

# GREEN PHILIPPINES

Greening the Philippine Industries with the **ECO**PROFIT Approach



A project funded by  
The European Union's Asia-Pro Eco Programme

## CLEANER PRODUCTION versus End of Pipe

### STENUM Ltd.



[www.stenum.com](http://www.stenum.com)

## End of Pipe thinking: Common Waste Treatment :

**Waste is generated !**

What has to be done with it ?

## Cleaner Production idea:

**Waste is generated !**

Where does it come from ?

What can be done to avoid ?

## Cleaner Production thinking deals with **ECO-EFFICIENCY**

**Wastes and emissions are input materials that have been bought for money and have not been converted into products that can be sold for money**

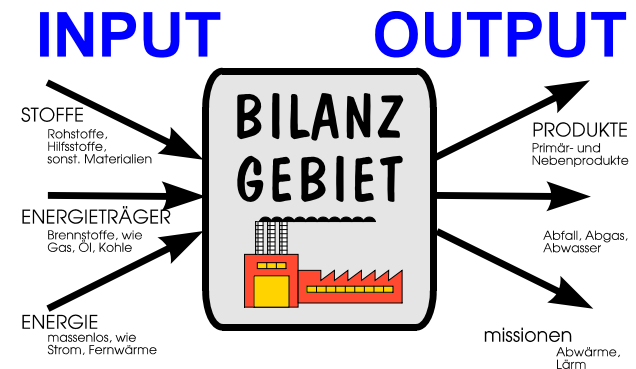
## Cleaner Production

### the solution:

**consistant analysis of the materials  
form input to output**

➤ **with:**

- **Input / output - analysis**
- **Material flow analysis**
- **Energy analysis**

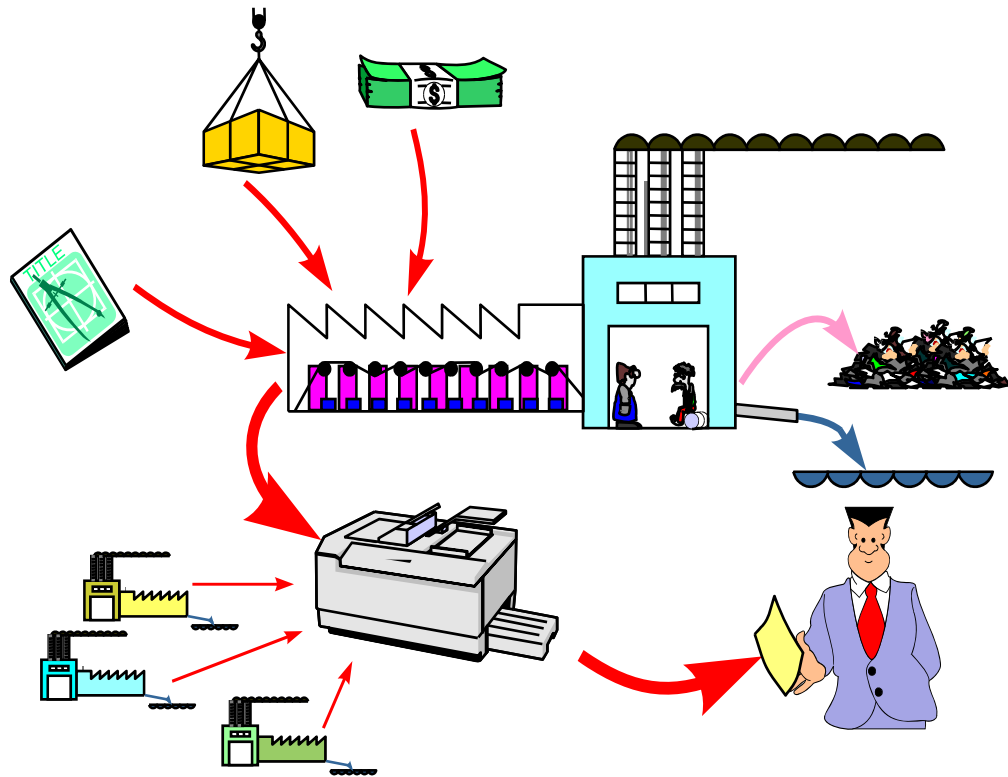




## Cleaner Production

considers your

- technologies
- employees
- raw materials
- process
- emissions
- partners and
- products.



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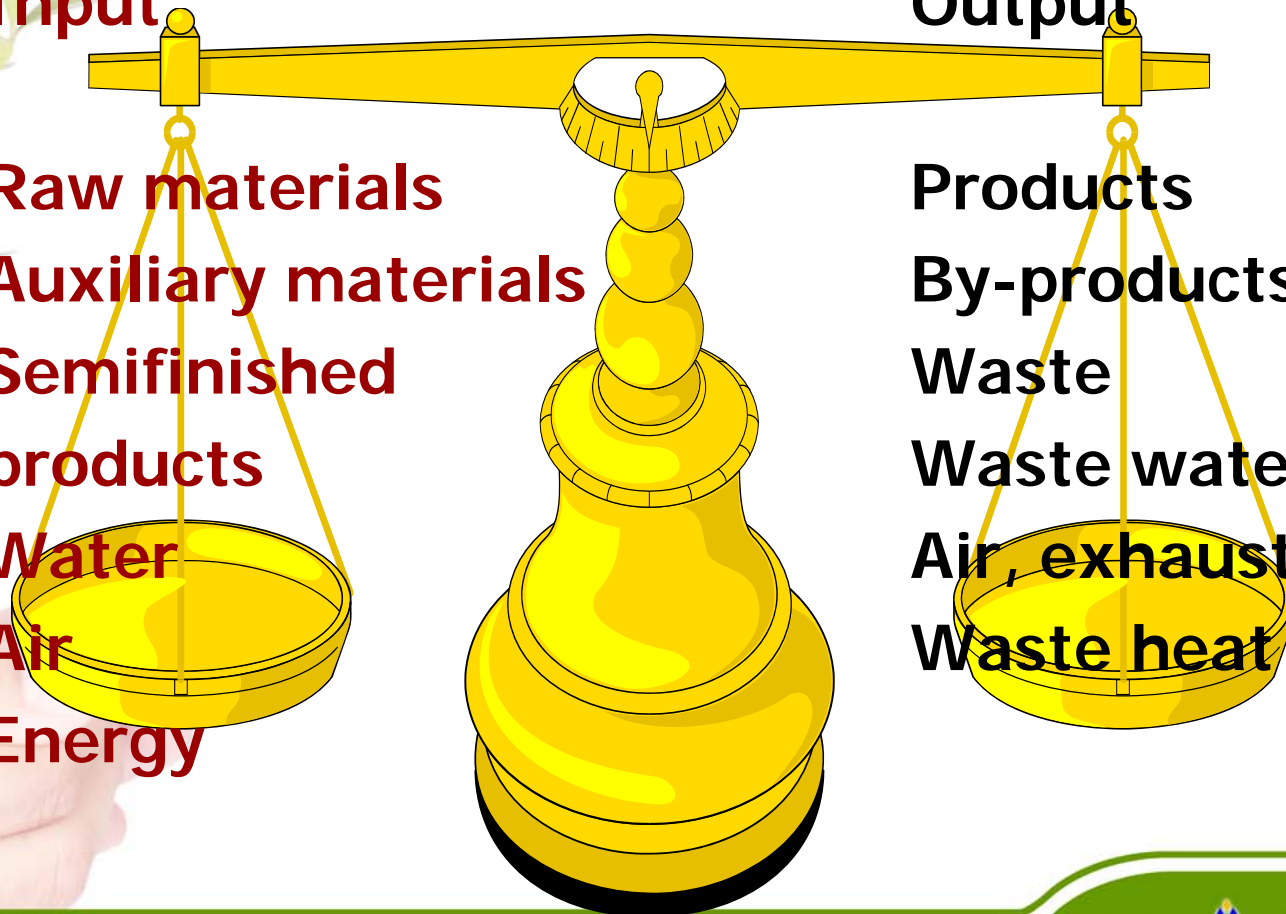
## Balance of Input/Output

**Input**

**Raw materials**  
**Auxiliary materials**  
**Semifinished products**  
**Water**  
**Air**  
**Energy**

**Output**

**Products**  
**By-products**  
**Waste**  
**Waste water**  
**Air, exhaust gases**  
**Waste heat**



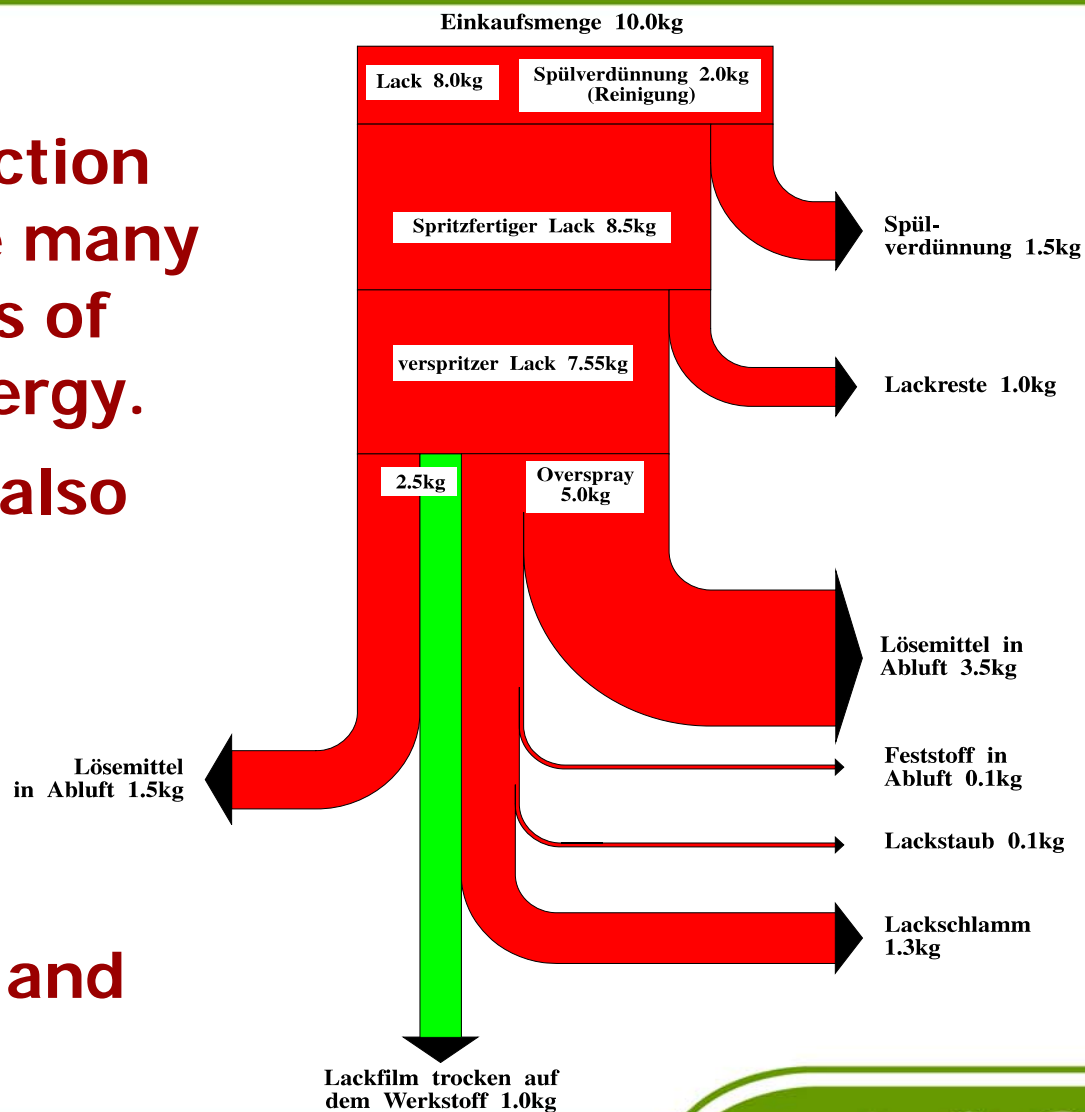
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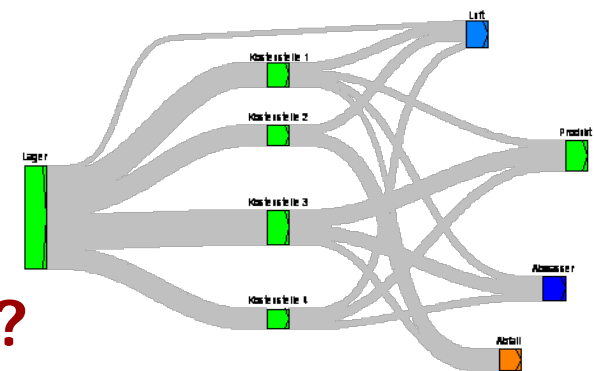
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- Within the production process there are many places with losses of materials and energy.
- These places are also ecological and economical weak points.
- A material flow analysis gives answer to places and amount of losses



## Material flow analysis detailed description of the material- and energy uses

- which waste and emission streams are generated ?
- which raw materials are lost ?
- where and why does this happen ?
- where are weak points ?
- where are potentials for improvement ?
- which materials can be reused ?



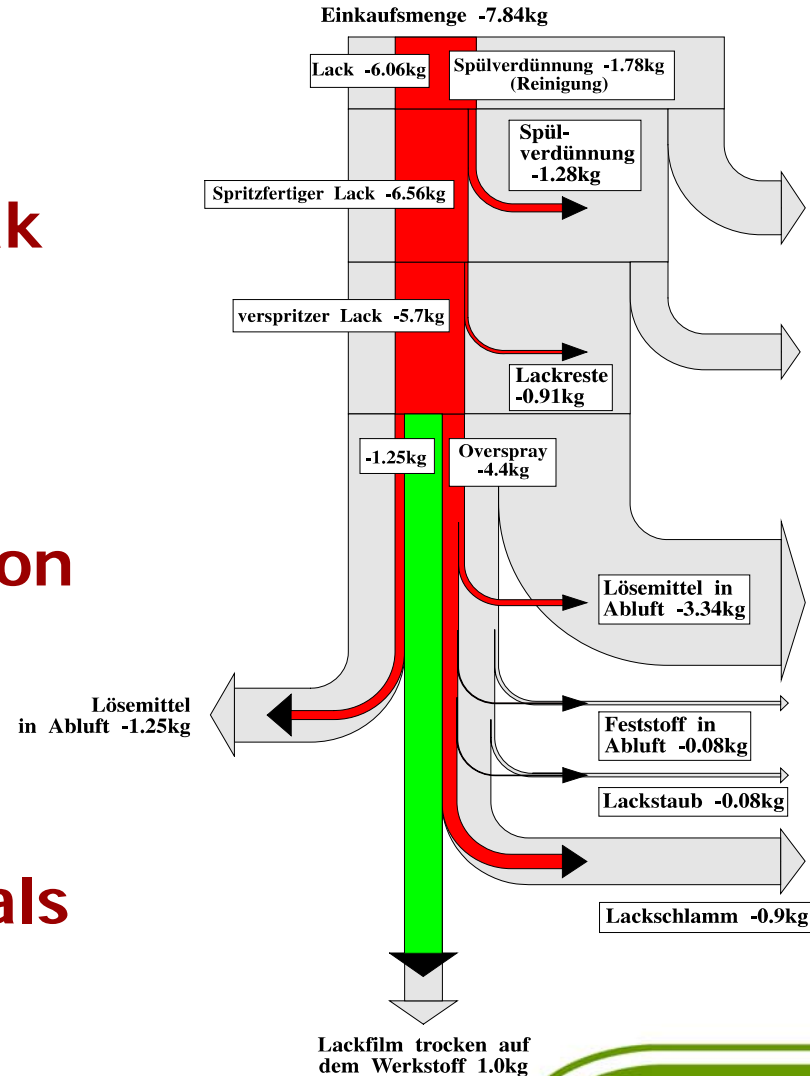


## Why have raw materials been converted to waste and emissions?

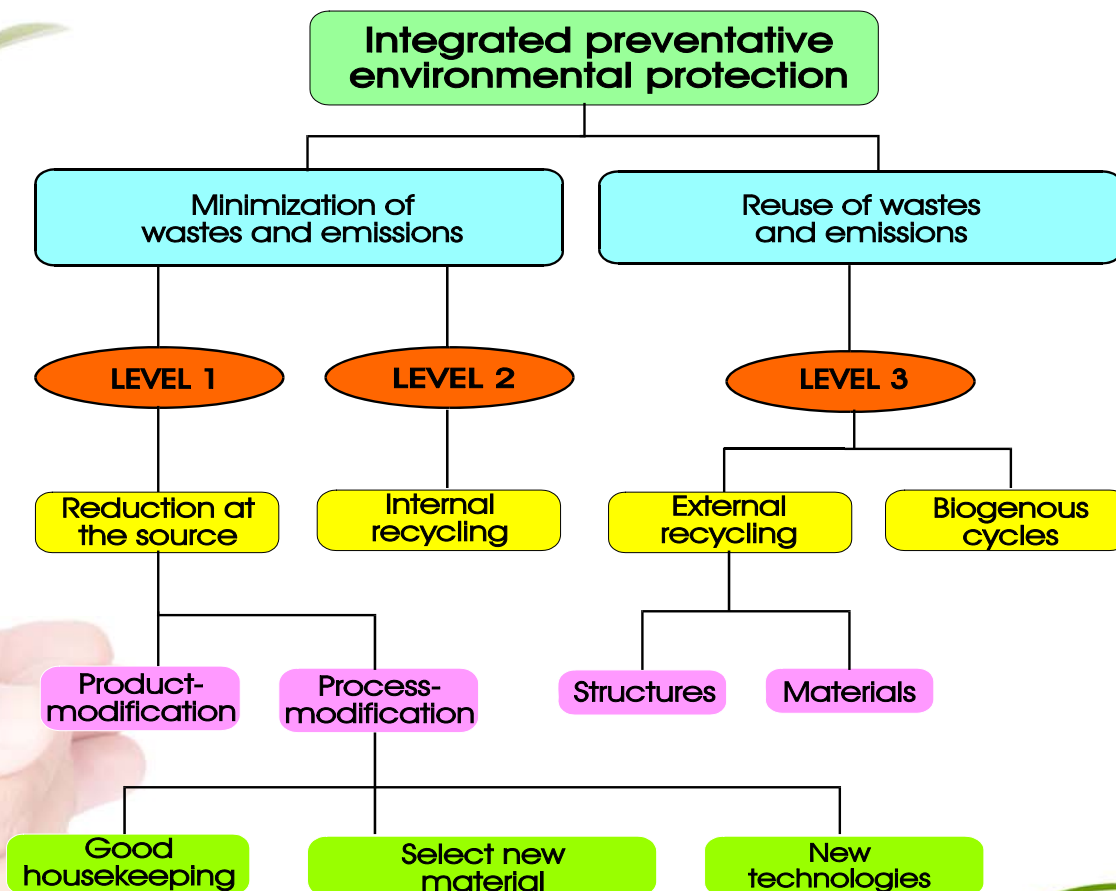
- not used raw materials
- impurities of raw materials
- spent auxiliary materials
- undesired side products
- reject
- residues from maintenance
- materials due to start-up and shot-down procedures
- handling, storage, transport, sampling, and analysis
- leakages, materials from damages
- evaporation losses



- A comparison with the best available technology shows weak points
- The material flow analysis enables to evaluate the "production costs" of waste and emissions
- ECO-efficiency: the best use of materials reduces emissions



## Strategies for Cleaner Production Options



## Possible barriers for implementation of CP options

### attitudinal

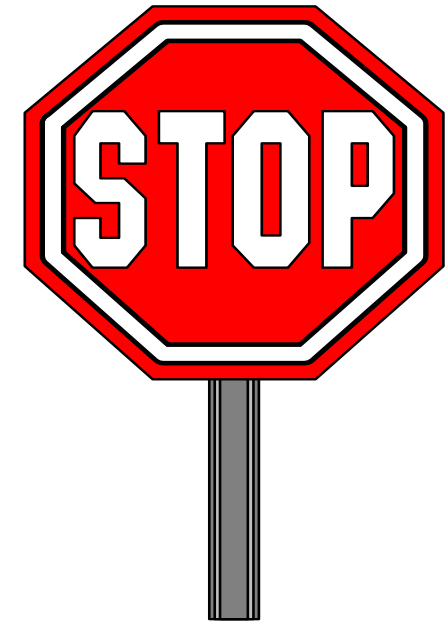
obstacles within organization,  
people, awareness etc

### economical

problems regarding economics,  
availability of money etc

### technical

- no technical solution available  
on the market

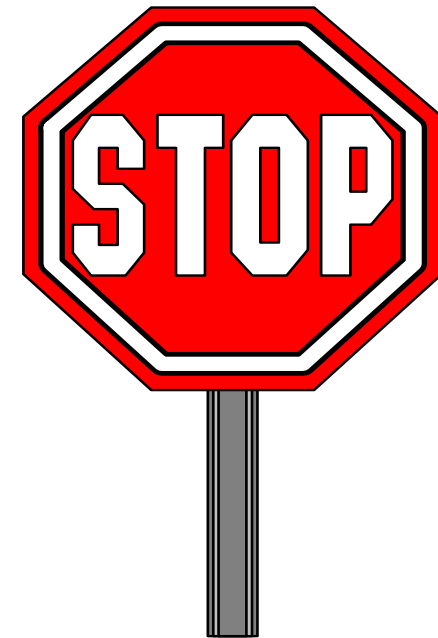


Source: Schnitzer, TU Graz



## „idea killers“

- We have always worked like this
- We are too big/too small for this
- Do not forget we have to earn money
- This does not affect my department
- Nobody told me what to do
- I am still waiting for the O.K.
- It is not my business
- I have to wait for the boss
- I forgot
- I am very busy
- Let John do this
- I did not understand
- It is too early for this
- Now it is too late



## Many case studies shows that instead of End of Pipe thinking:

- **Cleaner Production pays**
- **Cleaner Production creates innovation**
- **Cleaner Production motivates the employees**
- **Cleaner Production helps the environment**
- **Cleaner Production improves also legal compliance**
- **Cleaner Production means also quality**

