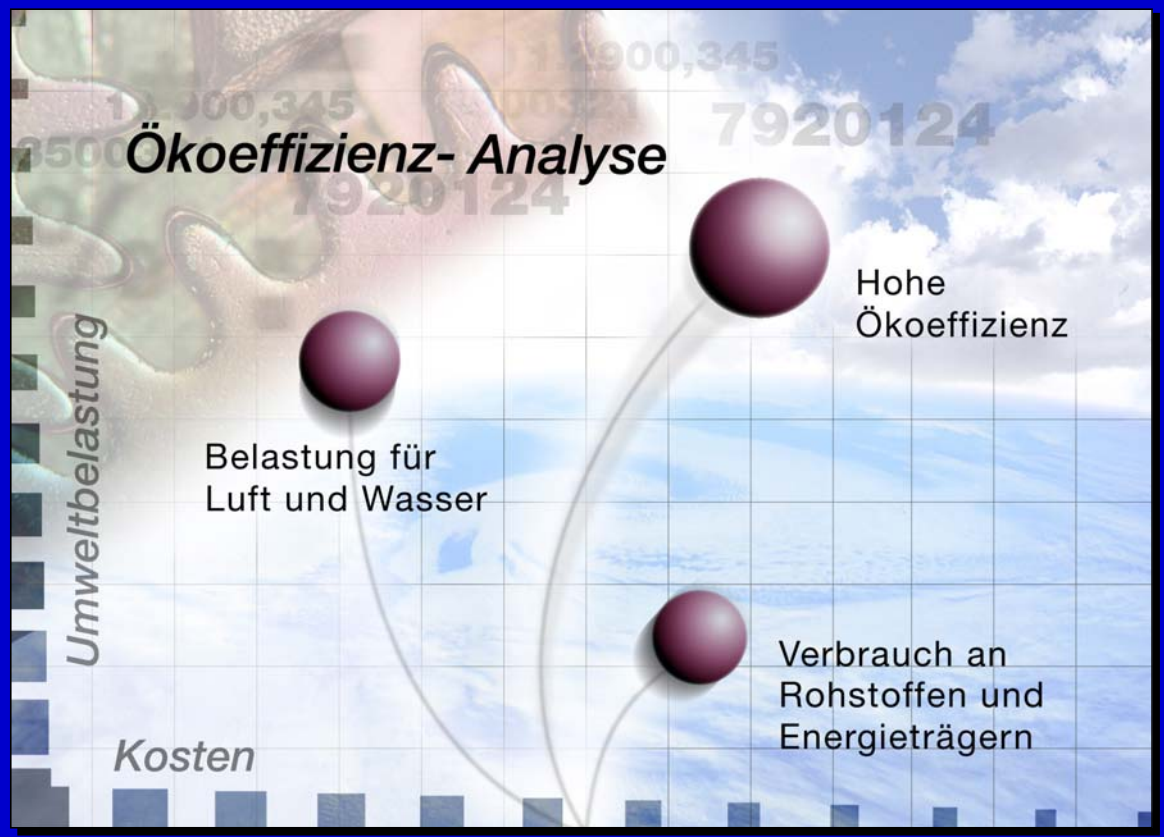
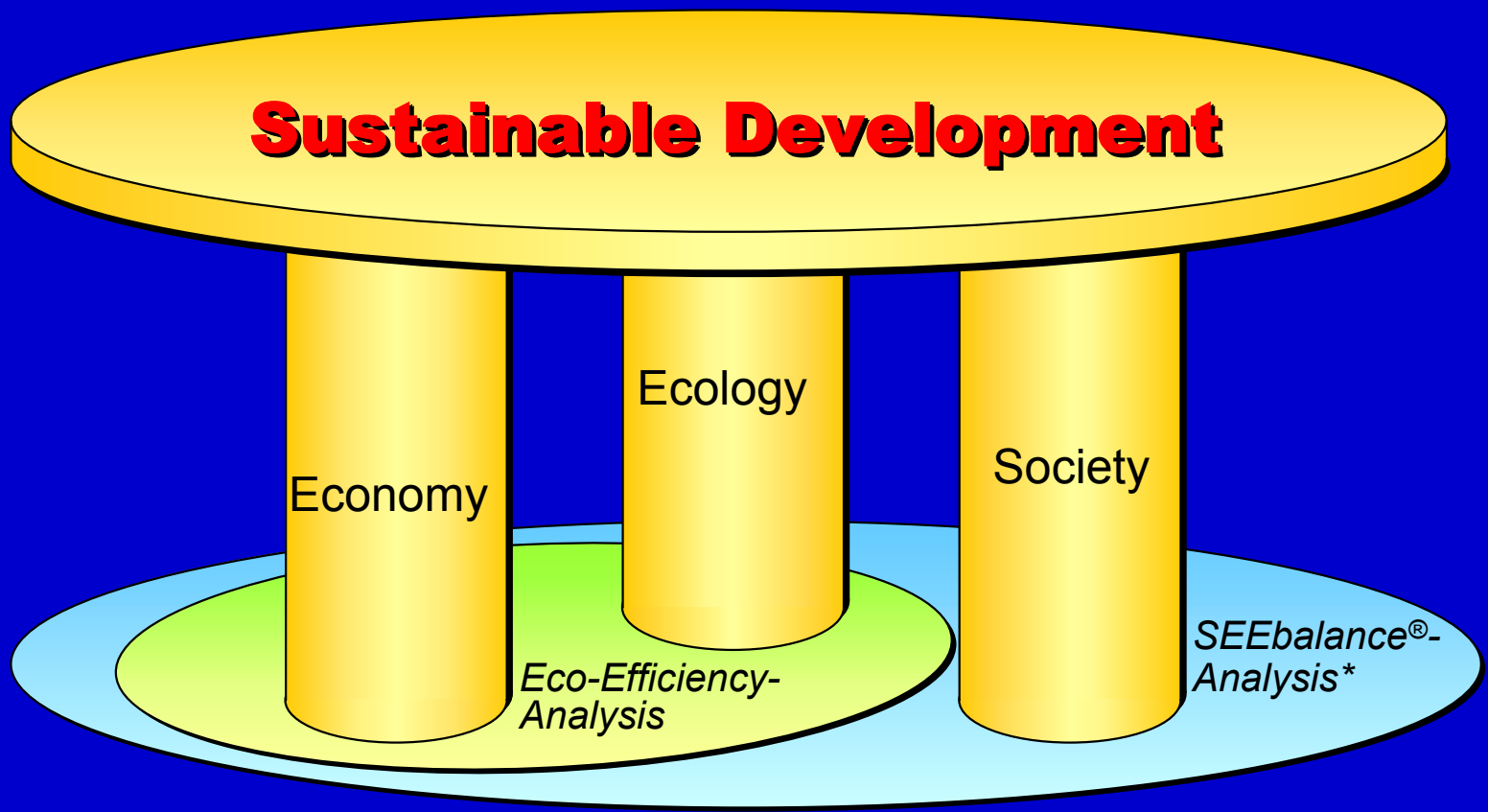
Industry Requirements onto LCI/LCA Database

Dr. Andreas Kicherer BASF Aktiengesellschaft



Validated Eco-Efficiency Analysis Method

Sustainable Development is based on three Pillars



* being developed

What is Eco-Efficiency Analysis?

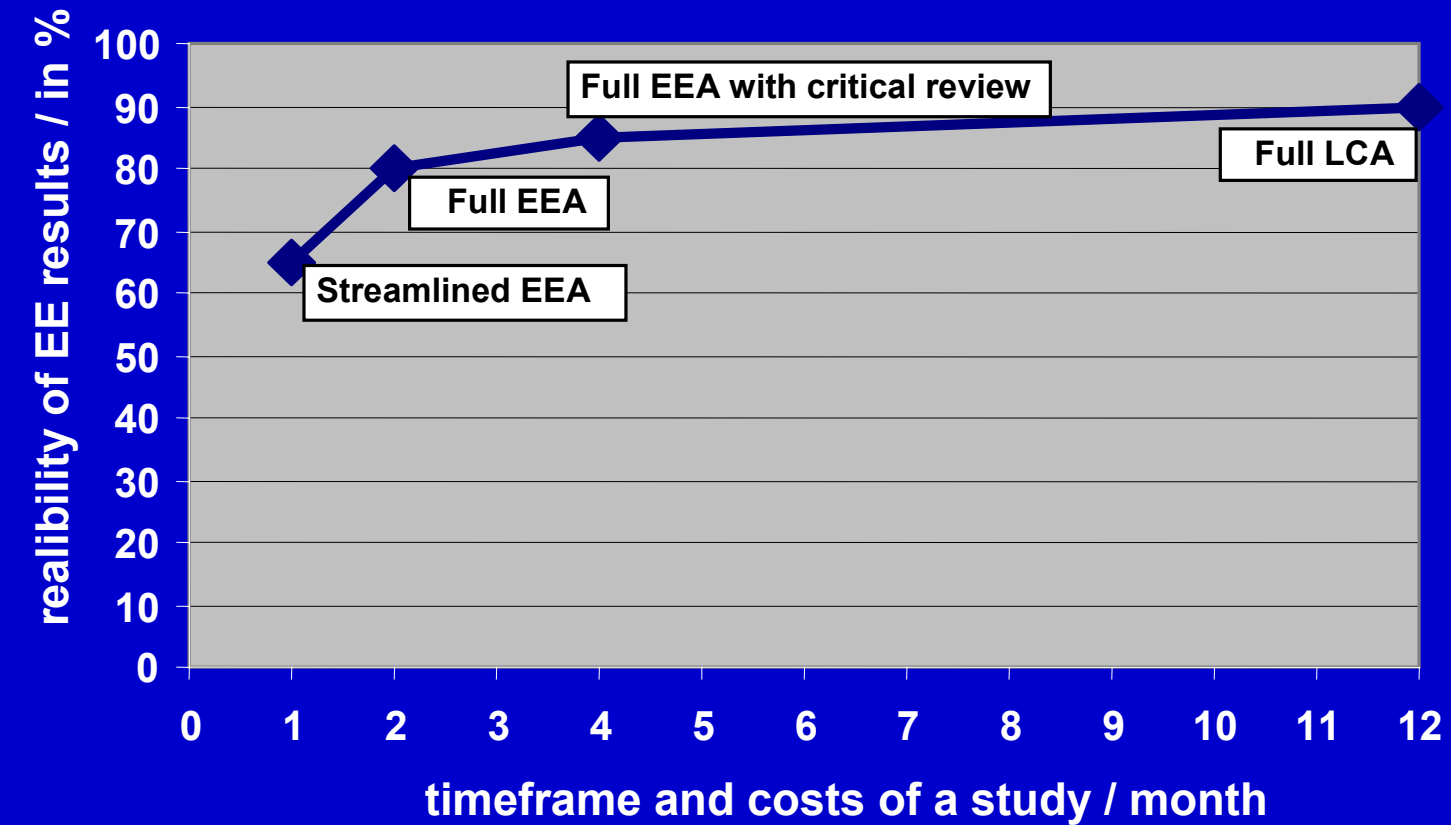
- Method for the **comprehensive assessment** of products and processes.
- **Ecological (ISO 14040) and economic aspects (LCC)** are given equal weight in assessments.
- Eco-efficiency analysis is a **standard** tool in the **BASF Group**; more than 200* analyses have been carried out.
  - More than 2000 LCI-data sets created
  - Experiences with about 150 internal managers and 40 externals
  - Projects in all product groups (chemical production, energy, coatings, cars, electronics, waste systems, agriculture, textiles, packaging....)

* Status 10/2003

Requirements of Industry Managers onto LCA-Projects

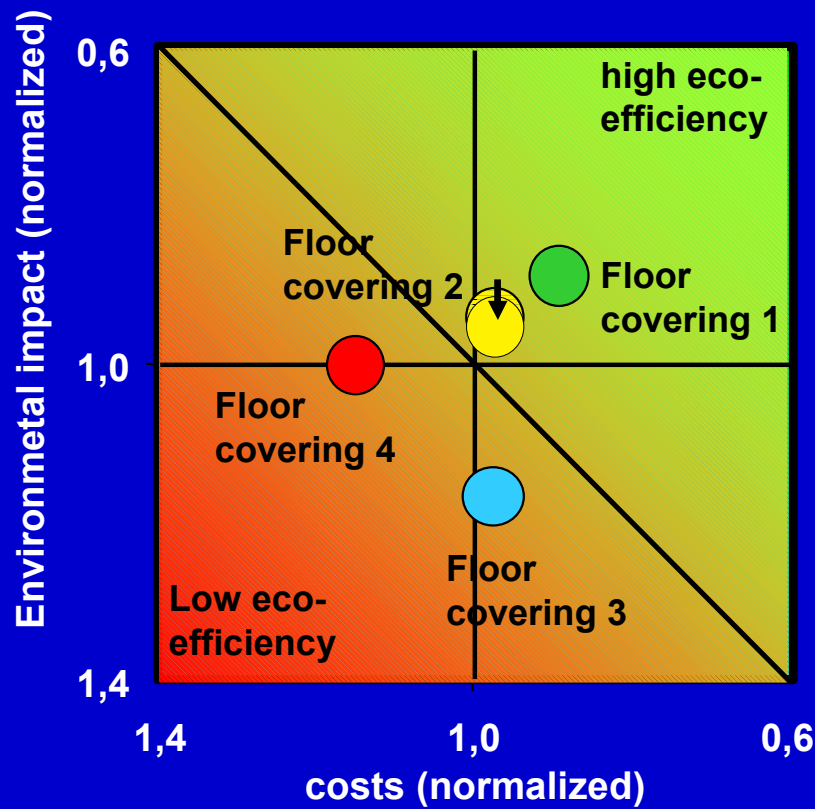
- Quantitative results with a clear assessment
- Simple and impressing illustration of the results
- Scenario and sensitivity analysis
- Short timeframe (2 month)
- Low costs for the analysis (<30.000 €)
- Combination of LCA with LCC

Reliability versus Effort of LCA‘s



Eco-efficiency portfolio for floor covering

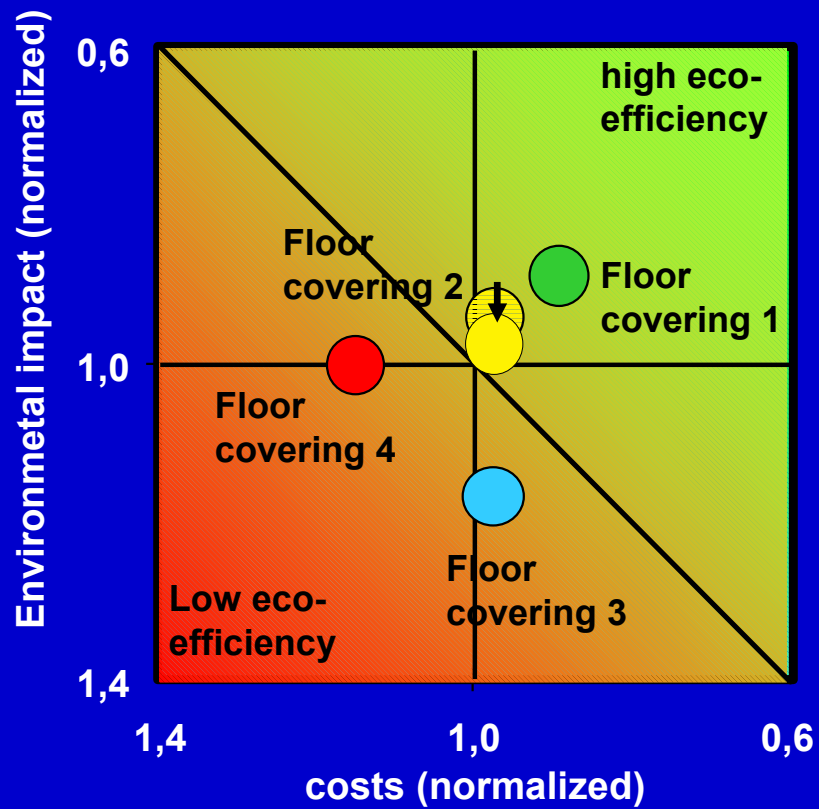
Ecoprofile for main material 2 was actualized (about 10 % worse)



The influence of the ecoprofile of the materiel onto the overall result is small

Eco-efficiency portfolio for floor covering

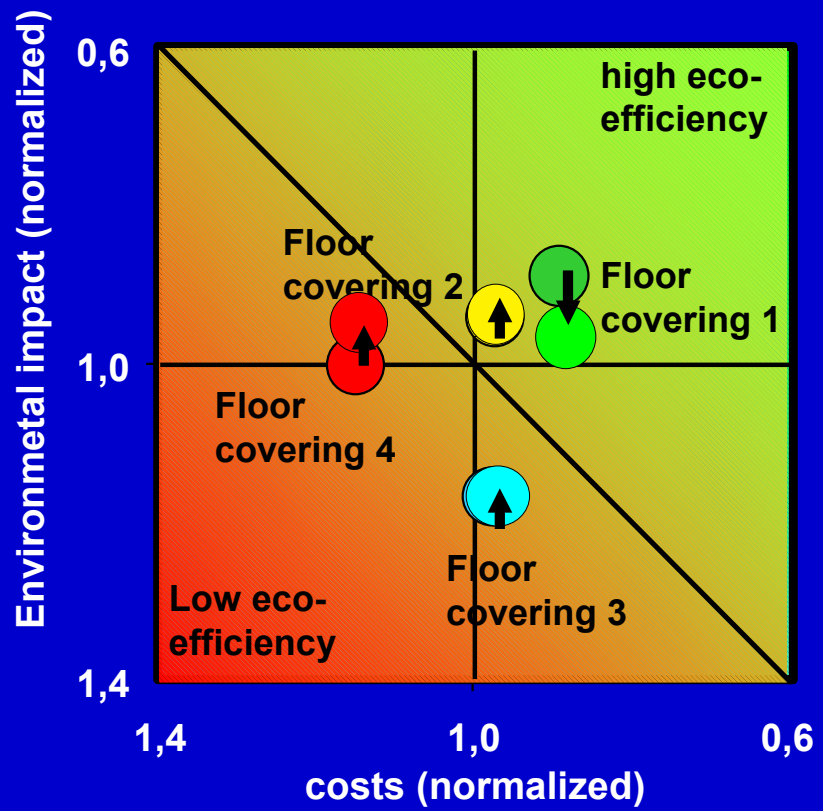
Ecoprofile for main material 2 produced in another country



The influence of the country,where the materiel is produced onto the overall result is small

Eco-efficiency portfolio for floor covering

Other weighting factors

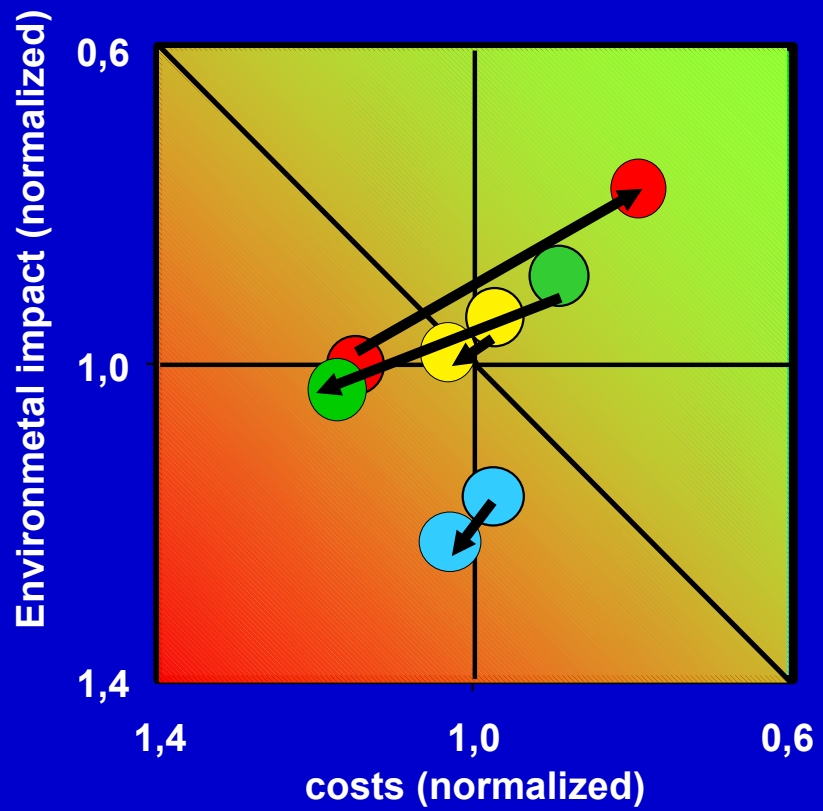


	base	new
Material	25%	16%
Energy	25%	20%
Emiss.	20%	28%
Toxicity	20%	24%
Risk	10%	12%
Air	50%	40%
Water	35%	38%
Waste	15%	23%
GWP	50%	28%
ODP	20%	33%
POCP	20%	18%
AP	10%	22%

The influence of the weighting factors onto the overall result is small

Eco-efficiency portfolio for floor covering

Variation of lifetime: residential to commercial



Life time

Resid.	Comm.
10 a	4 a
10 a	4 a
6,5 a	4 a
12,5 a	4 a

The influence of the lifetime onto the overall result is very high

Conclusions

- Main influence factors for the results of eco-efficiency-analyses are technical and market data.
- Preciseness of LCA data has only a small relevance onto LCA in decision making.
- Managers in companies need clear and defined results.
- A very practical approach for LCA is necessary and reliable enough for industrial and political purpose.

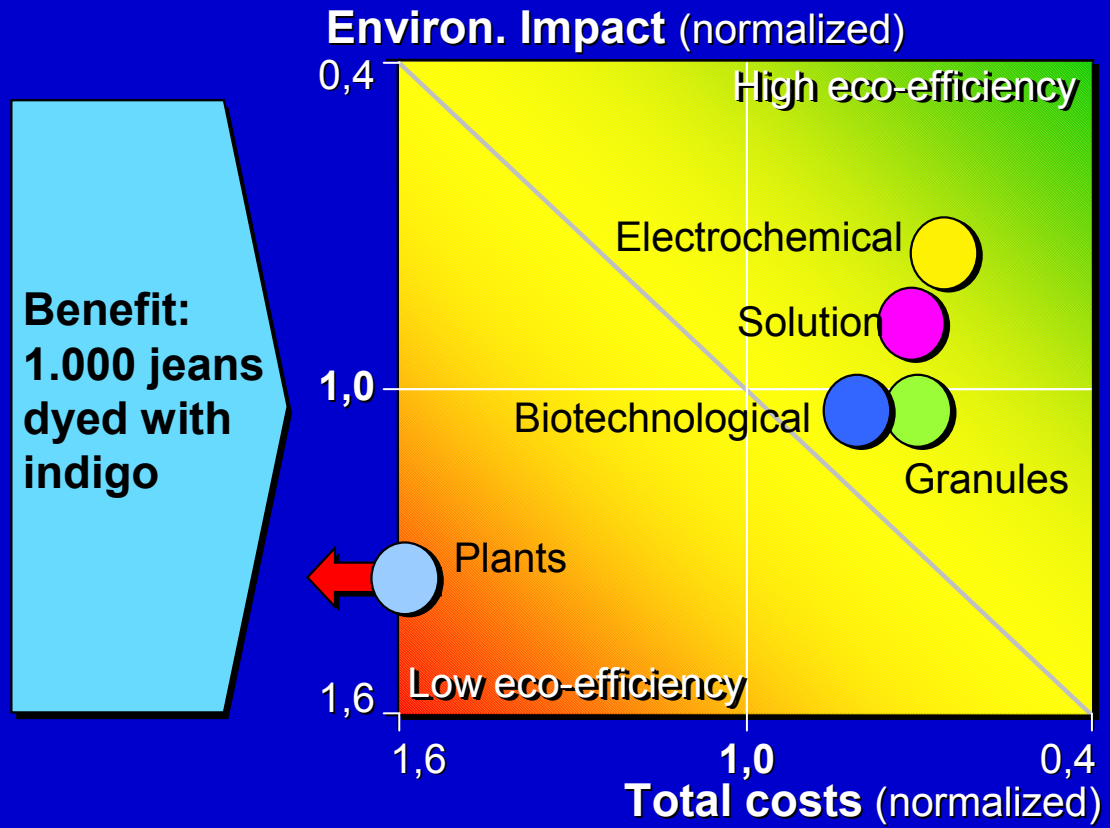
Appendix

Jeans Dyeing Project

Alternative Systems for Indigo Granules

Determine demand-specific benefit	Select BASF product	Define comparable products
Dyeing of blue denim for the production of 1000 jeans	synthetic indigo **granules**	Indigo powder from plants
		biotechnological Indigo granules
		synthetical indigo solution,40%,
		synthetical Indigo solution, 40%,electrochemical dyeing process

In the Eco-Efficiency Portfolio, the Environmental Impact is plotted against the Costs



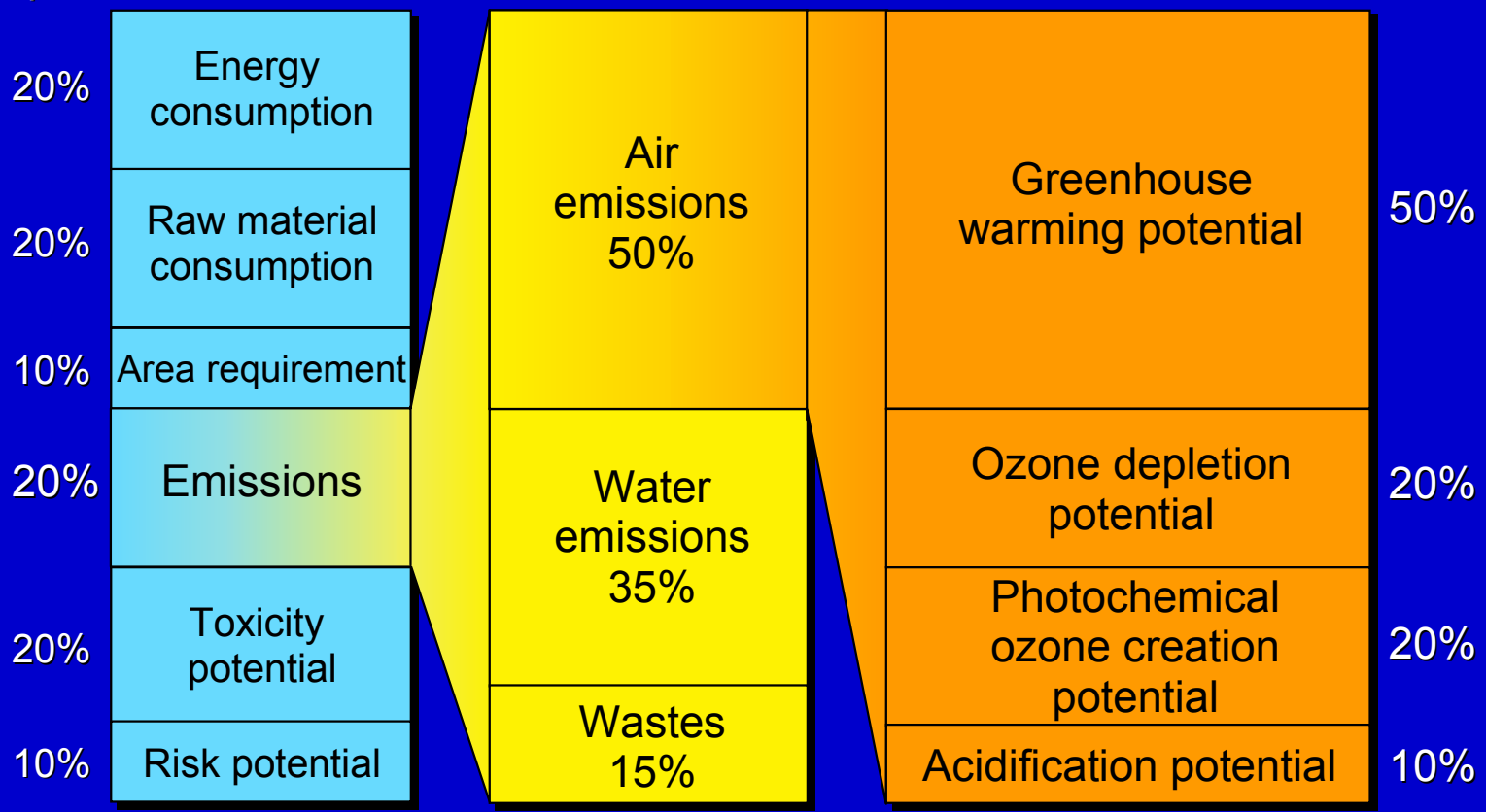
Consequences of the Analysis

- Construction of a plant for the production of 40% indigo solution (beginning production at the end of 1999)
- Increased R&D expenditure for the electrochemical process (construction of a pilot plant)
- Communication with customers and professional circles

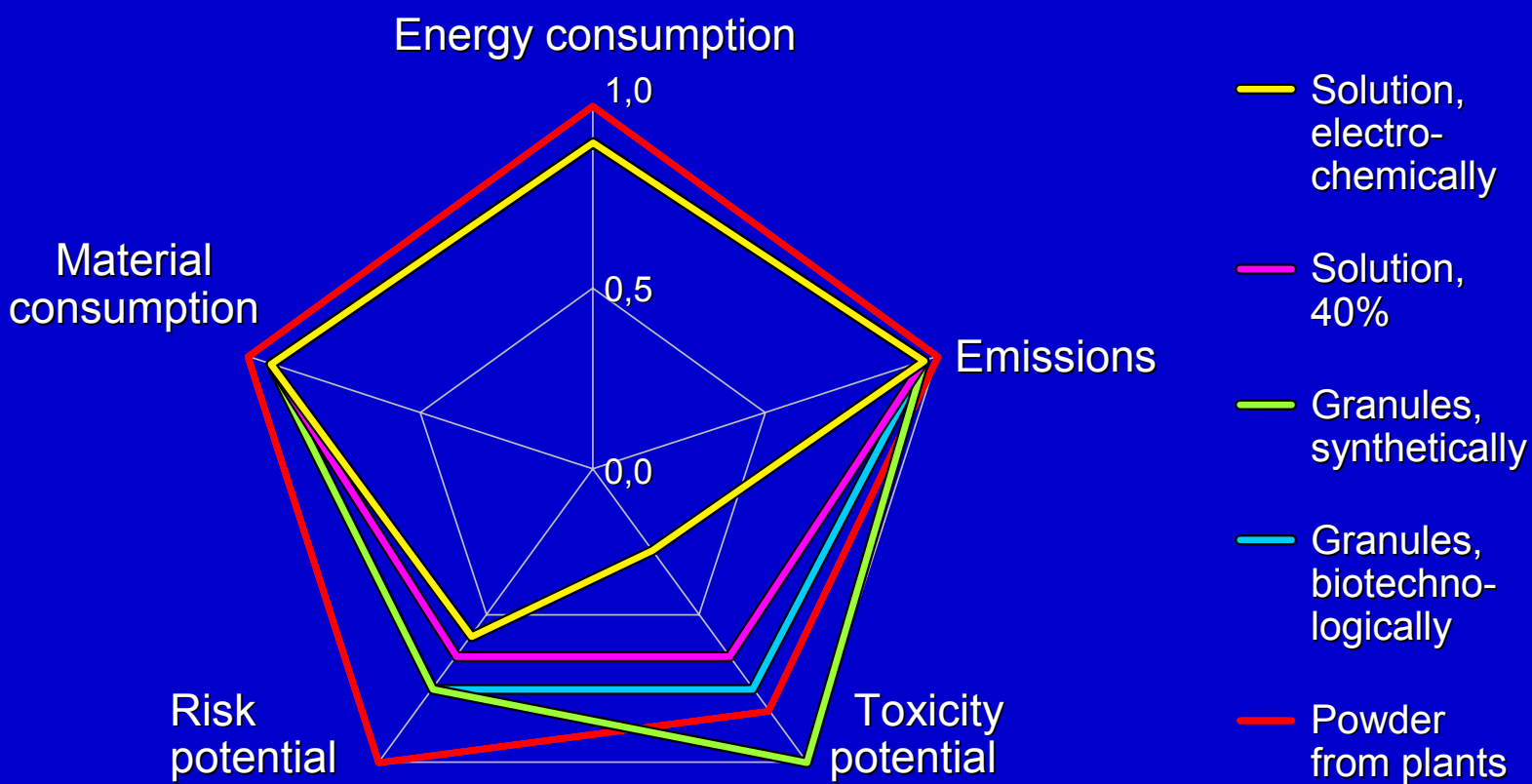
→ Success of the measures: Increase of the market share from 2% (1999) to approximately 40% (2002)

Social Assessment Factors

quantitative:



The detailed Results can be read off in the Ecological Fingerprint



Acceptance of the Method by Stakeholders, NGOs and Science ...

Wissenschaftszentrum Nordrhein-Westfalen
Institut Arbeit und Technik

Kulturwissenschaftliches Institut
Wuppertal Institut für Klima, Umwelt, Energie GmbH

...Basically, the large number of indicators used in eco-efficiency analysis make relatively reliable statements possible ...

Dr. Reinhard Loske
Mitglied des Deutschen Bundestages
Umweltpolitischer Sprecher Bündnis 90/DIE GRÜNEN

.....Politically, it is worth considering how this tool can find wider application.....

Öko-Institut e.V.;
Bereiche Chemie und Umweltrecht

....The sensitivity considerations carried out in the eco-efficiency analysis make sense and provide good orientation as regards further ecological and economic optimizations....

... and the whole World.

THE GLOBAL COMPACT
HUMAN RIGHTS LABOUR ENVIRONMENT

Pilot project with UNEP/UNIDO to improve the eco-efficiency of Moroccan dyehouses

Member of Dow Jones Sustainability Indexes
04

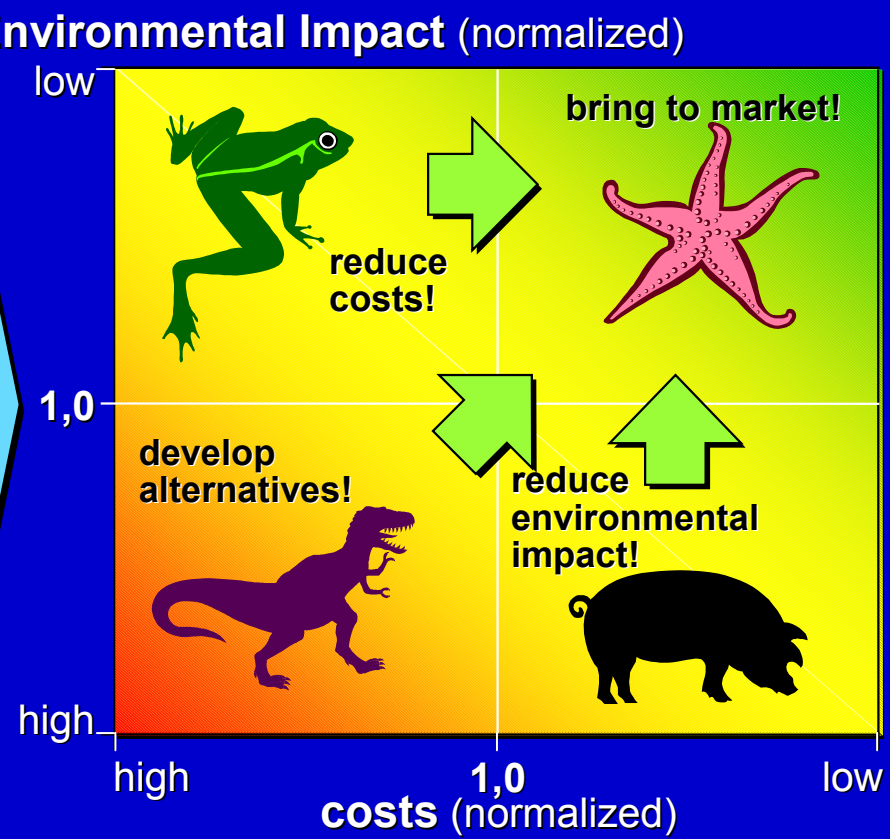
Assessed since 2002 as one of the world's most sustainable chemical companies, partly as the result of the development of eco-efficient products

What does BASF use Eco-Efficiency Analysis for?

Internal	**Strategy** • Decisions on investments	**Research/product development** • Prioritization of research projects
External	**Politics** • Discussion with opinion makers in political decisions	**Marketing** • External customers optimize their products and processes with eco-efficiency analyses

Consequences of Eco-Efficiency Analyses

Depending on the position of the analysed product, different strategic recommen-dations are given.



Are you interested?

How can you proceed?

- Get in touch with us. (http://www.oekoeffizienzanalyse.de)
- We will provide you with a tailor-made proposal.
- The time frame for a study varies between 2 and 6 months.
- Your own efforts to determine the input data are relatively low.
- The total costs are between € 20,000 and 30,000 (depending on the complexity).

The Eco-Efficiency Team:

Our Homepage:
http://www.oekoeffizienzanalyse.de