

# **Water -necessary for life-the need for integrated solutions**

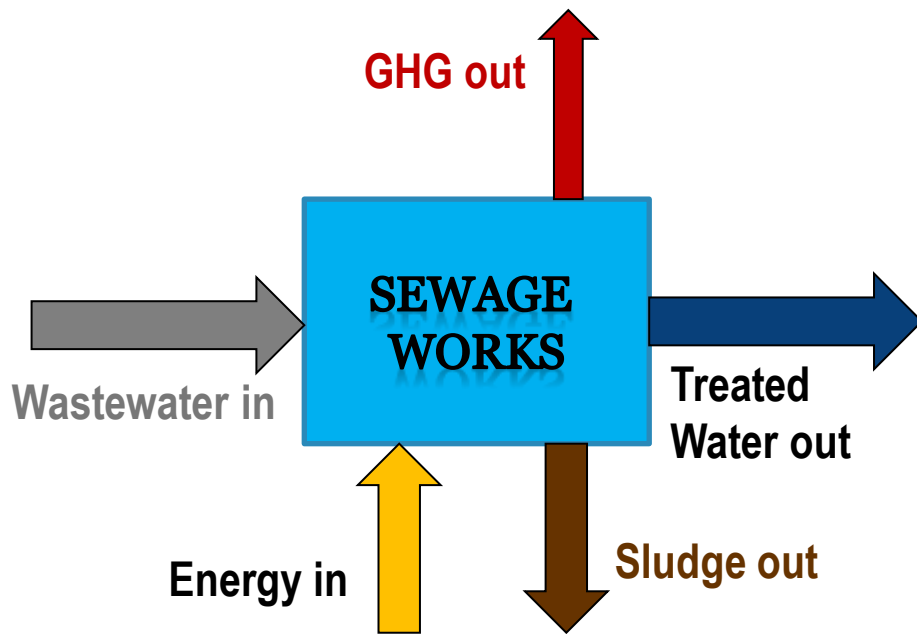
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# What we have: A treatment facility



## Problems/Challenges

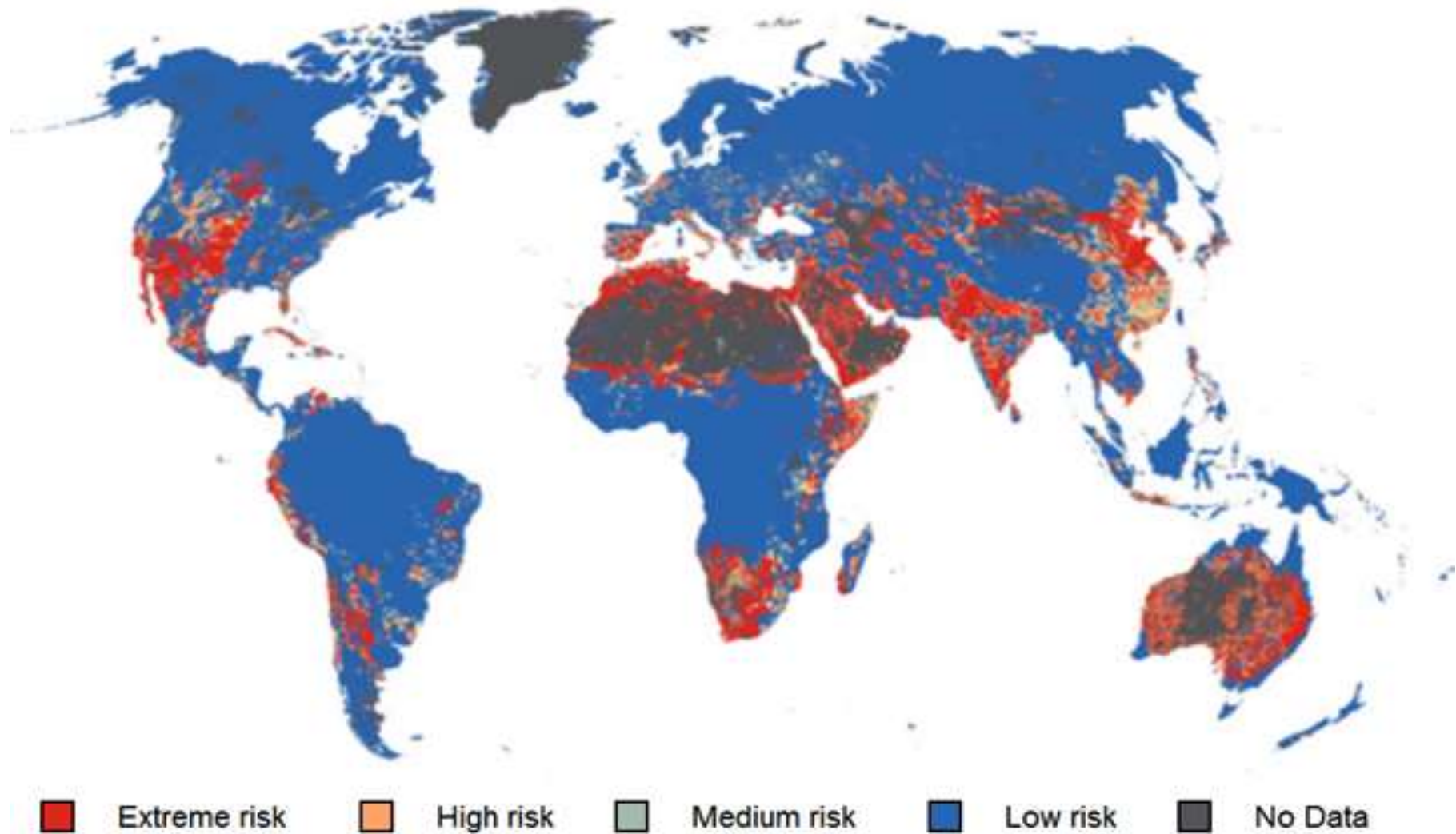
- The water sector is a major energy user
- GHG emissions
- Treated water is not used
- Outflows may contain pollutants, viruses, pathogens, pharmaceutical residues etc.
- Sludge seen as a problem



# WEREC Water Ecosystem Recovery AB

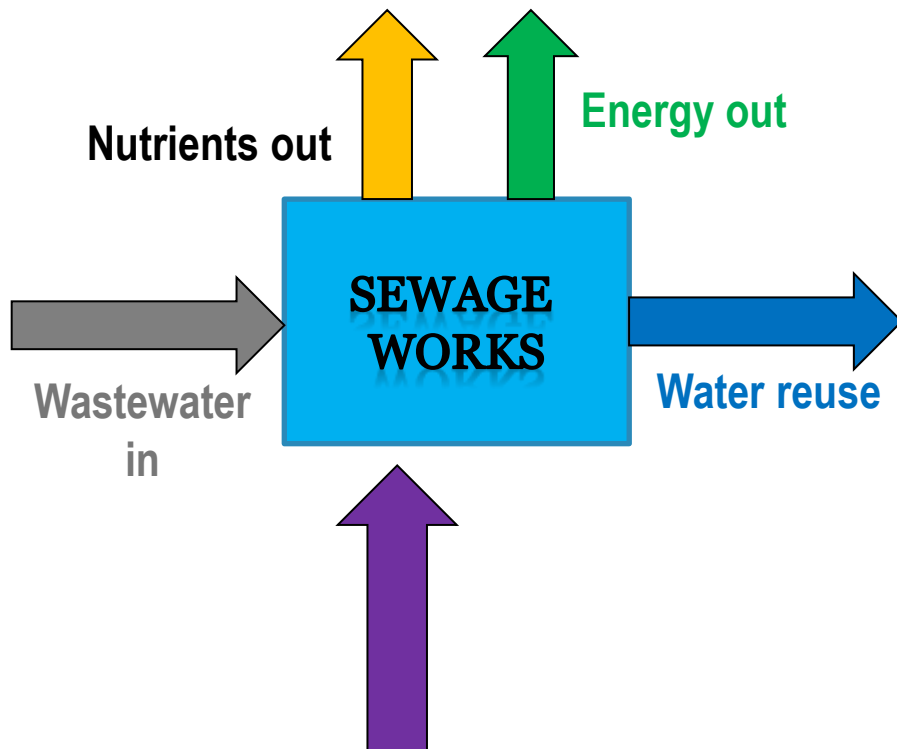


# Global Water Stress 2011



© Maplecroft, 2011

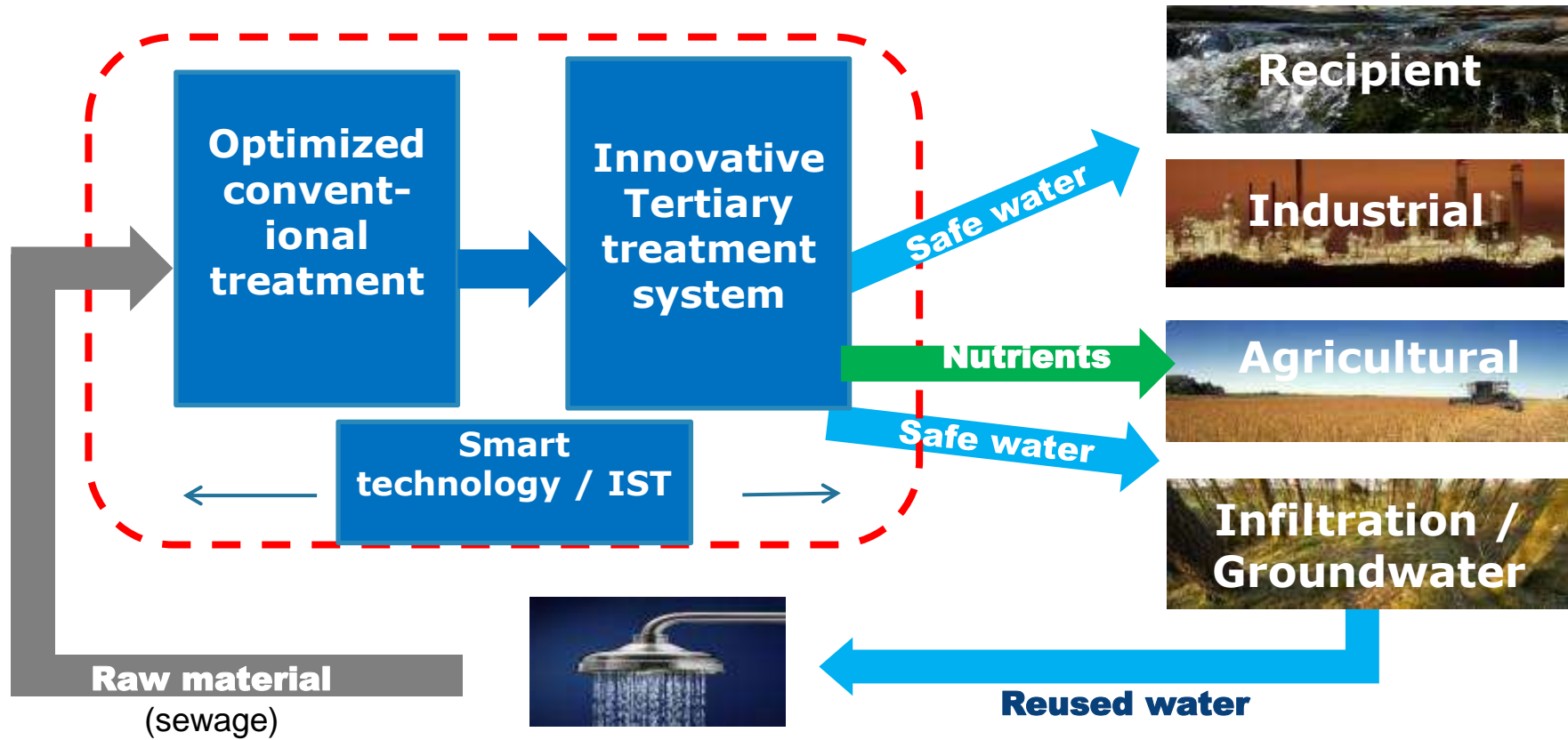
# What we want: A production facility



## Opportunities

- Waste as a resource
- Net energy production
- Nutrients recovery/reuse
- Improved treatment (P,N  
Pharmaceutical residues)
- Water reuse

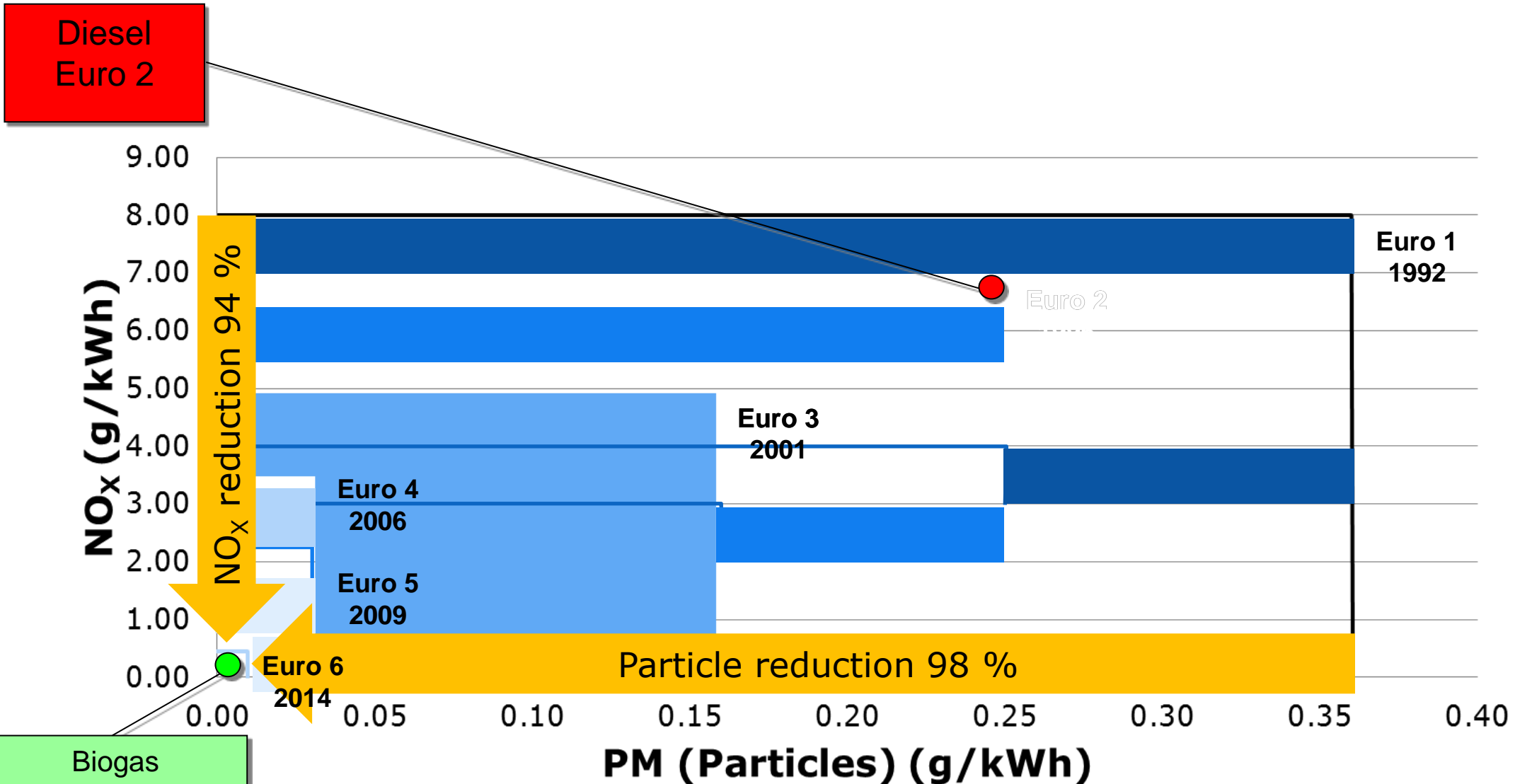
## Demonstration and validation



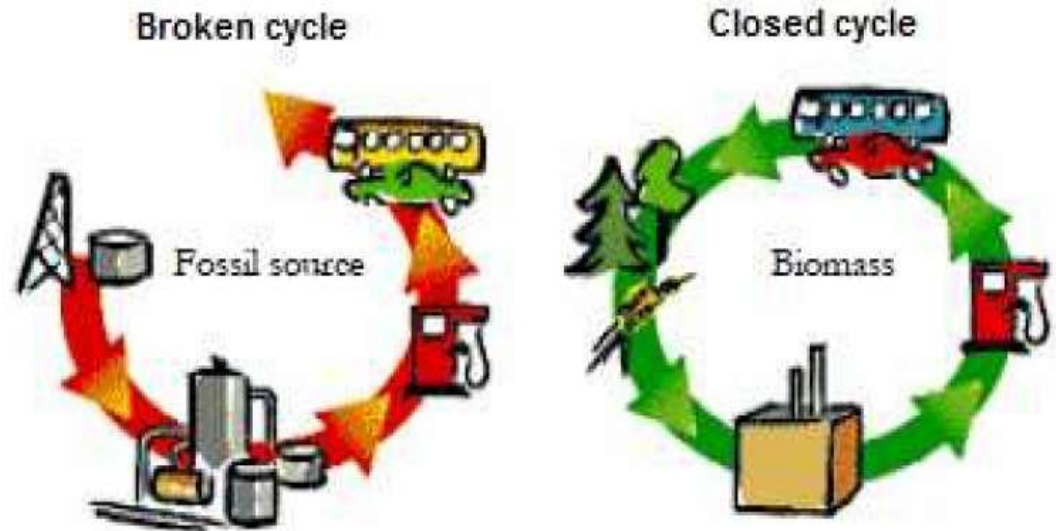




# Diesel and Biogas Engine Local Emissions



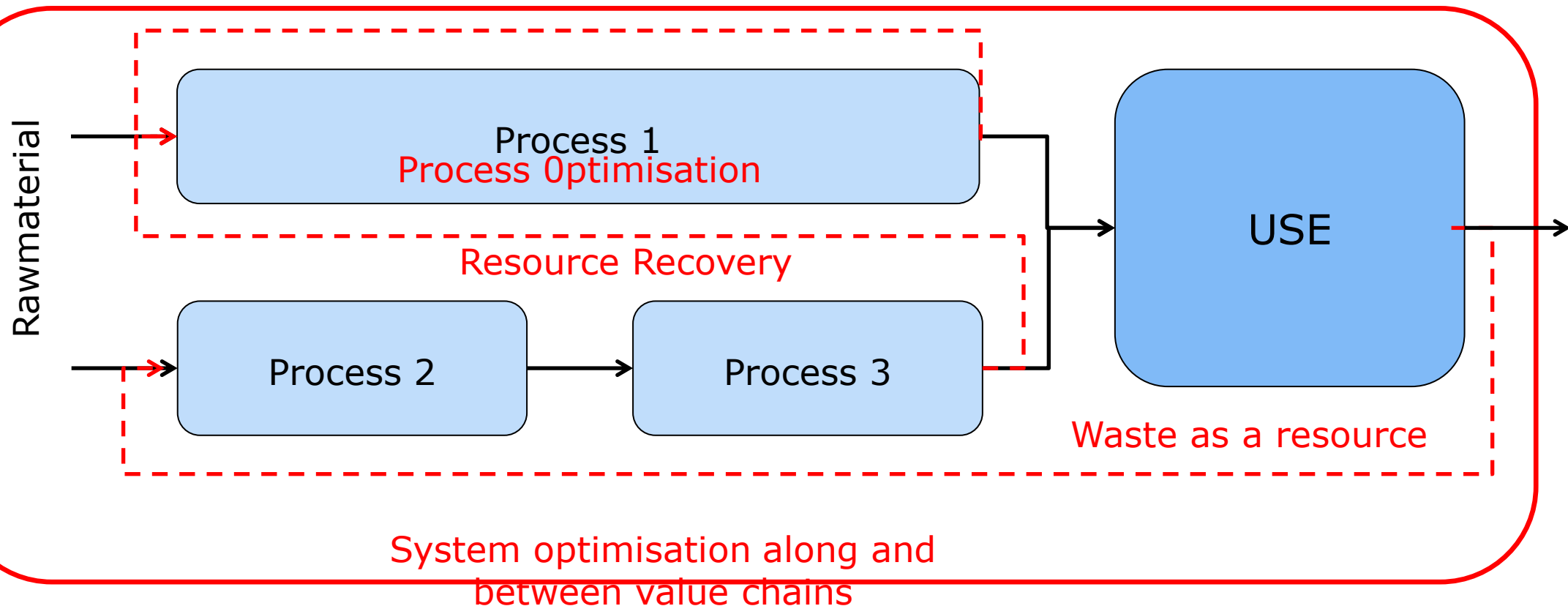
# Biogas – clear environmental advantages-Circular Economy



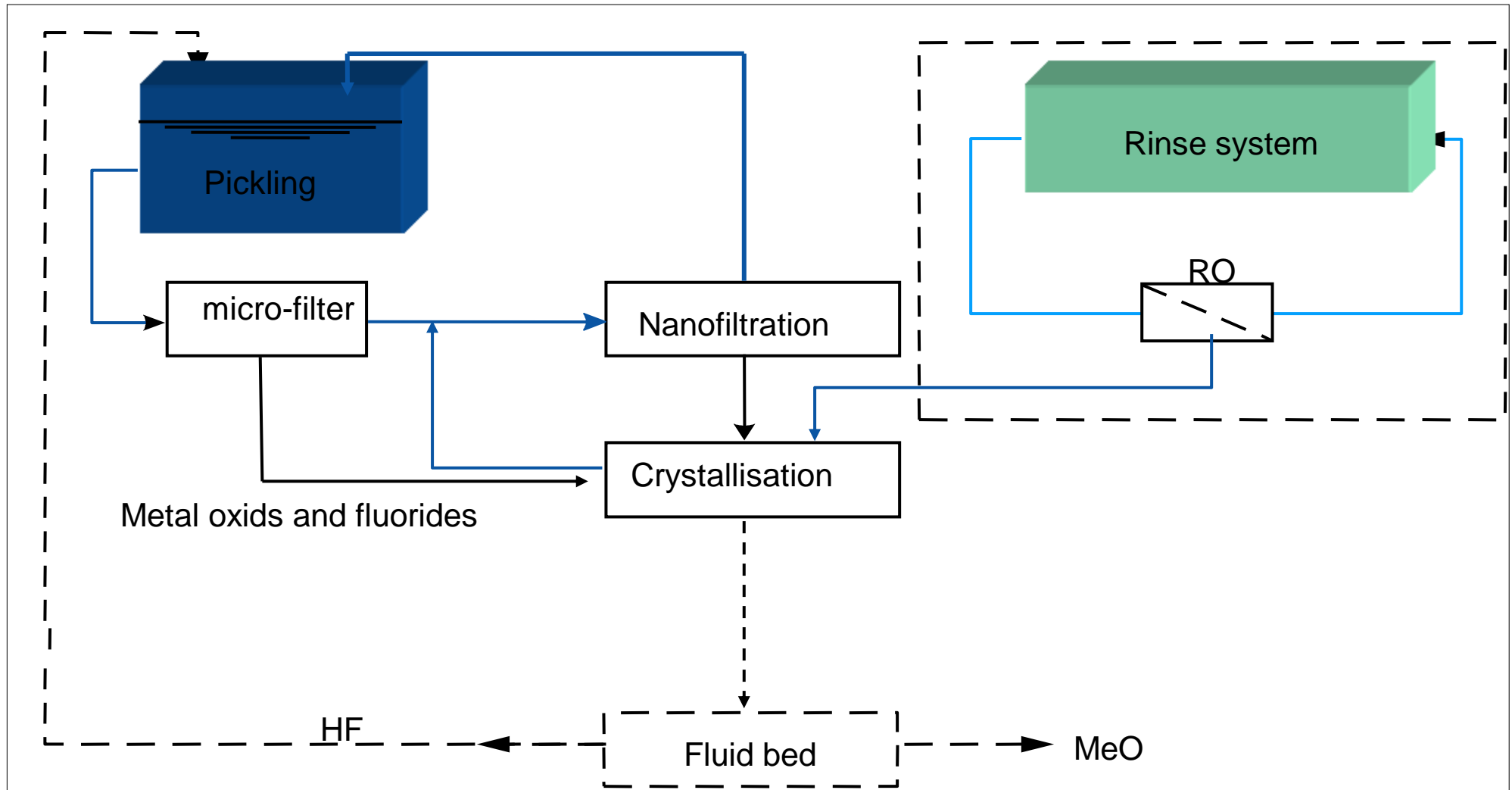
- Renewable energy (carbon neutral) from sludge or other organic waste)
  - Amount of sludge reduced with 50% compared with today
  - Improved air quality
    - Less particles
    - Reduced NOx ,Sox,
- Life Cycle Cost favourable

# Resource efficiency

**Focus. Technical processes:  
industry incl. Water, Energy and Waste**



# Possible closed-loop in steel surface treatment



# Research questions

- Resource efficient production/treatment technologies.
- Integrated solutions needed
- Valuable ingredients in waste waters from pulp&paper, mines,(Rare earth metals), food industries et al
- Waste waters as resources
- On line analyses –bacteria , metals,pharmaceutical residues
- How to recover the nutrients in a sustainable way?
- How to produce more energy from sludge and other substrates?Next generation-gasification?
- **Energy and water nexus**

**Don't look for the next opportunity the one you have in hand is the opportunity**

