Decentral drinking water and wastewater treatment at 'De Ceuvel' in Amsterdam

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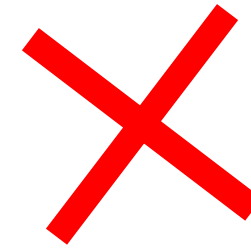
Contents
- Grey water treatment
- Composting toilets
- Local drinking water production
  - LCA
  - QMRA
- Conclusion

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Grey water treatment
5 L/person/day

(concentrations in mg/L)	COD	Total N	Total P	TSS
Grey water influent	401	14	1.9	43
Grey water effluent	122	6.8	1.6	37
Guideline	200	60	6	60

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Composting toilets

| Advantages	Disadvantages
No sewer needed (+ no flushing water)	11 Months of composting → only Log 1.9 removal of *Streptococci* (WHO norm: Log 6 removal)
Possibility of reuse compost	Complaints by users (smell, discomfort with handling human waste)

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Life Cycle Assessment

- Goal: compare environmental impact of 1 m^3 drinking water; centrally (conventional) and locally (at De Ceuvel)

- SimaPro software – EcoInvent 3.0 database – ReCiPe Endpoint method

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LCA: results
(Ecopoints/m³ drinking water)
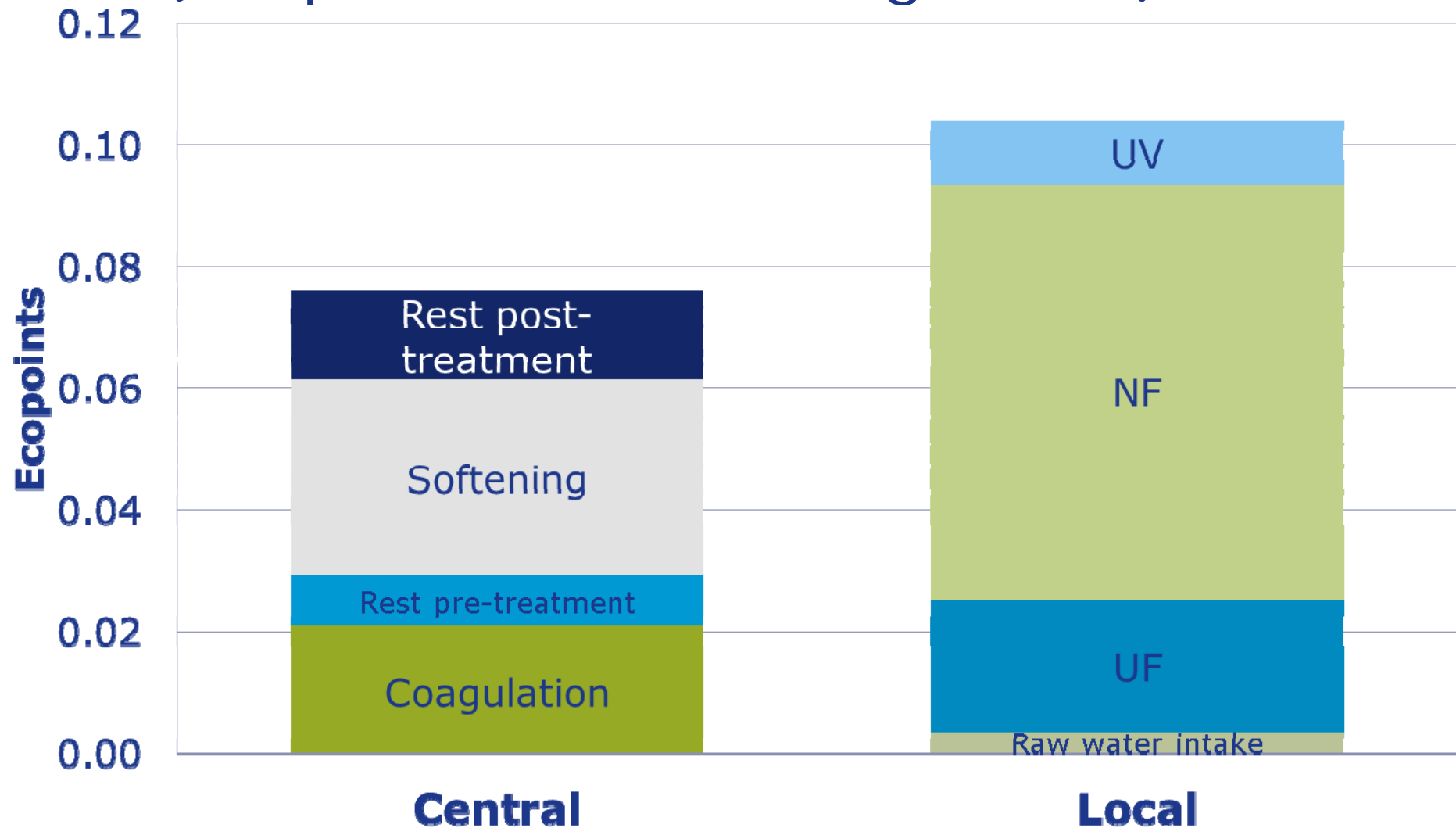
Quantitative Microbial Risk Assessment

- QMRA: risk below 1 per 10,000 persons per year → norm

Risk (inf/p*y)	Surface water (in communal system)	Grey water (in individual home system)
Enterovirus	8.0 per 10^9	**5.0 per 10^3**
Campylobacter	2.6 per 10^6	**8.8 per 10^4**
Cryptosporidium	7.1 per 10^5	**2.7 per 10^4**
Giardia	4.0 per 10^5	2.7 per 10^5

Conclusions

- Local loop closure hard to realize
    - Local grey water treatment is possible → not to drinking water production
    - Not safe, higher environmental impact, high costs for monitoring
    - Composting toilets are no option, unless site without sewer

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Questions? Discussion?

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