

# Key Environmental Issues

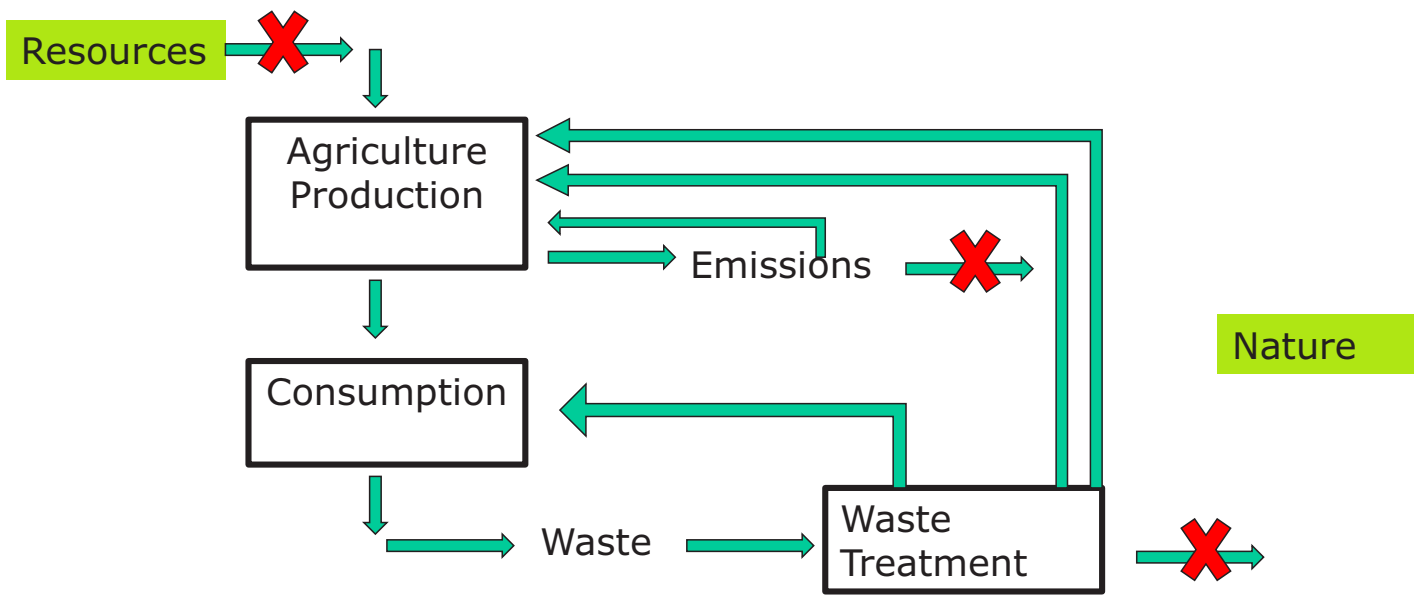
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# FDM Key Environmental Issues

- Use of resources:
  - Agricultural products, Bio mass, nutrients
  - Water
  - Energy
  - Packaging materials
- Emissions
  - Wastewater
  - Air (+ odours)



# Closing The Loops



## Challenges

- Internal production loop included in the FDM BREF note:
  - Important to notice that internal loop requirements should not stride against solutions for the external loop
- External production loop included in Sectoral Reference Document
  - BEMP food and Beverage manufacturing

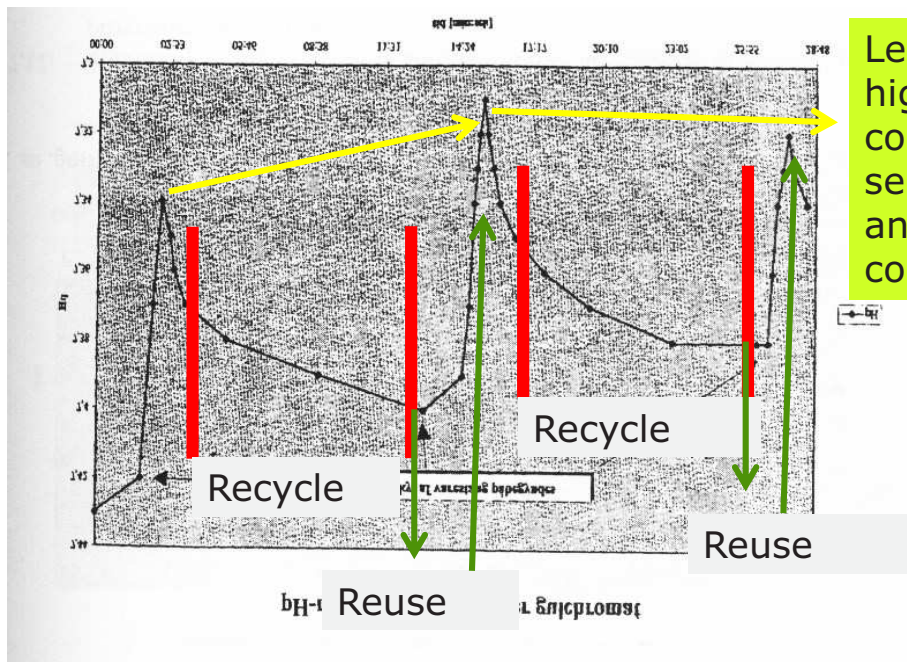


# Structural Challenges

- Collecting standard operation:
  - When is an operation standard?
  - Prevention & process logic get lost and turn focus on end-of-pipe solutions
  - When operations are not clear then it is problematic to use concepts as average periods, normal production conditions and diffuse sources in the impact assessment, too many uncertainties.
- Cleaning of tubes, bottles, conveyers or roasters are very different



# Generic Recycling Strategy



Leftovers with high concentration send to biogas and composting

## Preventive production planning

- Avoid or reduce cleaning through:
  - Reduce number of small batches
  - Start production first of light flavour, colour, high velocity etc.
- Use next product to clean
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- No incineration of food waste
- Collect biogas



# Monitoring of Resource Efficiency

- Concentration values for BATAELs
  - Big range – no use
  - Low concentration values expresses big water consumption
  - High concentration values expresses reduction in water consumption or waste of resources
- Impact assessment requires volumes per time unit





# Two Regulation Sets

Concept from VOC Regulation on Car Repair Workshops

- Traditional low concentration value:
  - Treatment requirements
- Transition:
  - Load per produced unit
  - Projects for reduction of water consumption towards zero emission
  - Deadlines for reporting
  - Documentation for contracts with receiver for leftovers



## Efficiency Parameters, Emissions

- Raw material unit; Volume in tons
- Water, m<sup>3</sup> consumption per raw material unit
- Wastewater content, COD, BOD, N, P per raw material unit
- Tons packaging waste per raw material unit
- Energy consumption per raw material unit

## **Big Loop, Take Back, BEMP, EPR**

- Produced unit: Volume in tons
- Waste
  - Take back as compost to agriculture, volume in tons compost per produced unit
- Recycling of packaging
  - 100 % Recycled packaging materials
- Domestic sewage sludge
  - Still to be developed



# Recycling of Packaging, Status for DK

- Glass
  - Bottles for beverage; 100 % washed
  - Bottles for Wine; 21 % washed, 79 % furnace
- Cans:
  - Domestic beverage 100 % furnace
  - Border trade beverage wasted in nature
  - Food container, incinerated

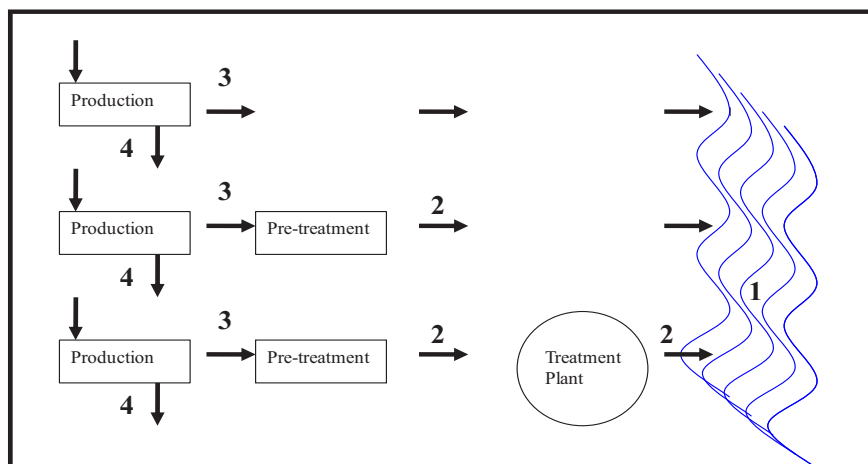


# Recycling of Packaging, Status for DK

- Plastic:
  - Beverage bottles 100 % melted
  - Food containers 100 % incinerated
  - Folios incinerated
- Paper & cardboard:
  - Incinerated

# Wastewater Systems

## Different Points Sources



- 1: Recipient Standards (Concentration values), 2: Abatement Standards (Concentration values)
- 3: BAT Standards (Concentration values), 4: Performance Standards (Waste per produced unit)