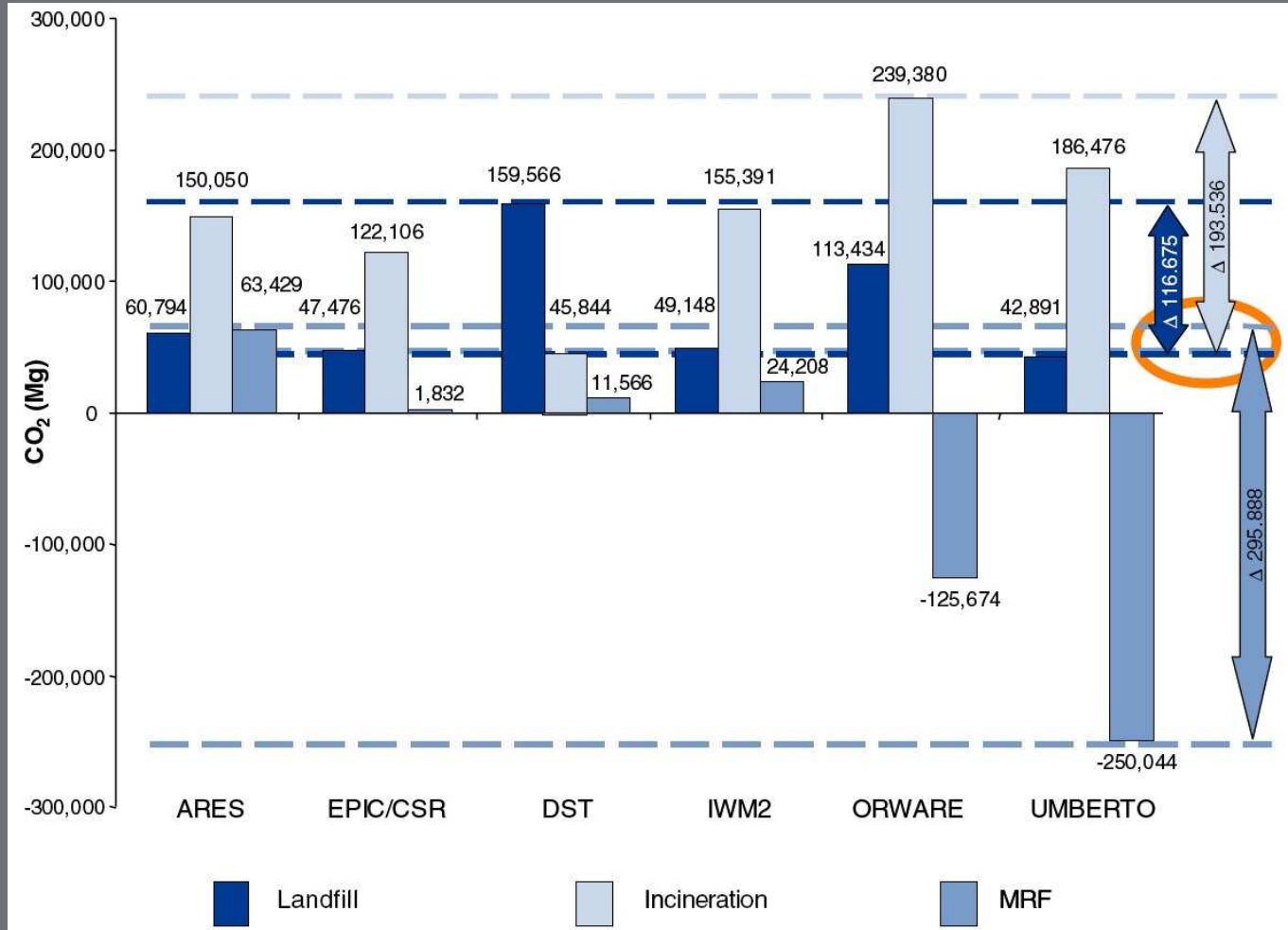
LCA's for Municipal Waste Management Systems

- EASEWASTE, Denmark (Kirkeby et al., 2006);
- EPIC/CSR, Canada (Haight, 1999, 2004);
- IWM2, UK (McDougall et al., 2001);
- LCA-IWM, EU (Den Boer et al., 2005a,b, 2007);
- MSW-DST, USA (Weitz et al., 1999; Solano et al., 2002a,b; Thorneloe et al., 2007);
- ORWARE, Sweden (Dalemo et al., 1997; Eriksson et al., 2002);
- SSWMSS, Japan (Tanaka et al., 2004; Tanaka, 2008);
- WISARD, UK (Ecobilan, 1997); and
- WRATE, UK (Thomas and McDougall, 2003; Gentil et al., 2005; Coleman, 2006).

Gentil et al, 2010, Models for waste life cycle assessment: Review of technical assumptions, Waste Management 30, pp 2636–2648

Normalised impact profile





Winkler & Bilitewski, 2007

20

68

293

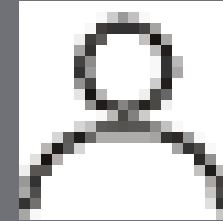
528

16



Anders Celsius (1701-1744)

20°C



Daniel Fahrenheit (1686-1736)

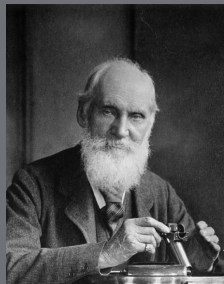
68°F



William Rankine (1820-1872)

293K

528°R



William Thomson, Lord Kelvin (1824-1907)

16°Ré



René-Antoine de Réaumur (1683-1757)

Most favoured option

Reduce

lowering the amount of waste produced



Reuse

using materials repeatedly



Recycle

using materials to make new products



Recovery

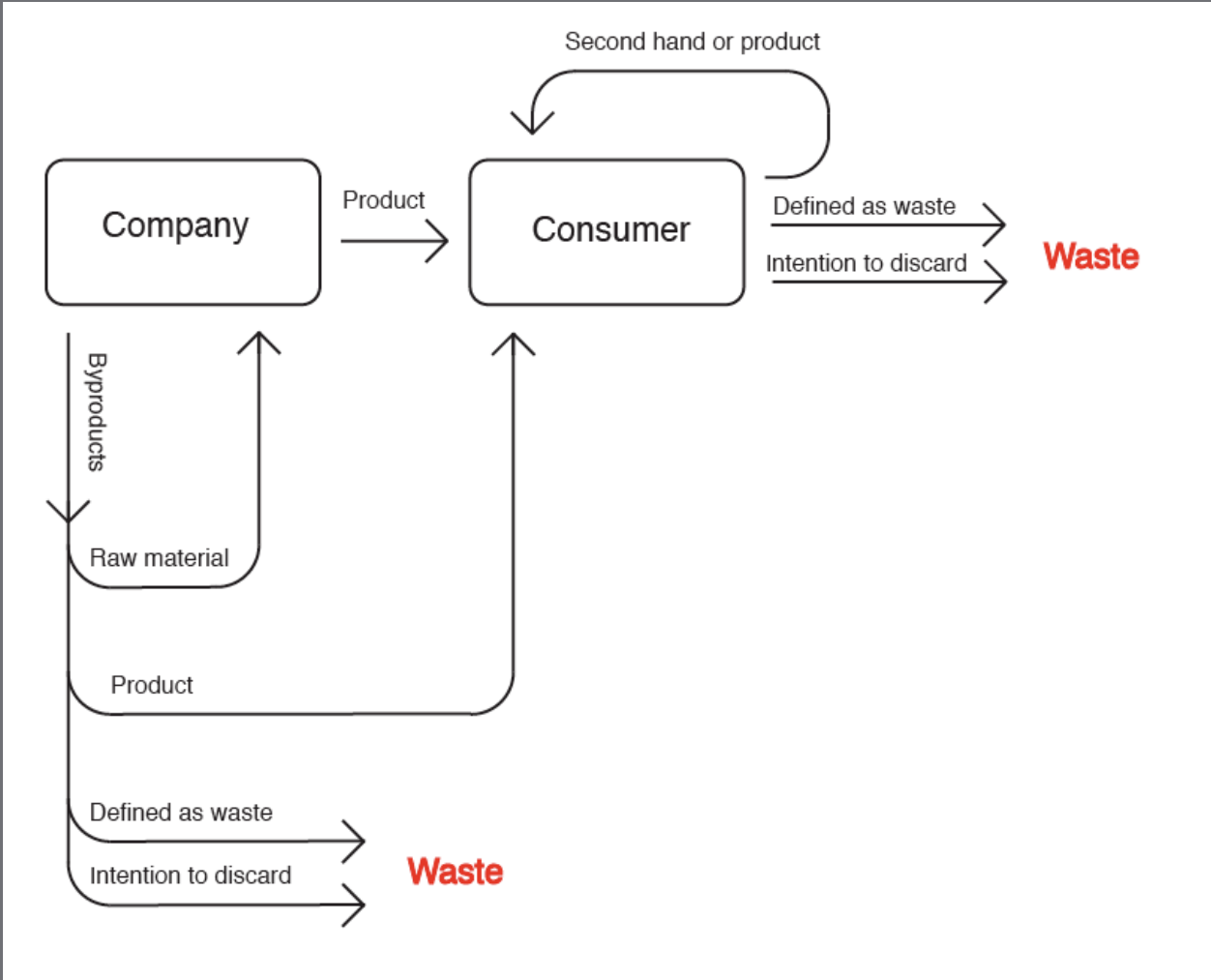
recovering energy from waste

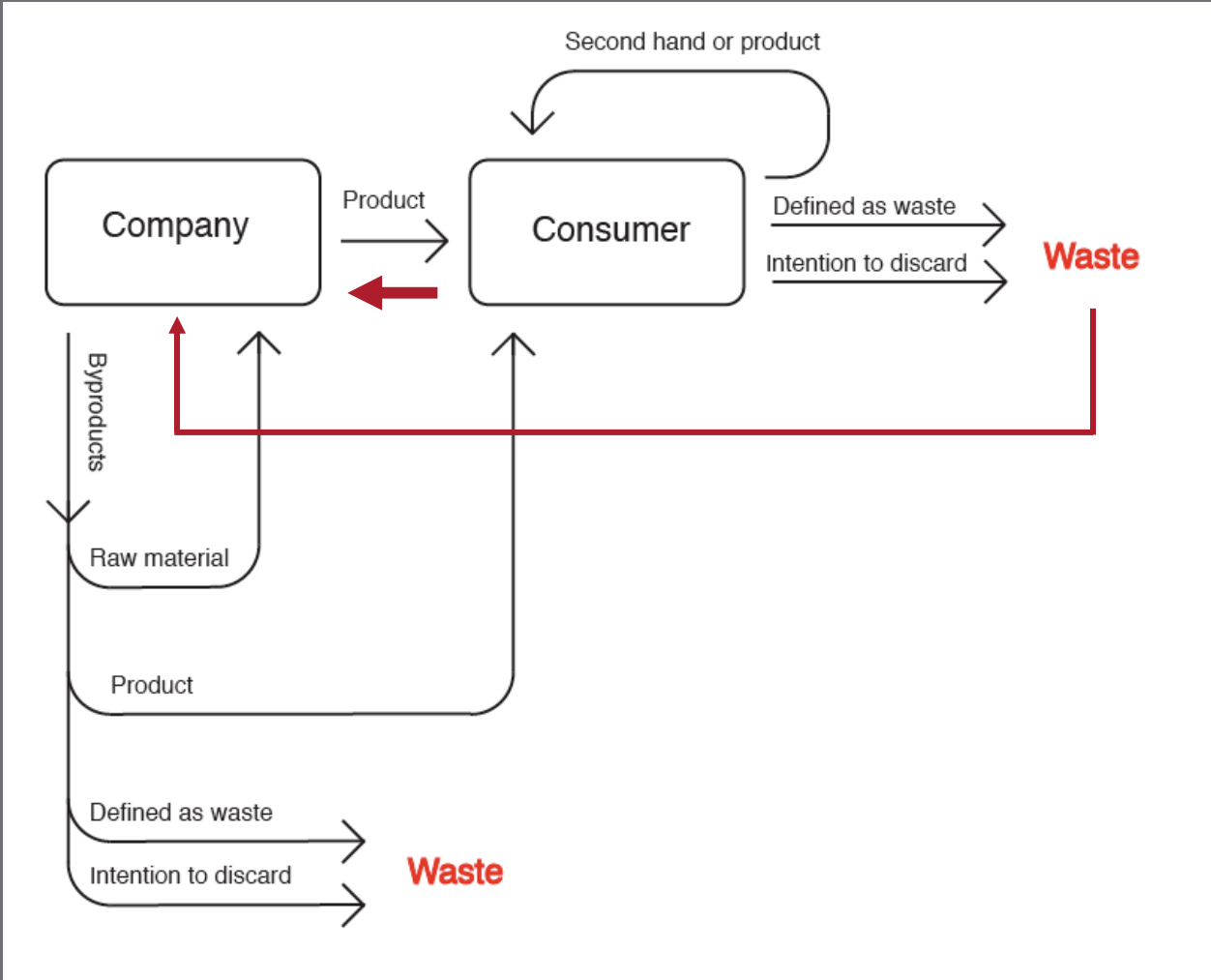


Landfill

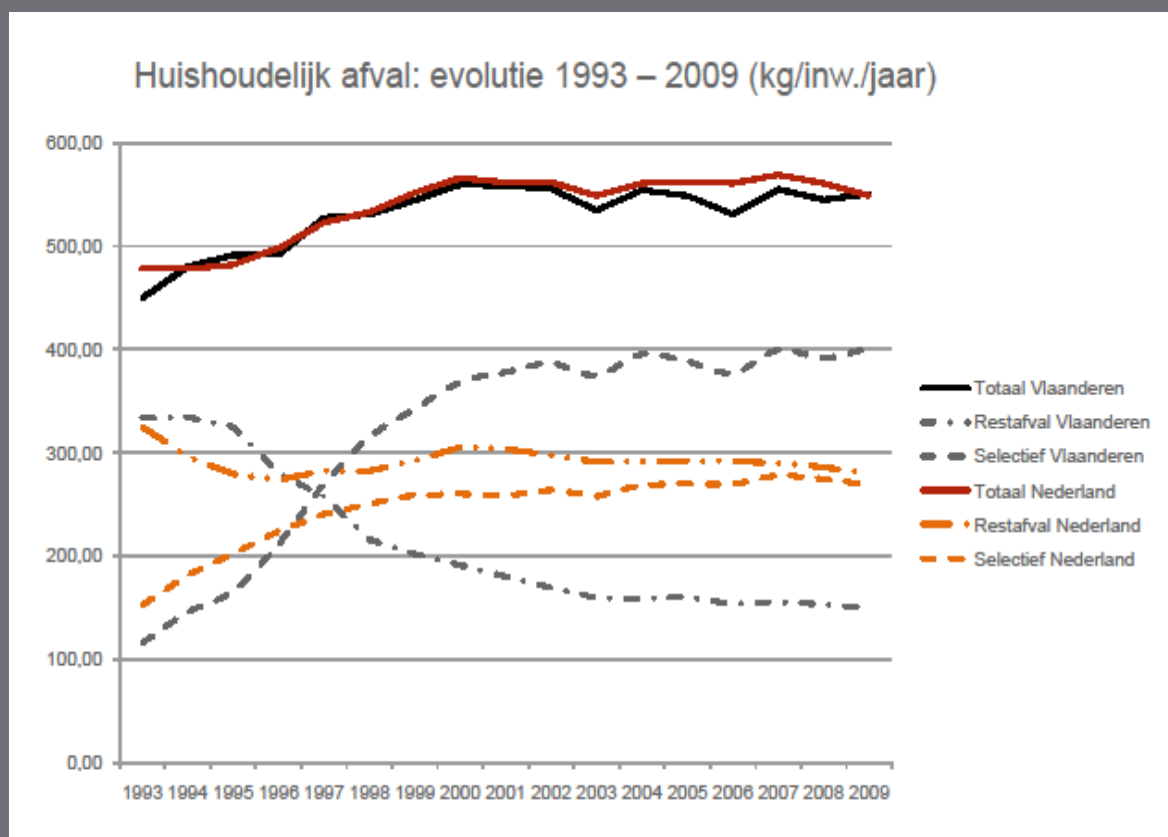
safe disposal of waste to landfill

Least favoured option





The Netherlands versus Flanders



Delatter, 2011

LCA for Local Authorities

- Reduction of environmental impact versus costs
- Translating EU or national policies practically
- Stimulate recycling by increased producers responsibility
- Making LCA tools more accessible by harmonizing and standardizing