

Universität Stuttgart

Technological innovations for collection, treatment and re-use of water

Dip.-Biol. Jovana Husemann, M.Sc., M.Eng.
University of Stuttgart
Institute for Sanitary Engineering, Water Quality and Solid Waste Management

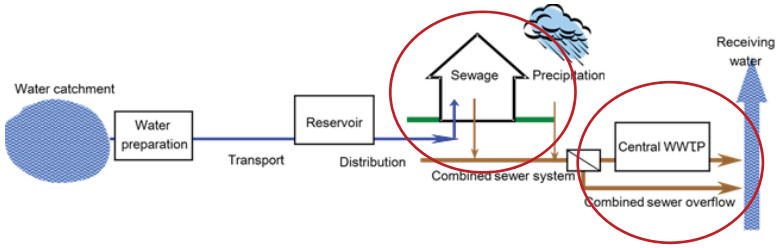
26. January 2015

© Universität Stuttgart, ISWA



Universität Stuttgart


Paradigma Change in Wastewater Management Practice



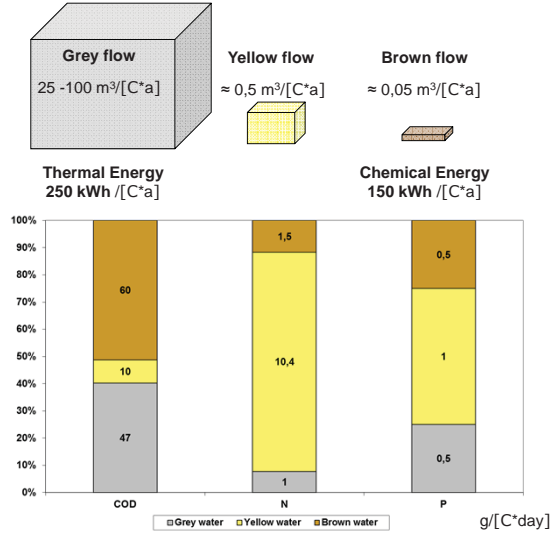
The diagram illustrates the wastewater management process. It starts with 'Water catchment' leading to 'Water preparation', then 'Transport' to a 'Reservoir'. From the reservoir, 'Distribution' leads to a house. The house has 'Sewage' and 'Precipitation' inputs. These feed into a 'Combined sewer system' (circled in red). The system leads to a 'Central WWTP' (circled in red). From the WWTP, 'Combined sewer overflow' is shown, and 'Receiving water' is shown as an output.

- **Boundary conditions change**
 - Increasing population
 - Shortage of resources (water, nutrients, energy)
 - Economical aspects
 - Climate change
 - New regulations
- **Resource efficiency and resource recovery vs. conventional end of pipe technologies**

© Universität Stuttgart, ISWA



Wastewater as Energy and Nutrient Carrier

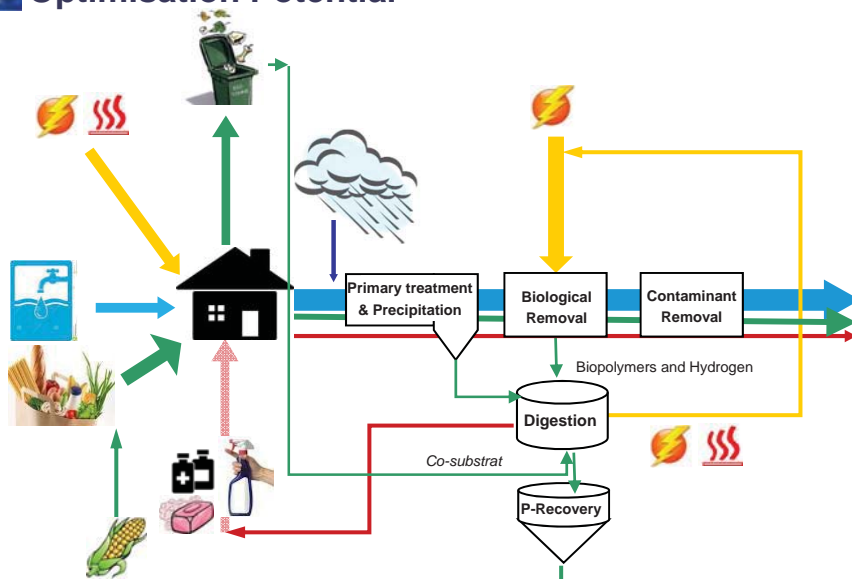


Source: Adopted from DWA, 2008 & Cornel et al. 2011

© Universität Stuttgart, ISWA



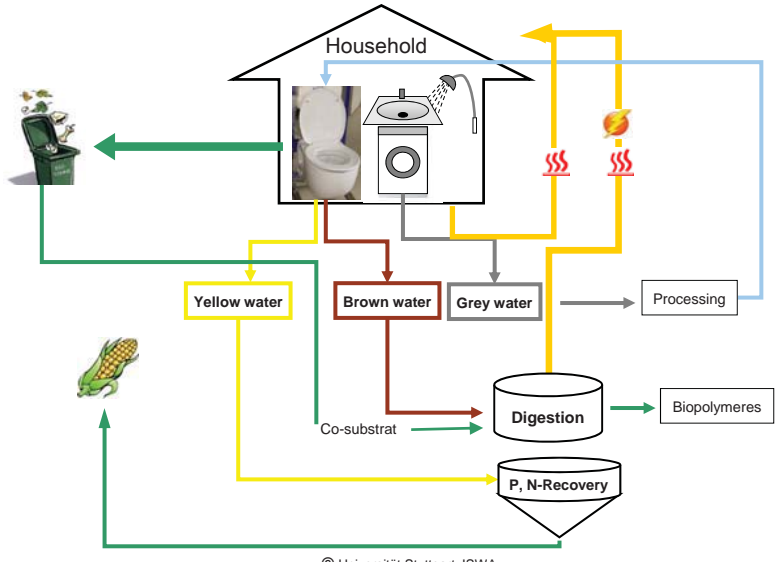
Optimisation Potential



© Universität Stuttgart, ISWA



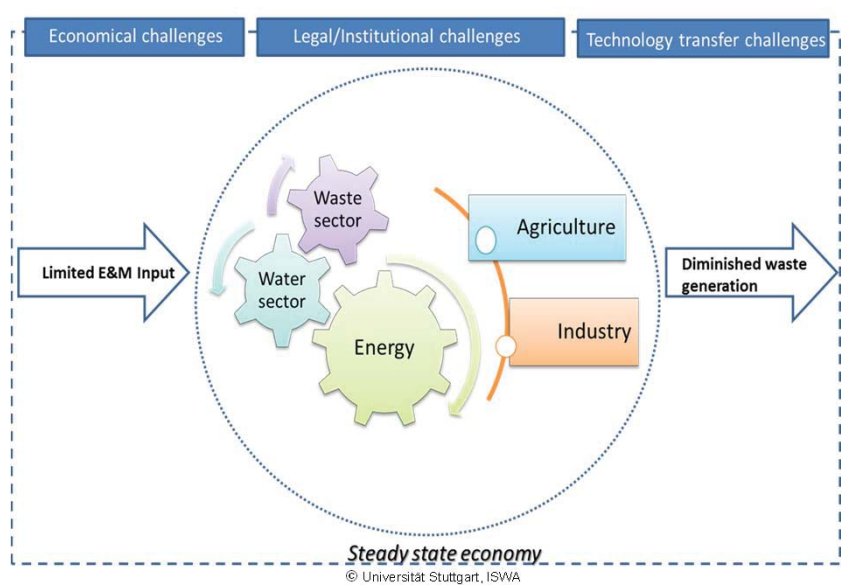
Optimisation Potential- Local Level



© Universität Stuttgart, ISWA



Integrative Nexus Approach

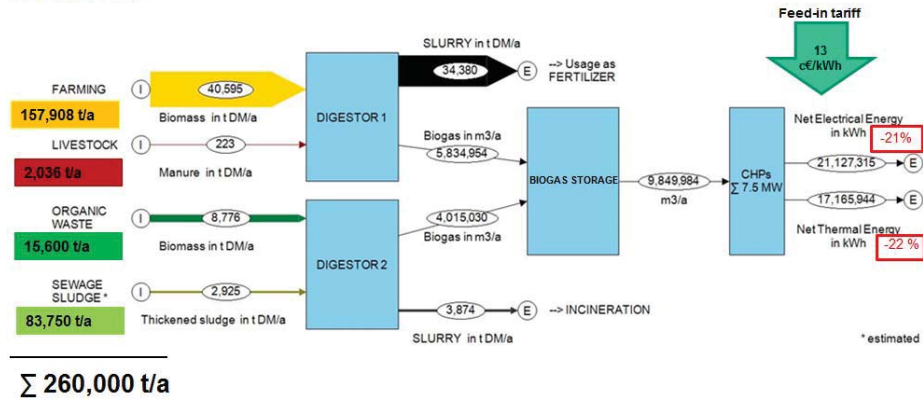


© Universität Stuttgart, ISWA



Energy and Material Flows Generation Potential – Example of Municipality of Stara Pazova, Serbia

115,000 Inhabitants



© Universität Stuttgart, ISWA



Summary and Outlook

- Water management is an important issue of general public services
 - Security of water supply for socio-economic development(quality, quantity)
 - Security of discharge (hygiene and flooding in settlements)
 - Innovation is needed
 - Locally: Optimisation of single components and treatment plants
 - Globally: Development of new sustainable integrative concepts and technologies
- ⇒ holistic view requires interdisciplinary and networking of different stakeholders
- New approach in wastewater management
 - Activation of energy and material flows from wastewater
 - Reduction of the total water consumption while facilitating reuse of water
 - Solving conflicts of aims if different dimensions of sustainable development are concerned (e.g. water quality versus energy)

© Universität Stuttgart, ISWA



Thank you for your attention!