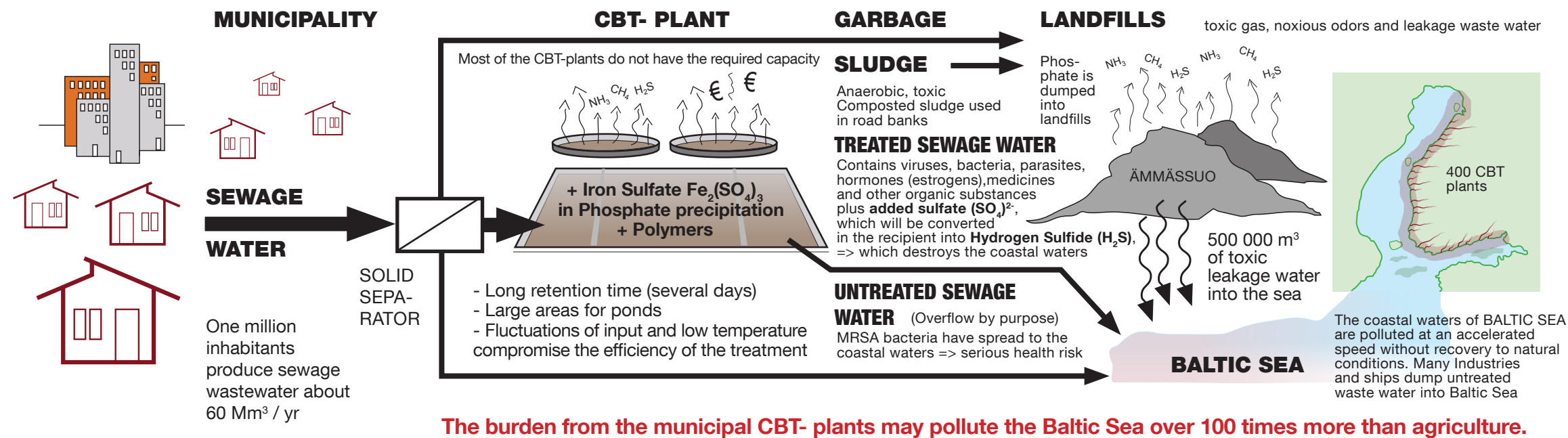


# Comparison of Sewage Treatment Methods

Hannu L. Suominen, Ph.D. 18.03.2015

## CHEMICAL-BIOLOGICAL TREATMENT (CBT) METHOD – used at present – pollutes natural waters



### CAPEX

One million inhabitants produce  
~ 60 Mm<sup>3</sup>/yr of sewage ..... ~ 600 million €

### OPEX

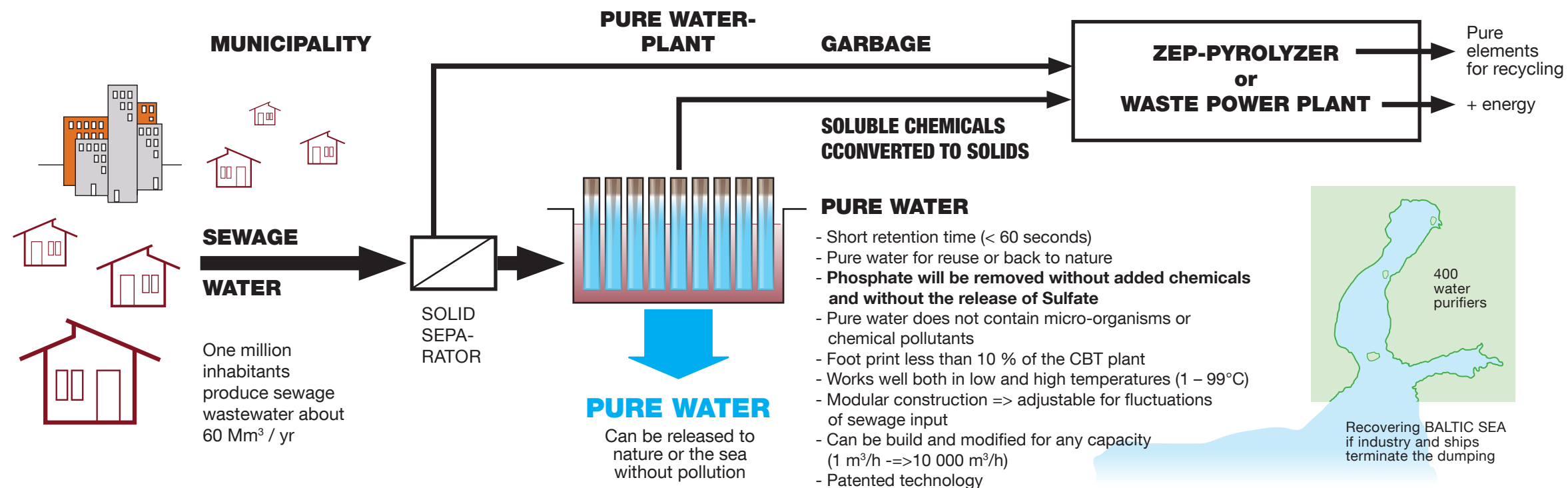
- 3 - 4 € / m<sup>3</sup>  
- 180 - 240 million €/yr

### BURDEN TO ENVIRONMENT

“Garbage Removal Plants” cause obvious pollution of the environment and water sheds, which cannot be prevented by conventional CBT plants. Pollution is cumulative. (The old CBT Plants takes 2 milliard € to repair)

## PURE WATER METHOD New method => the coastal waters may gradually recover

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### CAPEX

One million inhabitants produce  
60 million m<sup>3</sup>/yr of sewage water .. ~ 300 million €

### OPEX

- 1 - 2 € / m<sup>3</sup>  
- 60 - 120 million €/yr

### BURDEN TO ENVIRONMENT

No need for landfills due to the conversion of garbage and solids into pure elements and electricity and heat energy. The produced pure water will improve the environmental condition gradually. There is a need for ca. 400 water purifiers in Finland. The total investment will be less than 1,5 milliard €.