SUSTAINABILITY IN BUSINESS

54th Swiss LCA Discussion Forum 'Ecological Scarcity 2013'

Some remarks on the history and basic concept of the ecological scarcity method

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The political framework of environmental protection

In the Swiss Constitution:

1953: Water protection

1971: Environmental Protection (92 % yes)

1975: Water Protection improved

1983: Energy policy article voted down

(1990: Energy policy article (excl. eco-tax) accepted)

Global Glimpses (e.g.):

Limits to growth :1972

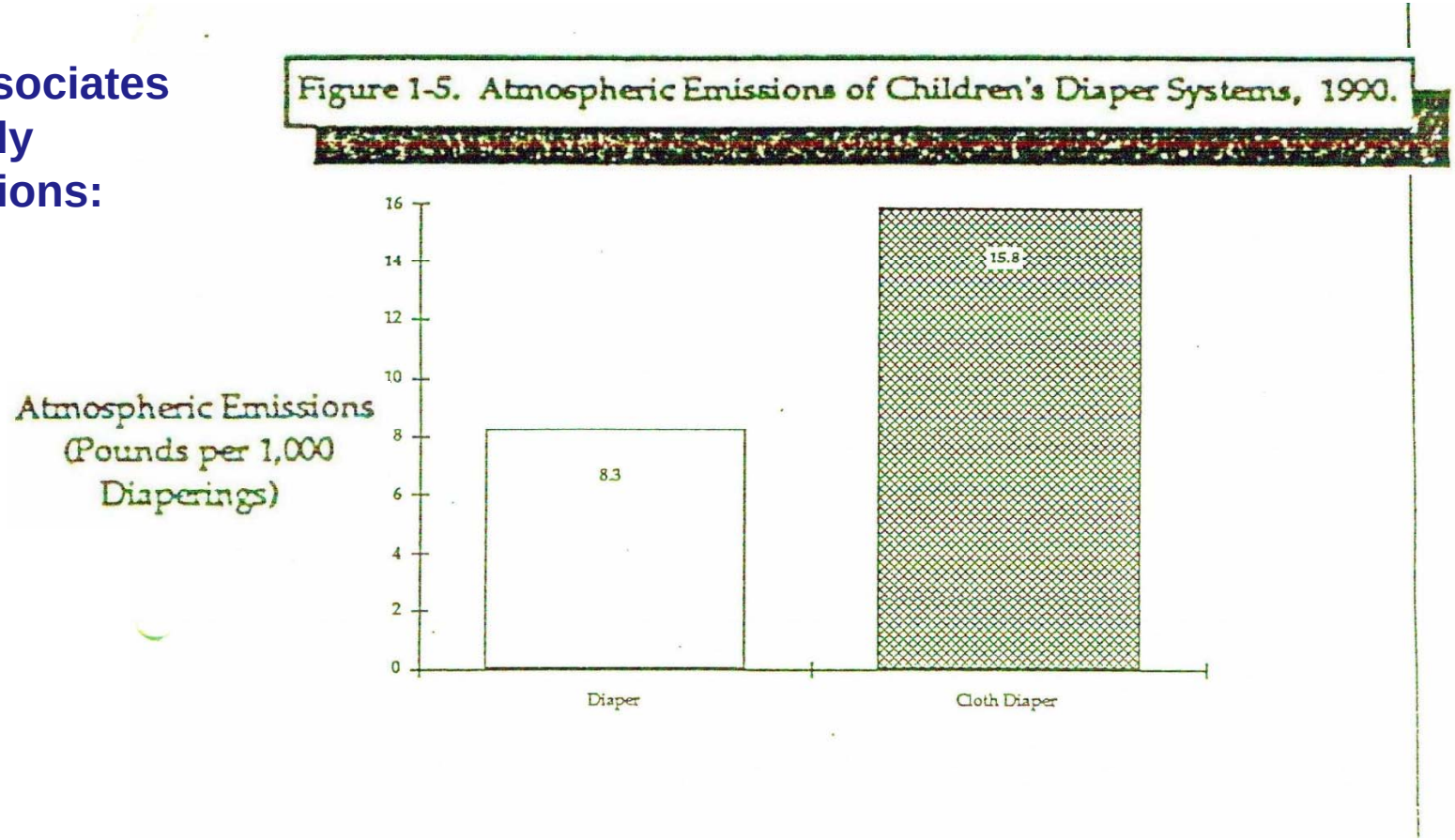
Global 2000 :1977

Companies ?

Product decisions ?

1980's: Environmental Product Analysis had just begun…

e.g. Franklin Associates up to 1990 simply added up emissions:



How to assess … if there is no method?

EMPA (W. Thalmann): end of 1970s until 1984

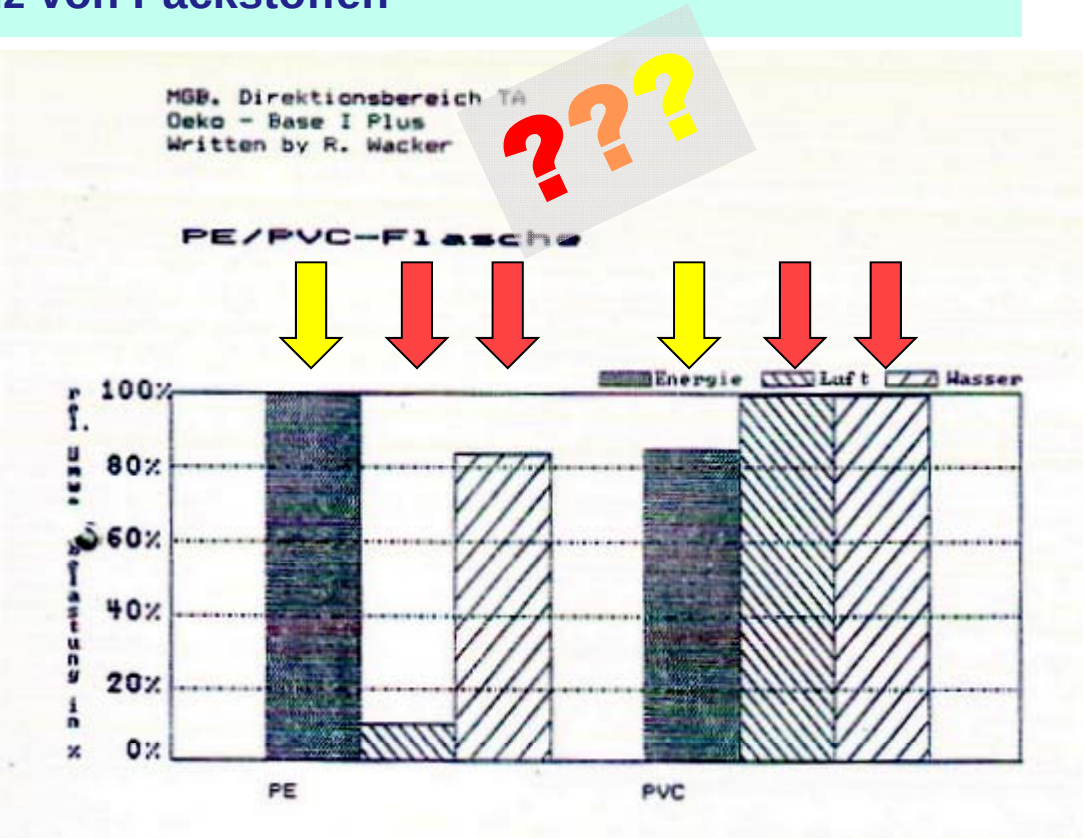
W. Thalmann: first systematic data collection + assessment for packaging materials (from 'PE, PVC and PS' in 1978, until steel in 1983), **and developed an assessment method:**

- **For Water and for Air pollution: 'Critical volumes'**
- **For Energy and for Waste: Simple addition**

Published as BUWAL 24 (1984): 'Ökobilanz von Packstoffen'

Migros implemented this in its 'Öko-Base' Software.

Sometimes clear results, but often not:



Therefore, Stephan Ahbe (MGB) expressed the need for a single-score method.

He contacted Ruedi Müller-Wenk, author of 1978's 'Ökologische Buchhaltung' with the first single score weighting *method*.

Development of 'Ecological Scarcity' method

Ahbe, Müller-Wenk and Braunschweig in 1988 set out to develop an environmental assessment method, which would follow these criteria:

- **allow for a single-score result, covering all environmental aspects considered**
- **be based on a general and neutral**, i.e. non sector biased, **definition of 'environment'**
- **have the support of the governmental environmental authority**
- **reflect soundly the scientific understanding of environment and its protection**

➔ **'Methodik für Ökobilanzen** auf der Basis ökolog. Optimierungen', BUWAL 133 (1990)

The algorithm was kept simple:

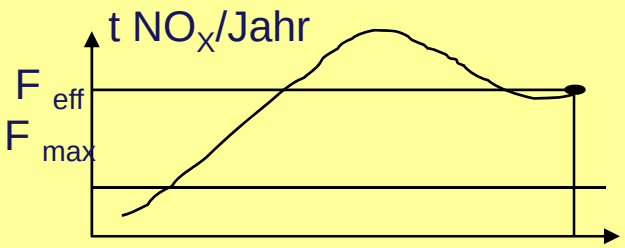
'Ecological Scarcity' method: The basic algorithm

Ecofactor: $\frac{1}{F_{act}} \cdot \left(\frac{F_{act}}{F_{max}}\right)^2 \cdot 10^{12}$

F_{act} = Current flow (emission, use) in a defined area (here: CH)
F_{max} = Maximum tolerable flow (emission, use) in the same area

➔ **Weighting expresses priorities of current Swiss environmental policy**

Example: Ecofactor for emissions of NO_X in Switzerland (UBP'06)



F_{max} = 45‘000 t / a , to stay within legal ozone limits
F_{act} = 91‘000 t / a , according to BUWAL 2005
EIP factor = 45‘000 pts / kg NO_X

Source: BAFU/öbu 2009

Slight adaptation by Frischknecht 2006 now allows for interesting adaptations, esp. for different area scarcities:

Ecofactor: $\frac{1}{F_{norm}} \cdot \left(\frac{F_{act}}{F_{max}}\right)^2 \cdot 10^{12}$

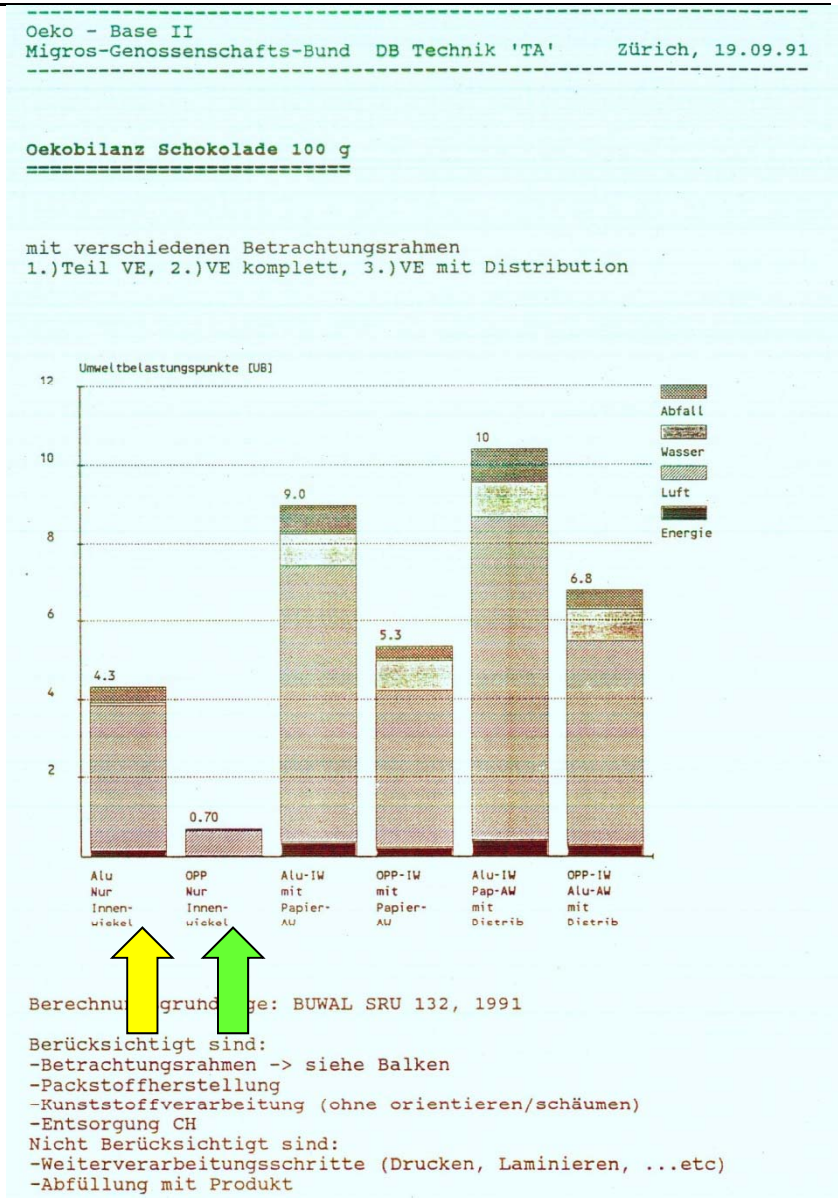
F_{norm} = Current flow in CH
F_{act} = Current flow in the reference area (mostly: CH)
F_{max} = Maximum tolerable flow (emission, use) in the area

Source: BAFU/öbu 2009

With single score assessment, results became clearer

Of course, scopes need be well defined. Of course, reasonable inventory data is necessary. But the **structure of the result became very useful for further internal discussion, both for products and for companies**:

Packaging example: 3 levels of packaging analysis (left: inner wrap only; middle: inner wrap with un-changed outer wrap; right: idem, with distribution).



Ecopoints results were **designed for management situations** & decision preparation. For detailed technical situations, e.g. product development or process improvement, more detailed information are needed. However, an EP-overview is useful there, too !

And there is more to discuss, e.g. reference area definition, completeness, etc. etc..

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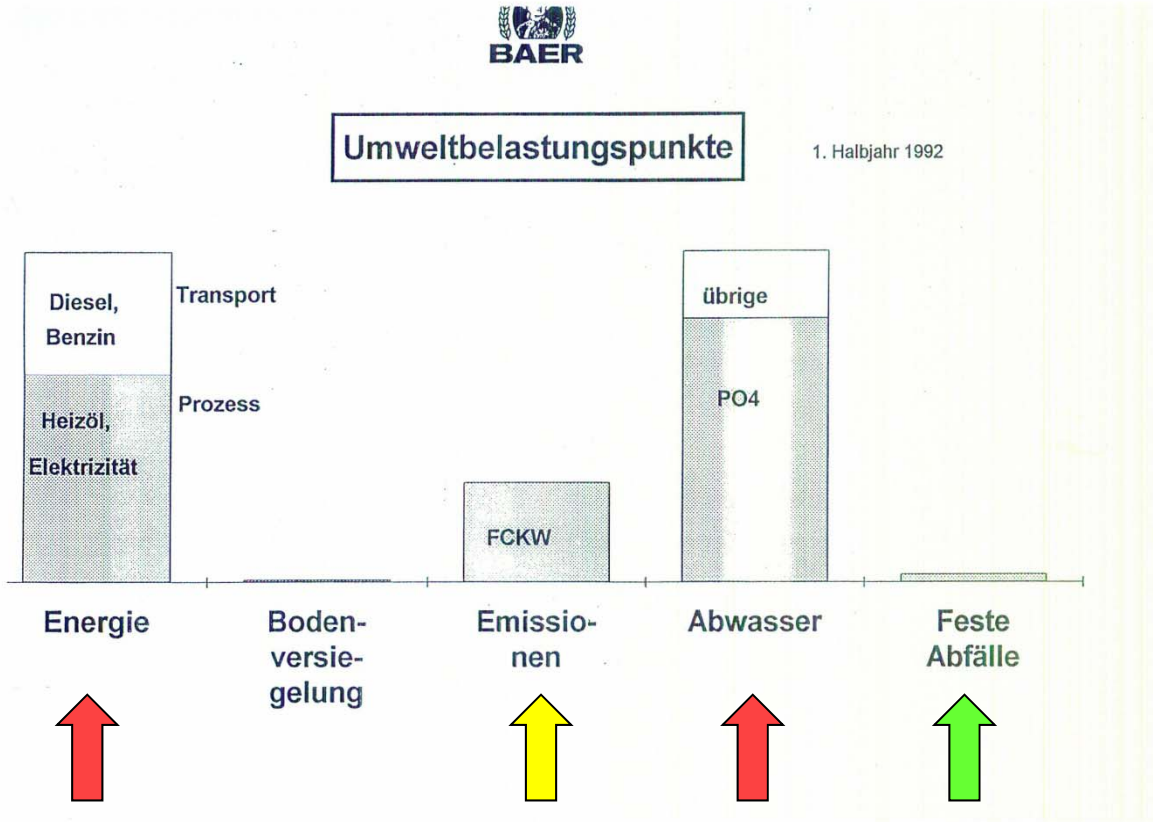
Company example: Baer Soft Cheesery



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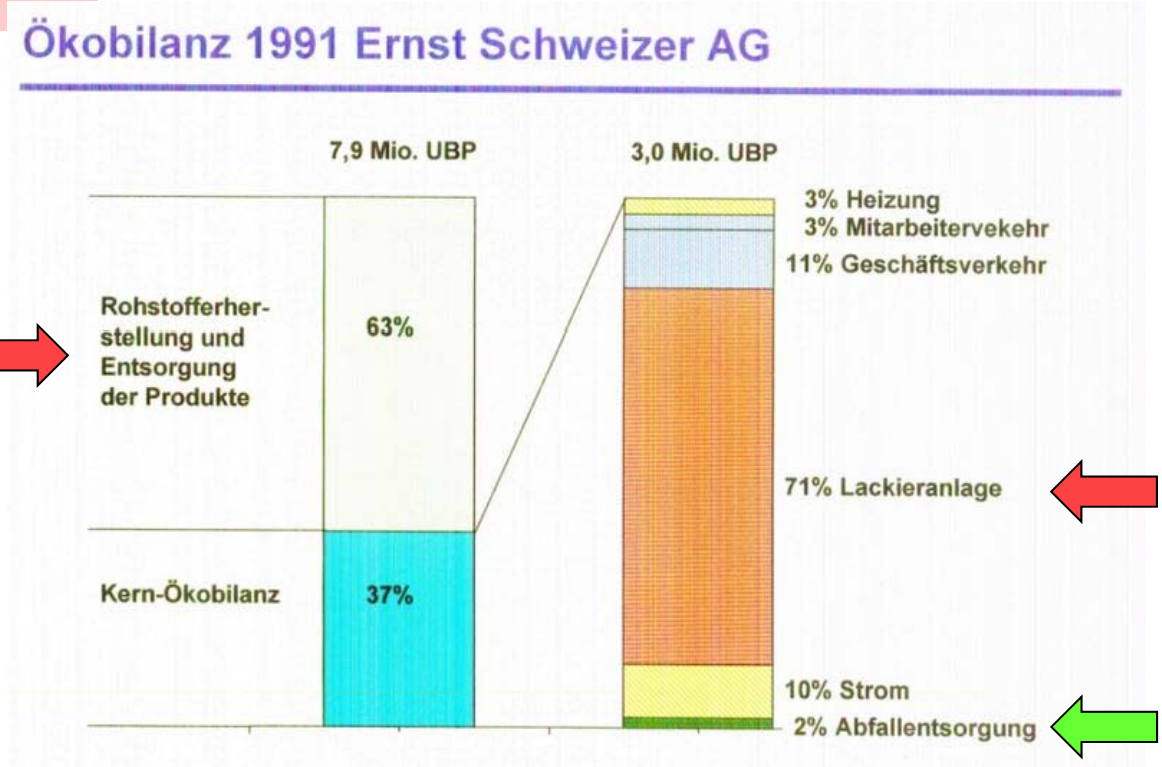
Company example:
E. Schweizer AG Metallbau



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