



Humification of (Sewage) Sludge in the Mekong-Delta by Sludge Drying Reed Beds

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WISDOM Phase 2

High amounts of:

- Septic tank sludge (CT:5 m³/day)
 - Sewer sediments (CT:35 m³/day)
 - Activated sludge
- > But no suitable treatment
- VN environmental law: require adequate sludge treatment from sludge disposal companies



Current Sludge-Management in Ho Chi Minh City



Current Sludge-Management in Ho Chi Minh City



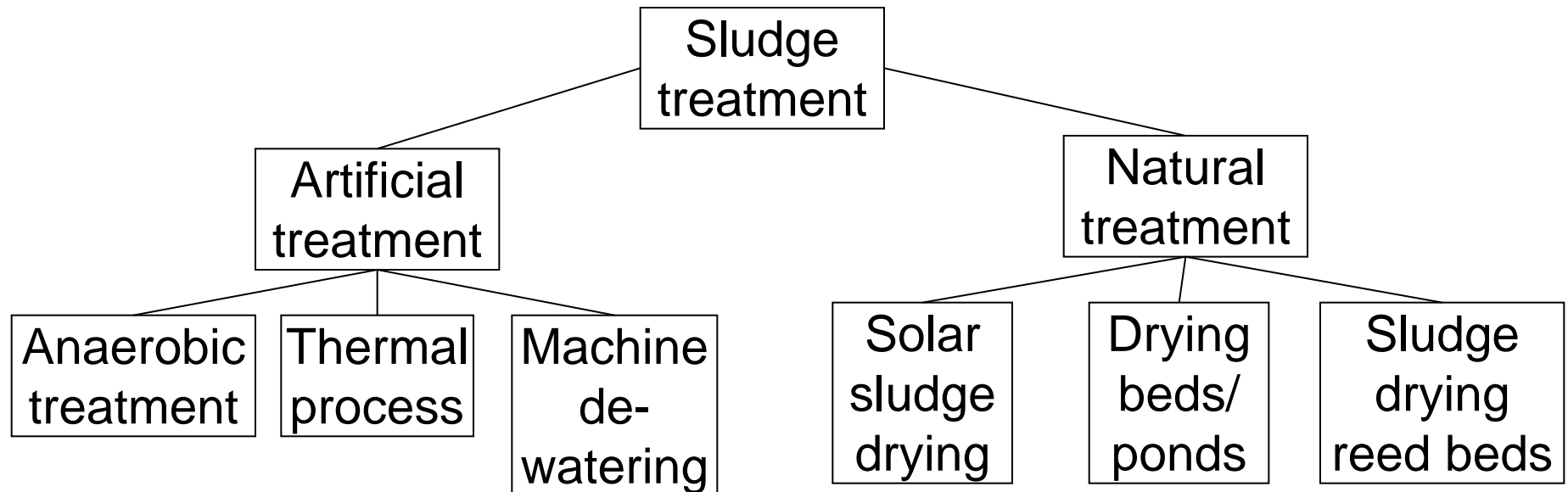
Current Sludge-Management in Can Tho



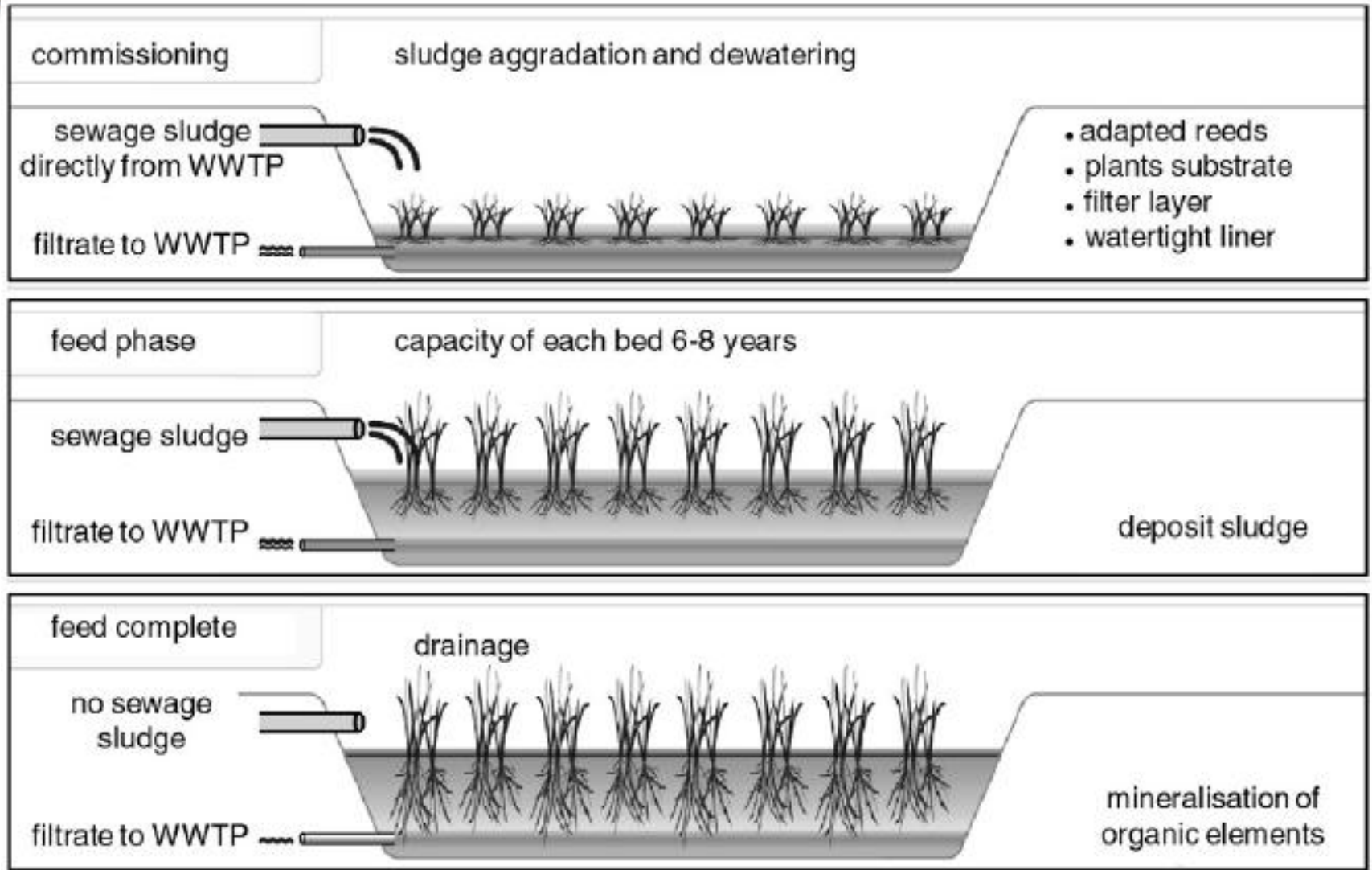
Current Sludge-Management in Can Tho



Sludge treatment is necessary to reduce the sludge volume and to stabilize the sludge/ organic compounds



Design of sludge drying reed beds



Pauly et. al. 2006

Full scale sludge drying reed bed



Function of reed:

- Roots of reed (*Phragmites australis*) keep the sludge layer open to the drainage system for several years
 - > No frequent sludge removal
 - > Low operation effort
- Transfer of oxygen through sludge layers
 - > Creation of aerobic microsites promote mineralization, stabilization conditons

(Reed et.al.,1988)

 - > less methane production
 - > organic matter mineralization
- Enhanced evapotranspiration
 - > quicker drying process
 - > less leachate



1. Batch experiment:

- 3 different sludge
- Optimum sludge loading rate
- N, P, organic solid removal rate/ cycles
- Methane production
- Differences planted <-> unplanted treatment
- Location: SIWWR laboratory Binh Duong

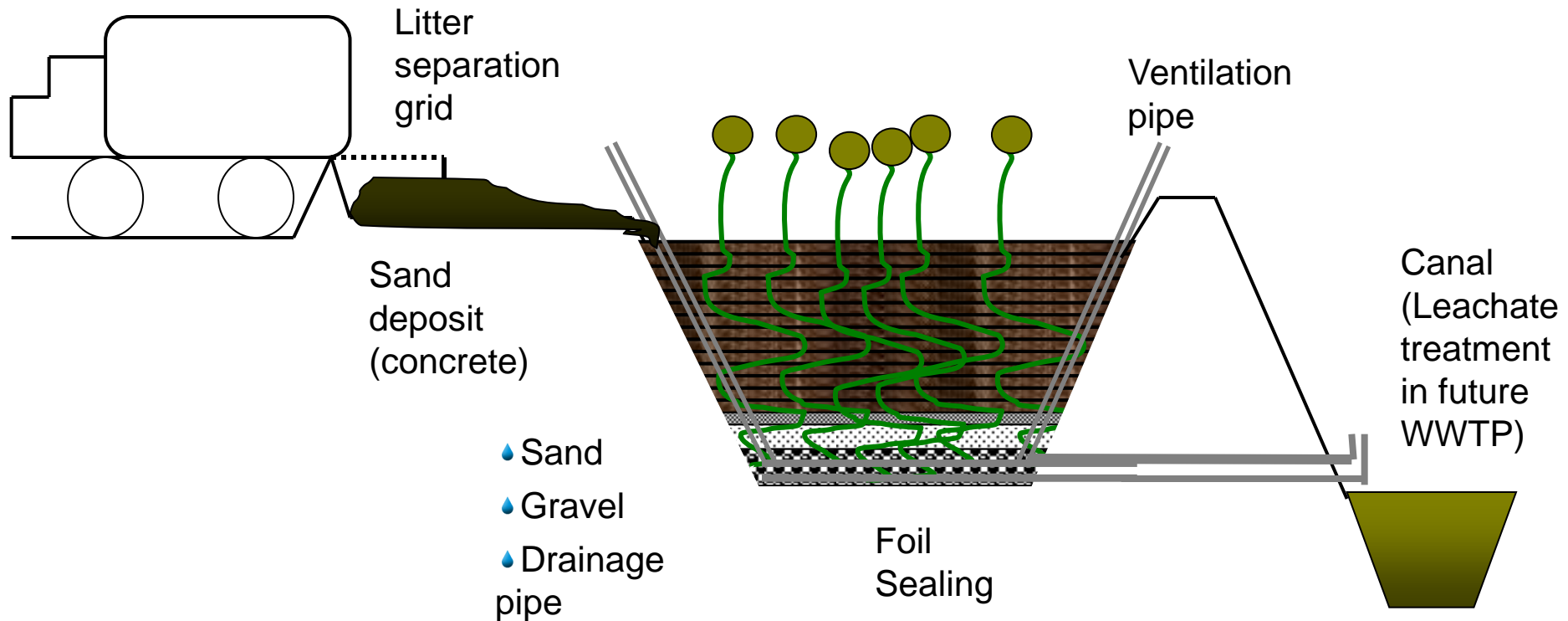
2. Pilot-scale experiment:

- Treatment under realistic conditions
- > Recommendations for full-scale treatment plants:
 - Design
 - Practical way of loading
- Ecomomic plants instead of reed
- Optimum loading rate and intervalls
- Effect of rainy season
- Greenhouse gas (CH₄) emissions
- Location: Can Tho, Cai Sau area

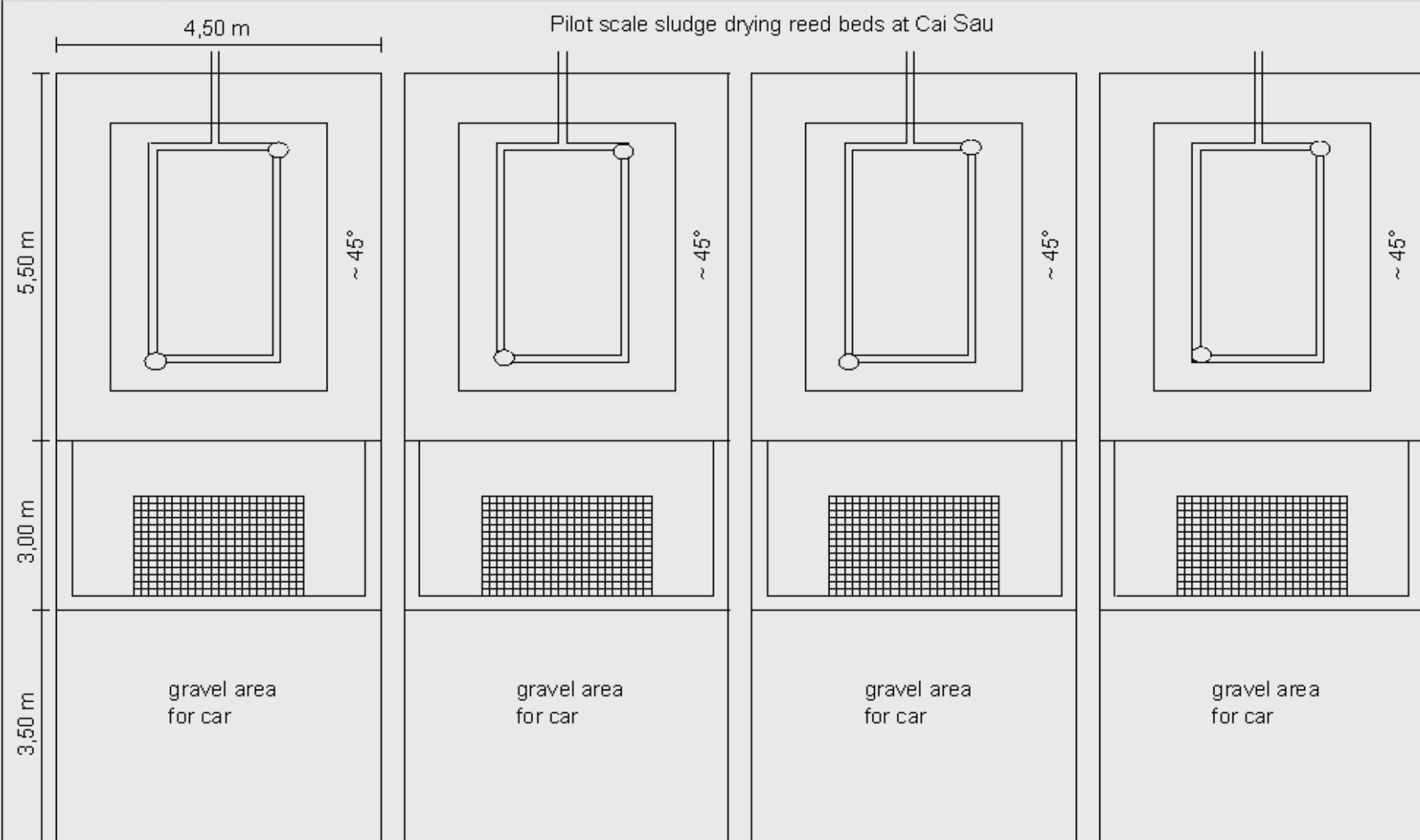
Set-up batch experiment



Set-up pilot-scale experiment



Set-up pilot-scale experiment



Thank you for your attention!

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