

# Sustainable local wastewater treatment at a neighbourhood scale



Water saving



Energy recovery



Nutrient recovery



wastewater

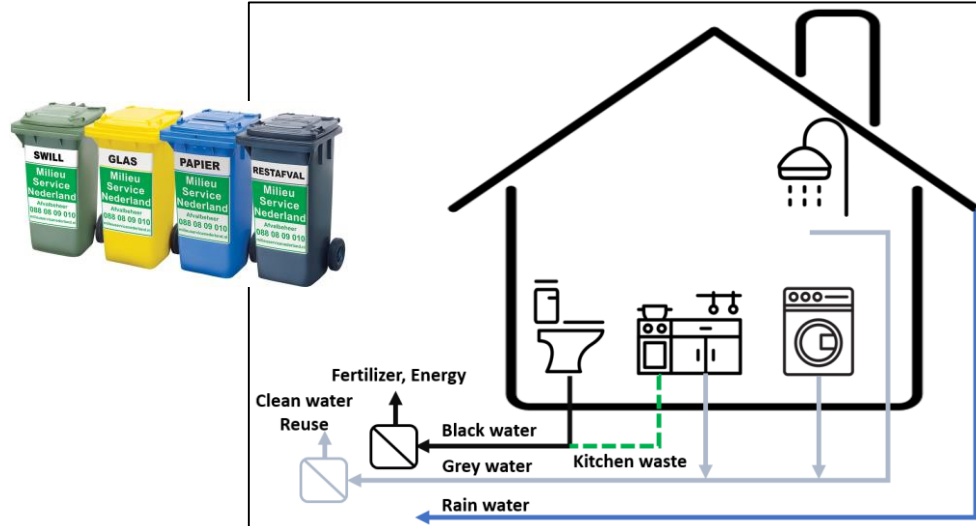


## Advantages:

- 25% drinking water savings through vacuum toilets = 30 liters per person per day
- 200% more biogas production compared to traditional treatment
- 250% more Phosphorous recovery compared to traditional treatment
- No central sewer
- Energy neutral wastewater treatment
- Heat extraction from warm treated wastewater and supplied to district heating: 10-30% of the total heating needs
- 50 Kg CO<sub>2</sub> reduction per person compared to traditional treatment, which is comparable to 2,5 trees per person
- Removal of micropollutants: medicines, bacteria etc.
- Total costs vacuum toilets + local sewer + treatment, comparable to wastewater treatment costs of large scale waste water treatment plant
- Excellent water quality after treatment: local reuse options e.g. irrigation, surface water

## Principle:

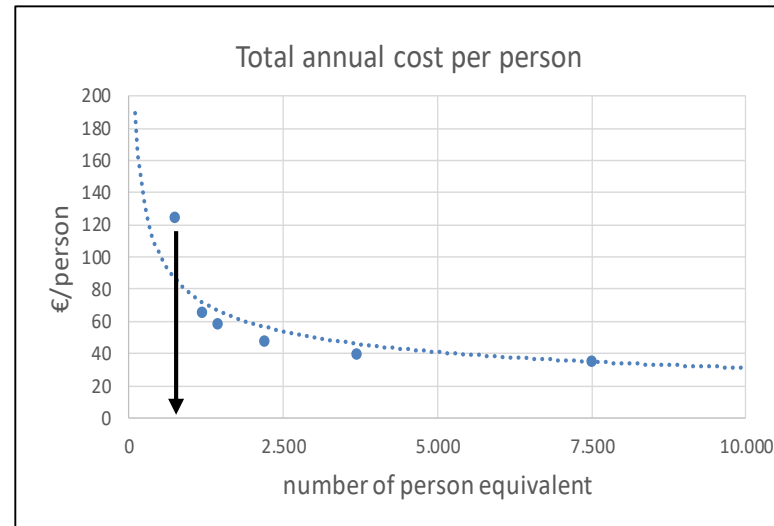
Separate different wastewater streams at the source for the best sustainable treatment



## Collection:

- Black water through vacuum toilets and vacuum sewer
- Grey water through gravity sewer
- Optional kitchen grinder for green waste

## Example total annual costs per person



## Taxes Netherlands:

- Wastewater treatment costs 60 Euro/person/year
- Sewer tax: 60 Euro/person/year

## Break-even at 750 persons

Including:

- Investments at home
- Investments local sewer
- Treatment (installations, facility)
- Depreciation, maintenance, management, electricity, consumables

## Selected references:

The Netherlands, Sneek 400 persons: [www.waterschoon.nl](http://www.waterschoon.nl)  
 Sweden, Helsingborg, 2.300 persons: [www.recolab.se](http://www.recolab.se)  
 Germany, Hamburg, 2.000 persons: [www.hamburgwatercycle.de](http://www.hamburgwatercycle.de)

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