

***Master: Ingénierie et Gestion de
l'Environnement Industriel (IGEL)***



TECHNISCHE
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**Industrial Environmental Management and
Technology**



Module:

Industrial Environmental Management

(La gestion de l'environnement industriel)

**Prof. Dr. Liselotte Schebek
Dipl.-Phys. Wilfried Denz
Dipl.-Ing. Othman Mrani**

1.1 Department of Industrial Material Cycles

1.2 Lecturers

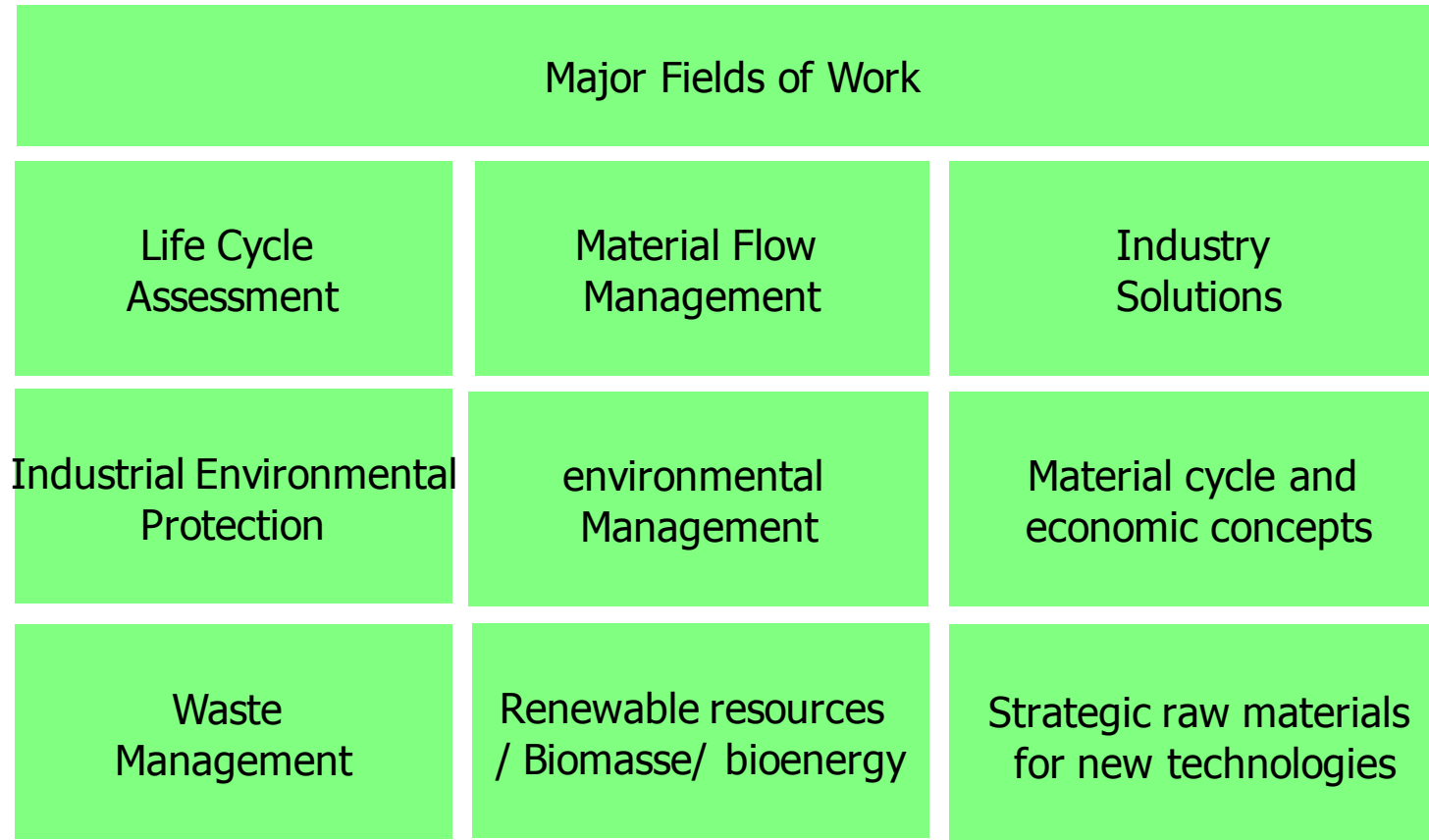
1.2 Modul: Industrial Environmental Protection

Department of Industrial Material

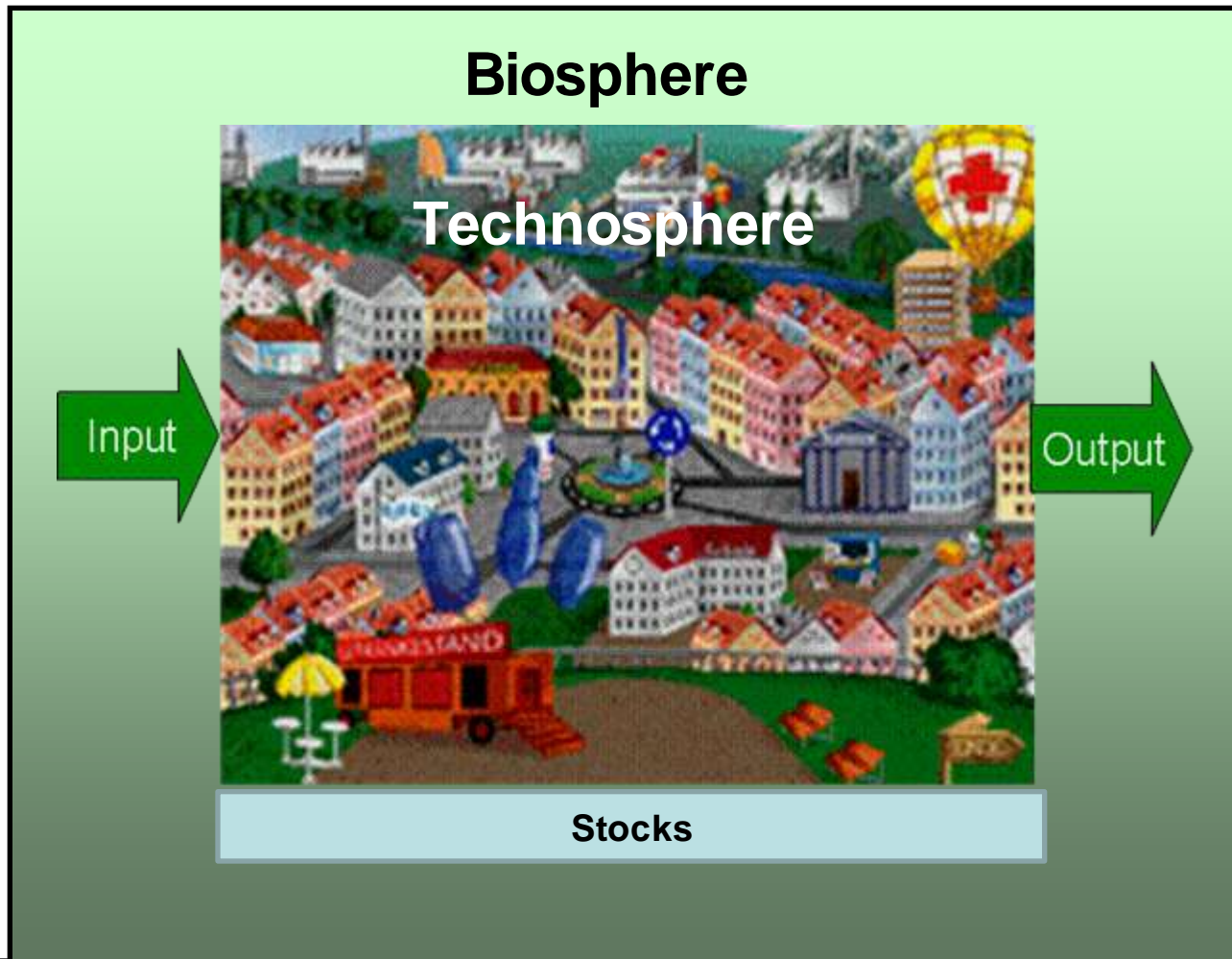
Head of Section: Prof. Dr. rer. nat. Liselotte Schebek



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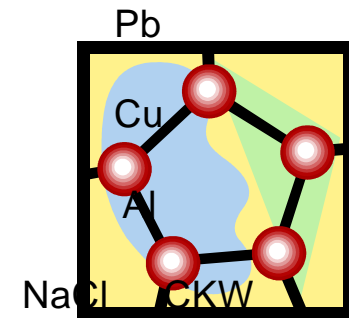


Anthropogenic Material Cycles



Materials are...

- In natural sciences: Elements and chemical compounds
- In economics: (raw) materials and commodities



Research interest in anthropogenic material cycles



Techno-economic analysis of material cycles inside of the Technosphere and between Biosphere und Technosphere:

- **Identifizierung of drivers and pressures, i.e. between economy, society and impacts on the environment.**
- **Development of management strategies for material cycles in order to increase resource efficiency and decrease impacts on environment.**

Methods (I)

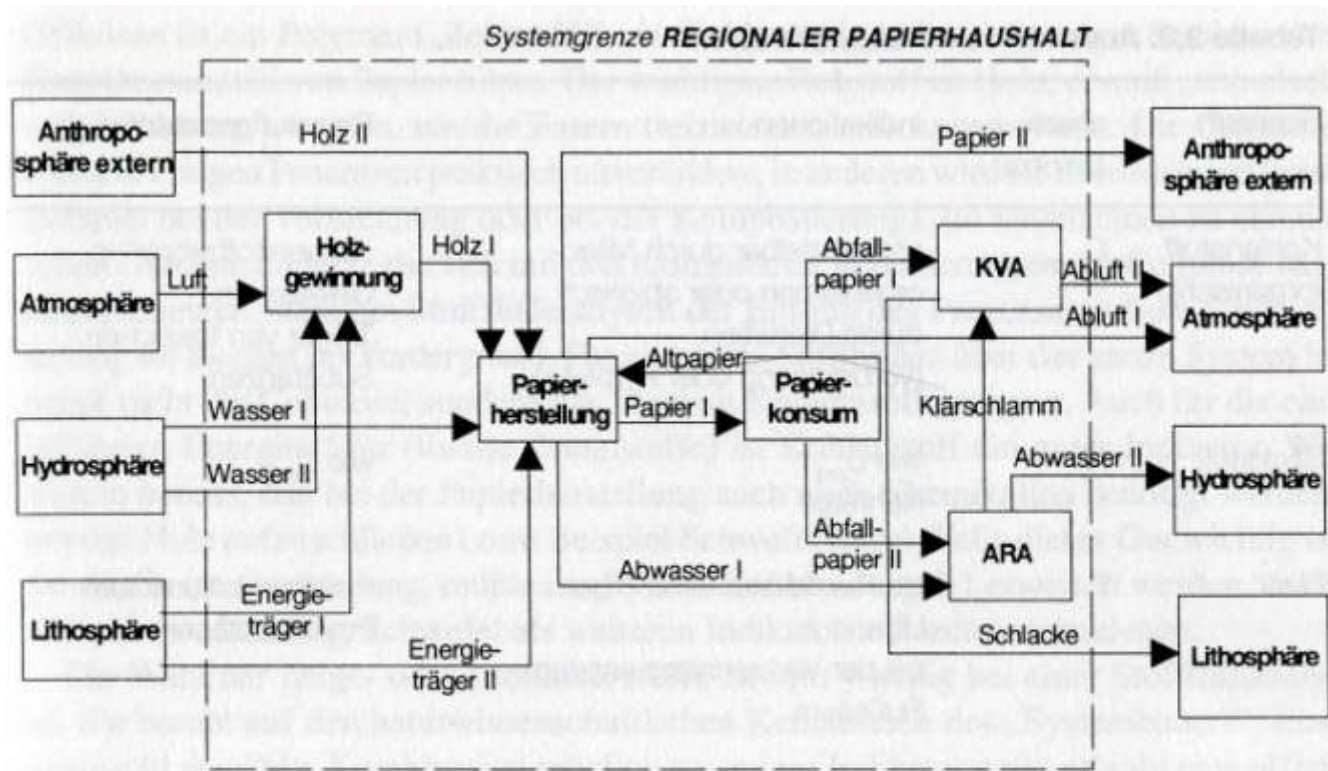
- MFA – Material Flow Analysis
- SFA – Substance Flow Analysis

based on principles of natural sciences:

*„Naturwissenschaftliche Methode zur Erfassung,
Beschreibung und Bewertung von Stoffwechselprozessen
innerhalb eines zeitlich und räumlich definierten
Systems.“*

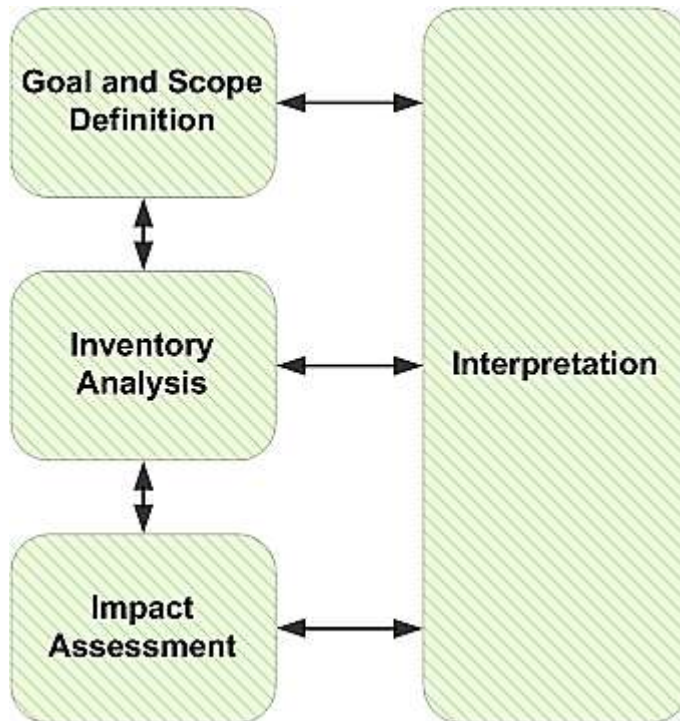
P. Baccini. H.-P. Bader: Regionaler Stoffhaushalt Spektrum Akademischer Verlag 1996

Example: Regional Budget of paper



2.1 Schema des Güterflusses für das System „Regionaler Papierhaushalt“.

P. Baccini, H.-P. Bader: Regionaler Stoffhaushalt Spektrum Akademischer Verlag 1996



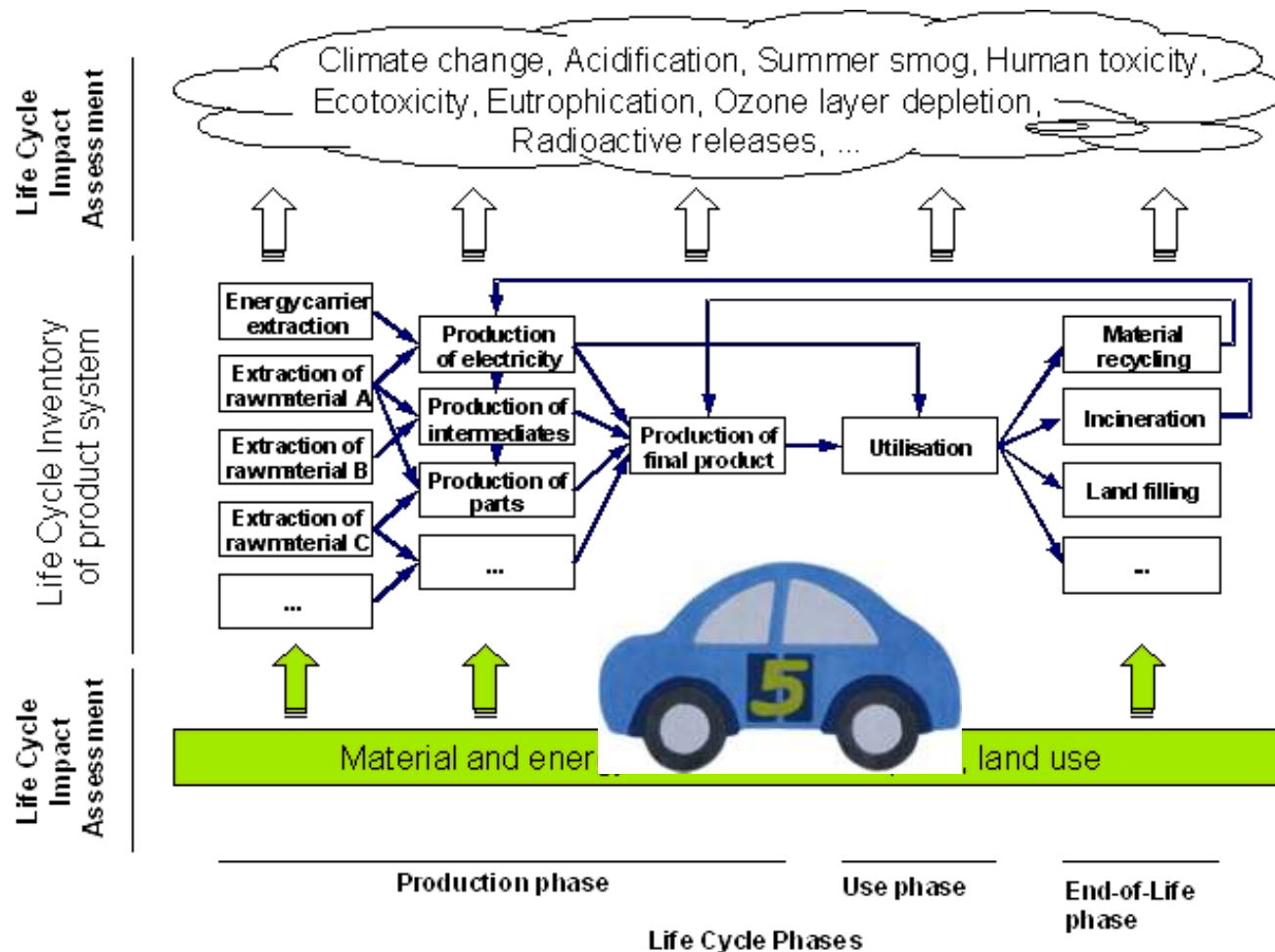
Life Cycle Assessment (LCA, Ökobilanz) ISO 14040/14044

complete acquisition

Life cycle of products "from
cradle to grave"

All relevant environmental
impacts

Example: LCA



Current issues of research

Biomass:

- Competing uses for material and energetic purpose; land use changes

Energy:

- Potentials of novel energy technology for GHG mitigation and energy efficiency

Strategic elements:

- Demand for specific „critical“ elements for novel materials and technologies

Urban Mining

- Stocks and material flows from the building sector.

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Lecturers



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Module: Industrial Environmental Management

What is it all about?

Natural Environment



Ressources

Emissions,
Waste

Industry



=> How can industry contribute to avoid or solve environmental problems?

Module: Industrial Environmental Management

Natural Environment



Industry



Part I (Schebek)

- Which are today's environmental problems?
- Which are the reasons for environmental problems?
- What general strategies do we have to cope with environmental problems?

Part II (Denz)

- How can Industrial Companies respond to environmental problems by management systems and by technologies?
- What are the benefits of environmental management for industry?

Programm: Industrial Environmental Protection

	9:00h-10:30h	10:45h-12:15h	14:00h-15:30h
20.06.2012	1. Introduction: Environmental problems	2. Impact	E 1 : Silent Spring
21.06.2012	3.Pressures - Global environmental problem	4. Responses	E 2 : IPCC AR4
22.06.2012	Citavi or GIZ-Expert	Citavi or GIZ-Expert	Citavi or GIZ-Expert
25.06.2012	5. Influences on industrial environmental protection	6. Environmental Management Systems	E 3:
26.06.2012	7. Instruments for industrial environmental protection (A)	8. Instruments for industrial environmental protection (B)	E 4:
27.06.2012	9. Resource Efficiency	10. Cleaner production (CP) - Introduction	E 5:
28.06.2012	11. CP-Examples: Metal working-Machining, Painting, Electroplating	12. Cleaner Production – Examples: Tanneries – Textile Industry – Use of Energy	13. Cleaner Production: Profitability Analysis - Employee Involvement - Corporate Waste Management
29.06.2012			Examination