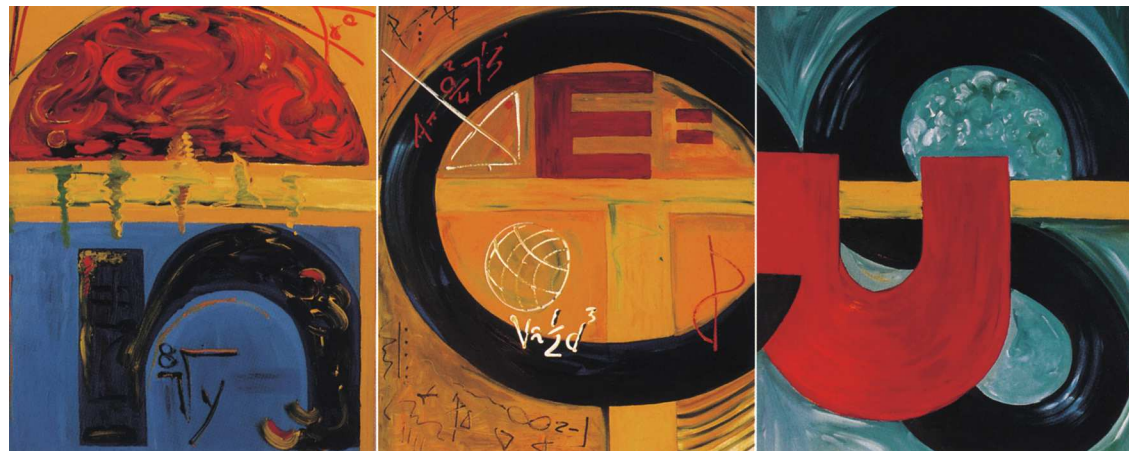


INTECUS GmbH

Waste Management and Environment-Integrating Management



Cleaner Production in Food Industry –

What we are talking about?

Durango, March 09th, 2011

INTECUS - Company data

- Foundation 1991 in Dresden
- Clients: municipalities, industrial enterprises, authorities, international organizations and associations
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INTECUS - Services

Basic design engineering, support in plant permitting, startup and optimization support for waste management facilities

Steering instruments and financing schemes for waste management

Landfill construction, remediation and aftercare planning

Planning and development of renewable energy concepts

Concepts and system solutions for environmentally benign waste management

Waste-to-Energy concepts and services

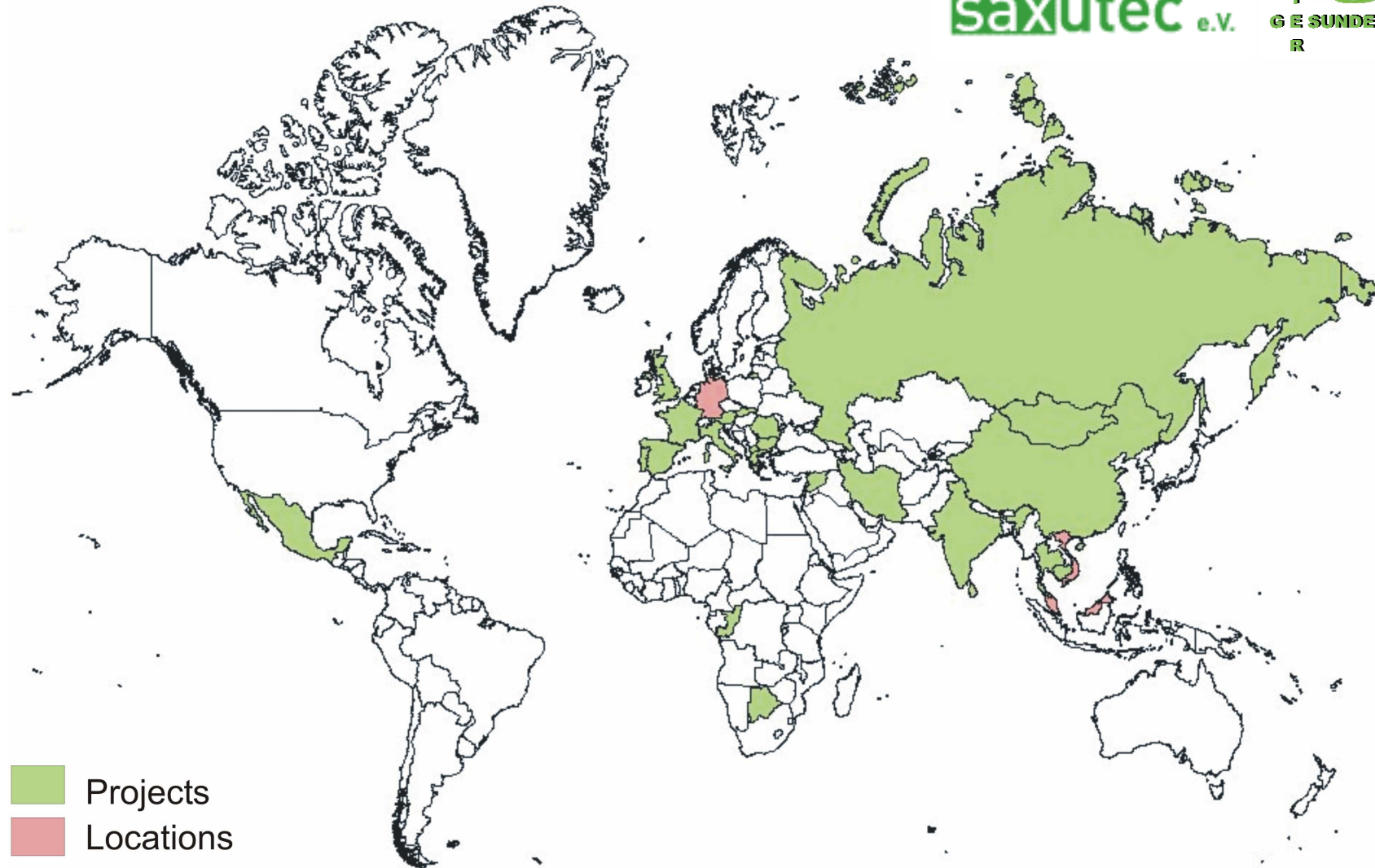
Waste collection systems and logistics management

Industrial waste management and cleaner production concepts

International waste management co-operation and technical assistance



INTECUS - International activities



Agenda

1. Definition Cleaner Production

2. Cleaner Production Procedure

Step 1: Predefinition of the scope of the CP-measure

Step 2: Identification of input and output flows

Step 3: Definition of the general framework

Step 4: Selection and representation of input and output flows

Step 5: Analysis of the CP potential

Step 6: Comparison of potential improvement offered by CP with the current situation

Cleaner Production

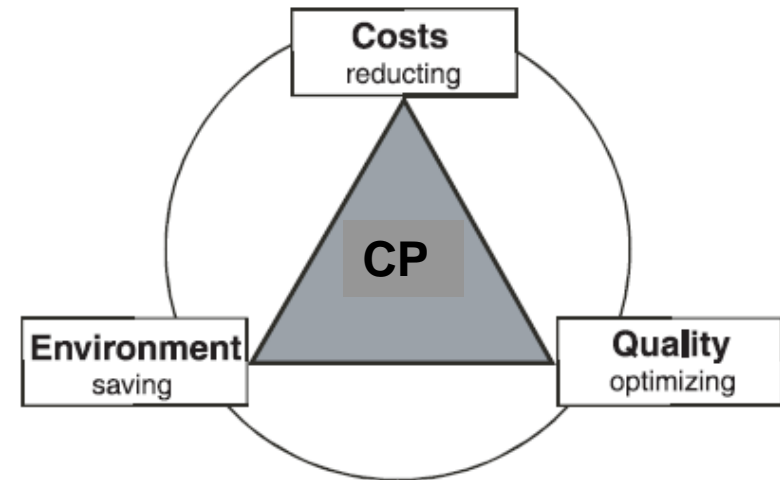
- **Definition Cleaner Production (CP)**

- technical or organizational changes of production processes and/or production facilities to minimize environmental pollution
- at the same time optimizing of quality and decrease of costs
- reduction of environmental pollution by means of the change of production processes by contrast with downstream emission control measures
- minor or modified use of raw materials, consumables and working materials as well as more efficient consumption of energy
- connection of environmental save and sustainable economy with business efficiency

Cleaner Production

- **Definition Cleaner Production (CP)**

- Cleaner production is understood as the production-related part of "Integrated, Precautionary Product Policy – IPP"
- IPP unites the ecological and economic characteristics of a product throughout its entire life cycle
- efforts have to be made here to achieve a number of objectives simultaneously – objectives which are sometimes mutually dependent



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Cleaner Production

- **Procedure**

Step 1: Predefinition of the scope of the CP-measure

Step 2: Identification of input and output flows

Step 3: Definition of the general framework

Step 4: Selection and representation of input and output flows

Step 5: Analysis of the CP potential

Step 6: Comparison of potential improvement offered by CP with the current situation

Cleaner Production

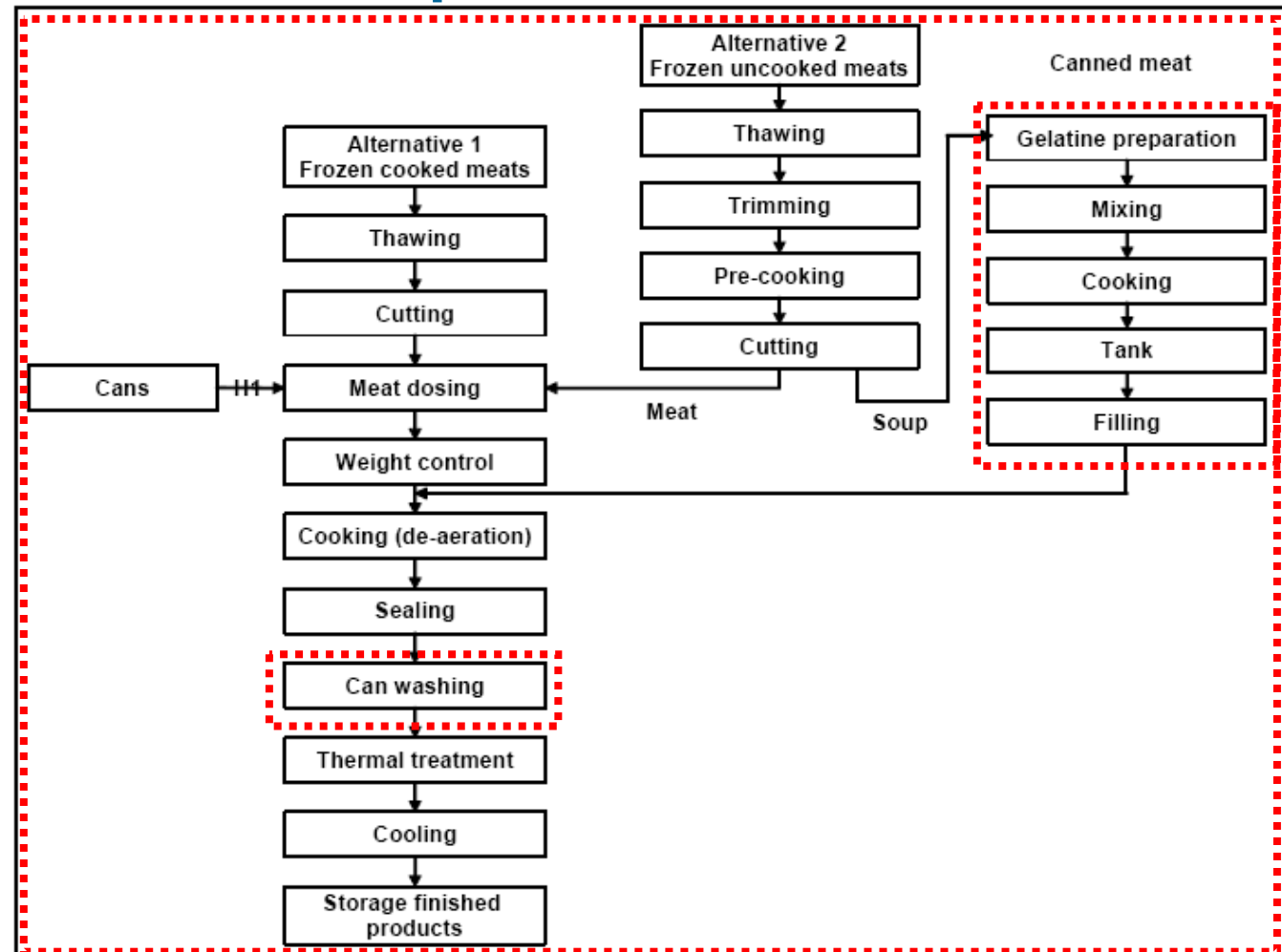
- **Step 1: Predefinition of the scope of the CP-measure**
 - selection of boundaries depends on the level of complexity of production as well as on the relevance of the individual areas to the environment
 - it is recommended to start from process to process or sub-process in order to consider what scope process optimization should have
 - a higher level of examination will involve a much greater temporal and financial outlay on the analysis, however, it opens up more comprehensive evaluation and improvement possibilities

Cleaner Production

• Step 1: Predefinition of the scope of the CP-measure

Definition of the system boundaries:

- an individual production process
- a sub-process
- a production plant
- a plant system network
- a complete plant location, several plant locations simultaneously

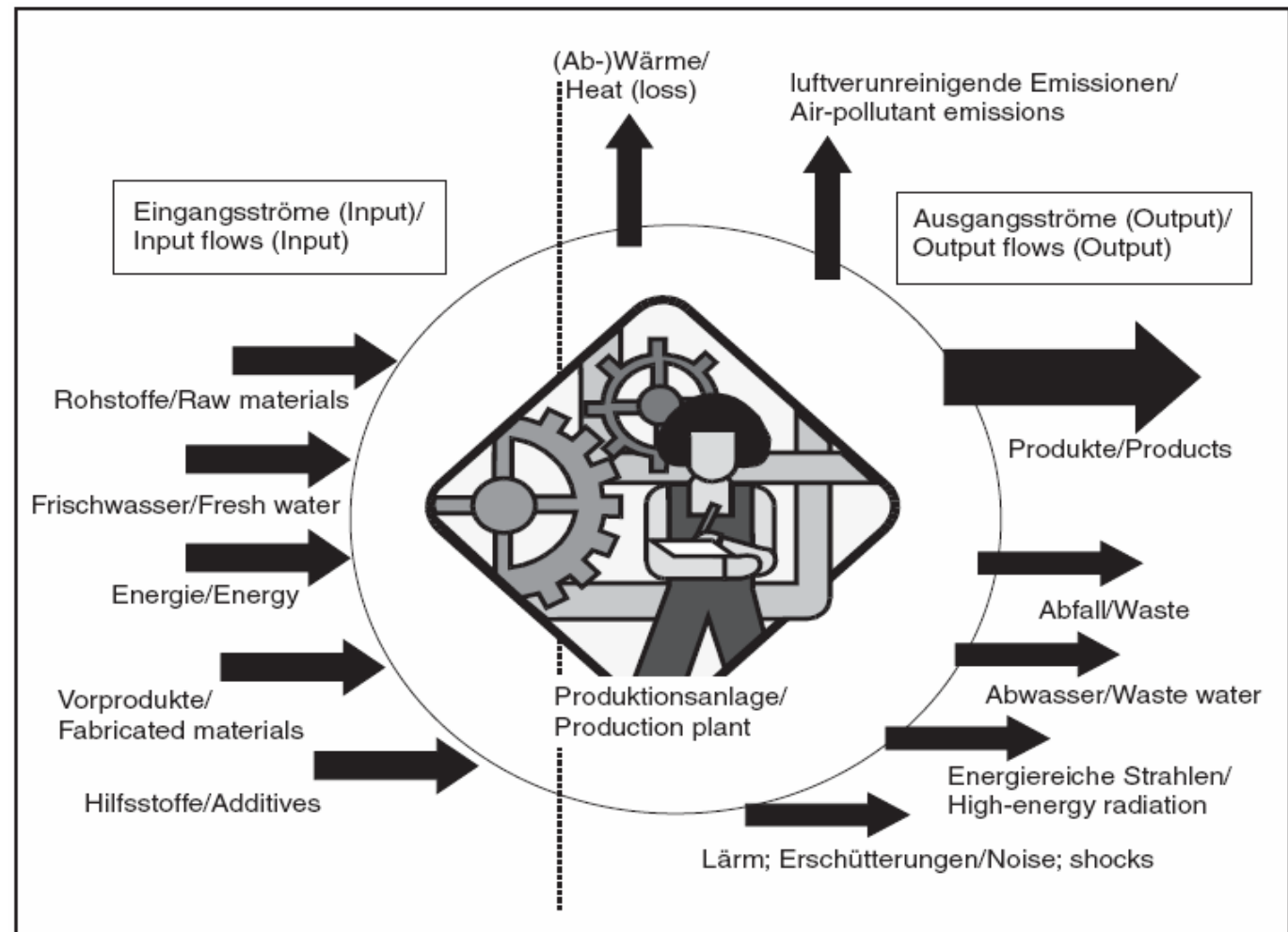


*Canned meat production
[BREF, 2006]*

Cleaner Production

• Step 2: Identification of input and output flows

- determination of the input and output flows inside the impact boundaries identified in step 1
- quantification by amount of flow and costs and quality



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Cleaner Production

• Step 3: Definition of the general framework

- check on permissibility restrictions, or even restrictions arising from company requirements apply to the input and output flow
- determination of corresponding limits and guideline values to identify the possible scope of action
- Examples:
 - statutory requirements: emission limits, prohibitions on using particular substances, industrial safety and health protection concerns
 - location-related requirements: limits for discharge of effluents, water extraction rights, power input or delivery traffic
 - corporate requirements: product quality, competitiveness, reliability of supply, management objectives, corporate image

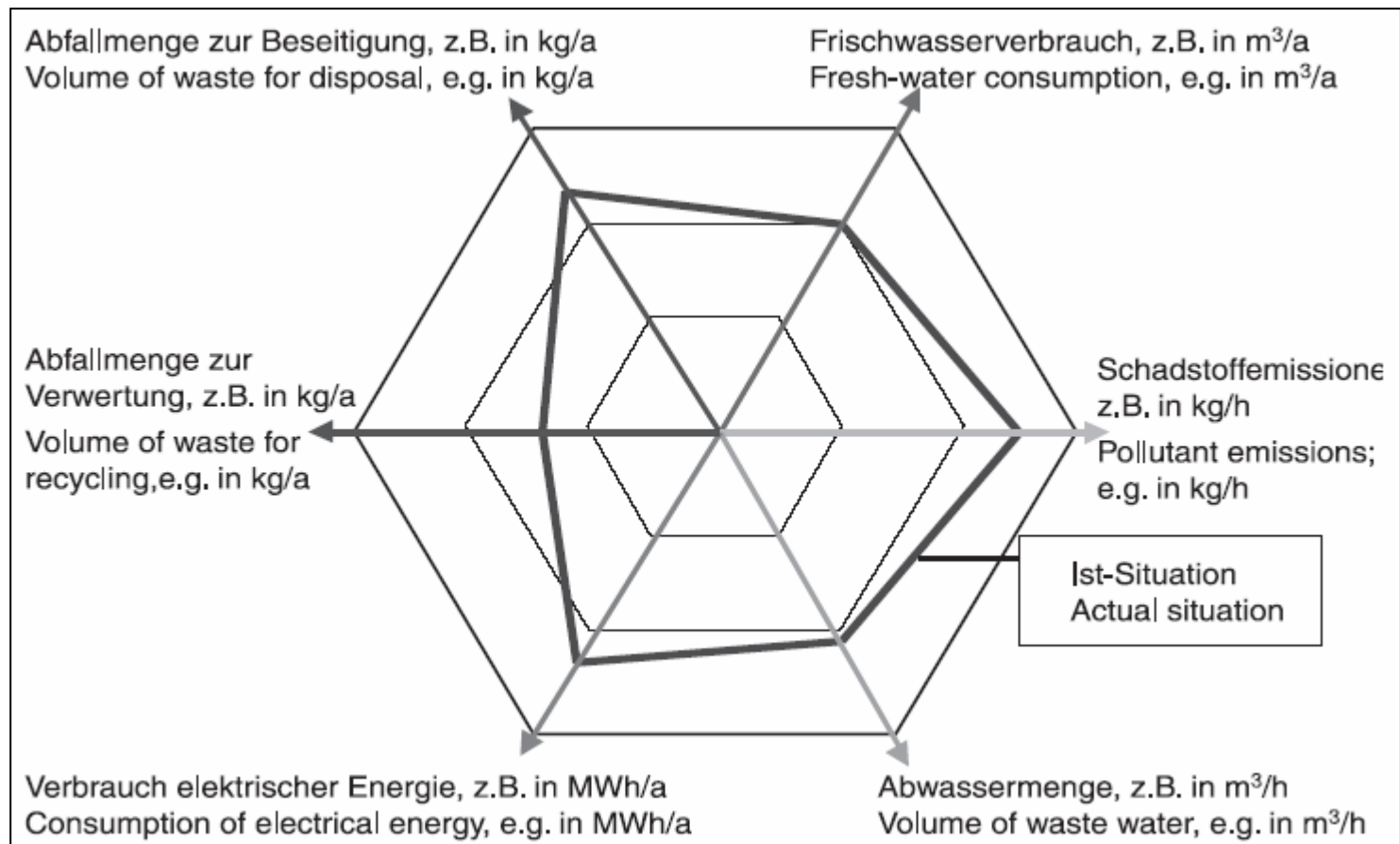
Cleaner Production

- **Step 4: Selection and representation of input and output flows**
 - input and output flows which have a predominating relevance to environment and costs are selected and a representation of the current situation for the process under consideration is prepared
 - Identification of input and output flows:
 - with the greatest environmental burden
 - with the greatest instances of resource consumption
 - have great importance on the basis of the general conditions identified in step 3
 - which cause of highest costs in the process

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- **Step 4: Selection and representation of input and output flows**

Example of a grid to illustrate the different range of influences



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- **Step 5: Analysis of the CP potential**

- input and output flows selected in step 4 are examined on the basis of this question:

At which locations does the potential for improvement and optimization within individual processes or sub-processes exist as the result of the introducing CP, assuming a comprehensive approach is taken?

- the results should be ranged on the basis of the associated costs to deduce the most effective measure under cost and environmental considerations

Cleaner Production

- **Step 5: Analysis of the CP potential**

- helpful CP-approaches:
 - minimization of after-care pollution control measures
 - minimization of the consumption of raw materials and supplies by increase of the process efficiency and constant quality of casting
 - intensification of the use or multi-use of raw materials and supplies
 - substitution of environmentally-harmful raw materials and supplies
 - minimization of the energy consumption and improvement of energy efficiency
 - decrease of efforts for logistics and transportation

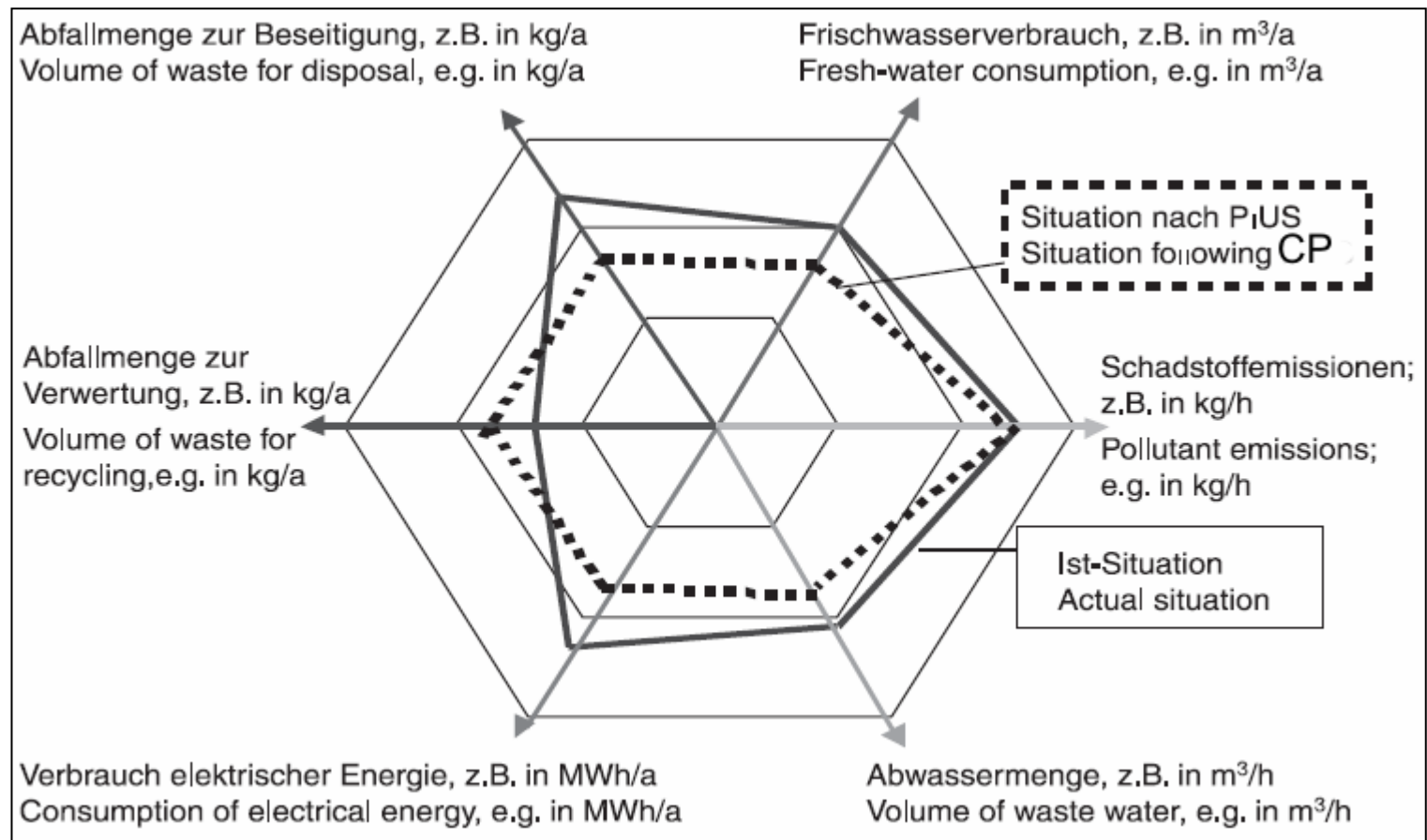
Cleaner Production

- **Step 6: Comparison of potential improvement offered by CP with the current situation**
 - investigation of the relevance there is to the individual effect and whether this can result in apparently useful measures being taken
 - prepare a general survey of the potential for reducing environmental impacts
 - successful application of CP-measures requires the identification of monetary effects on costs and revenues and their incorporation into the economic efficiency calculations usual in each case
 - selection of useful measures according to their relevance and economical and ecological effects

Cleaner Production

- **Step 6: Comparison of potential improvement offered by CP with the current situation**

Example of a grid showing the situation after implementation of CP-measures



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Muchas gracias por su atención!

Dipl.-Ing. Joerg Wagner

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