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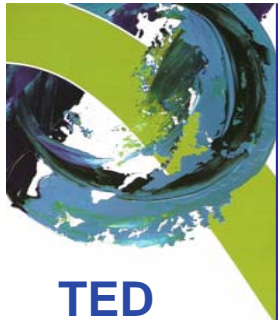
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Decentralized Wastewater Treatment



DEWATS is an approach, rather than a hardware package

Guided by following principles:

- Reduce sewer networks
- Simplify sewer by applying **SOLID-FREE SEWER**
- Involve **local labour and material** available
- Construct what requires **low maintenance and no energy**
- Generate **Biogas for energy**
- Generate **water and nutrients for irrigation** in agriculture and food-garden

Applicable for households, settlements, institutions, hospitals, schools,...and small and medium sized enterprises (SME) for the treatment of domestic and organic industrial wastewater

→ Up to 2,000 households per DEWATS unit



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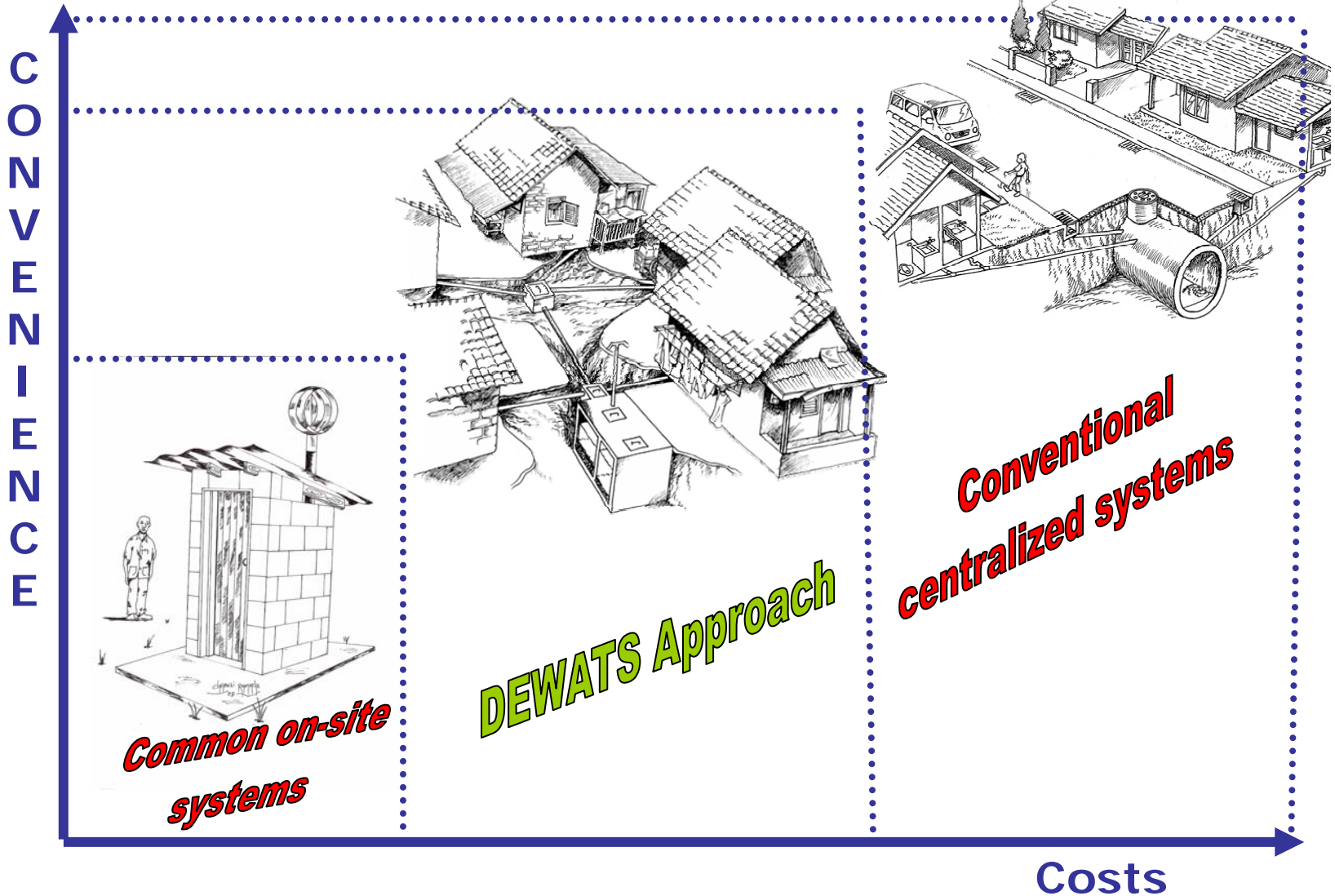


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DEWATS fills a Gap



Common on-site systems

DEWATS Approach

Conventional centralized systems

Costs



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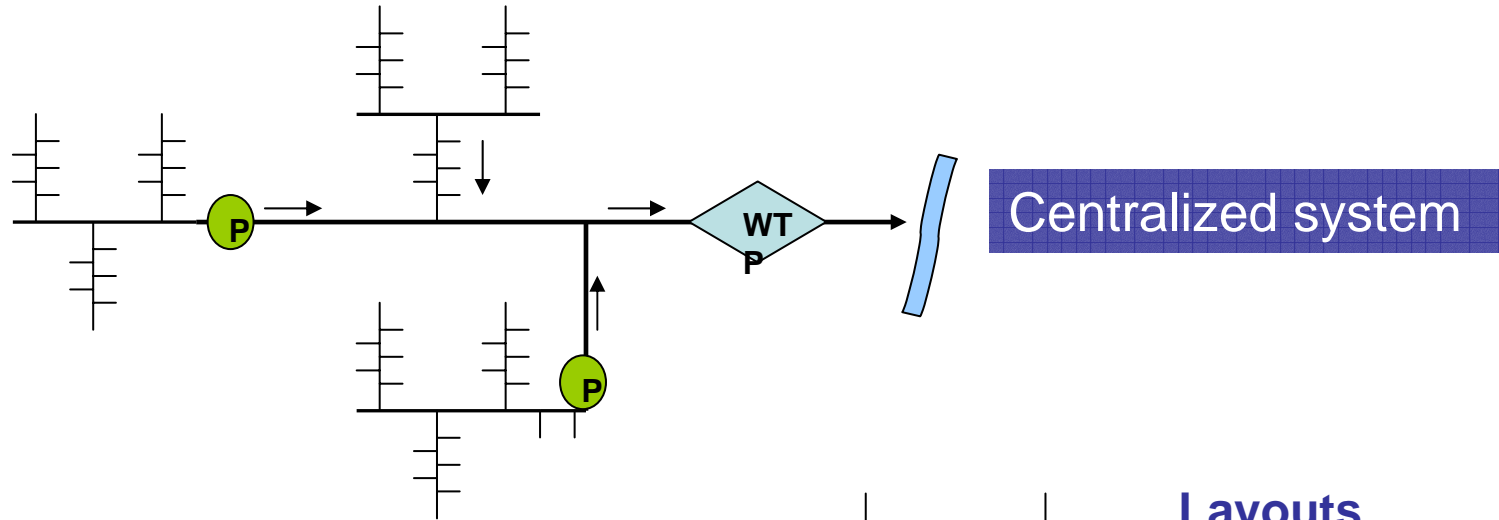


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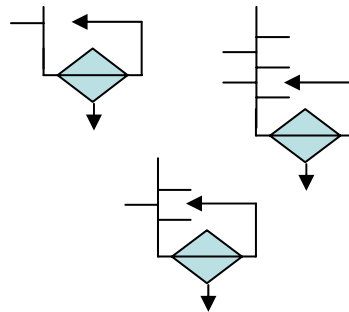


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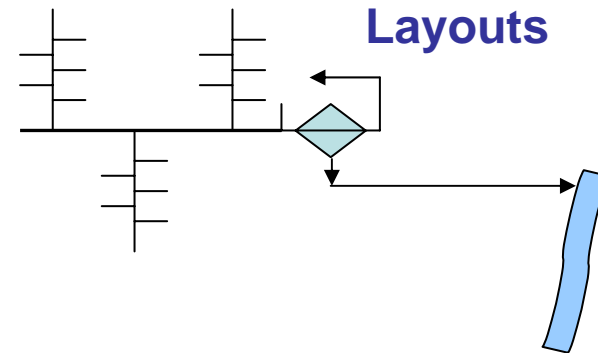


Single House



Decentralized system

Layouts



Housing Colony



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Decentralized Wastewater Treatment



Advantages-Decentralization

- ★ Is beneficial from the point of construction & maintenance of sewer system
- ★ Size of sewer pipe and depth of construction is lesser, hence not expensive
- ★ Re-use of the treated wastewater in agriculture and food garden
- ★ Integration of local construction & operation capacities and job creation
- ★ Collection and utilization of biogas for cooking and heating

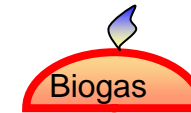
Disadvantages-Decentralization

- ★ More maintenance on decentralized level
- ★ Cost and area required for the treatment infrastructure is more

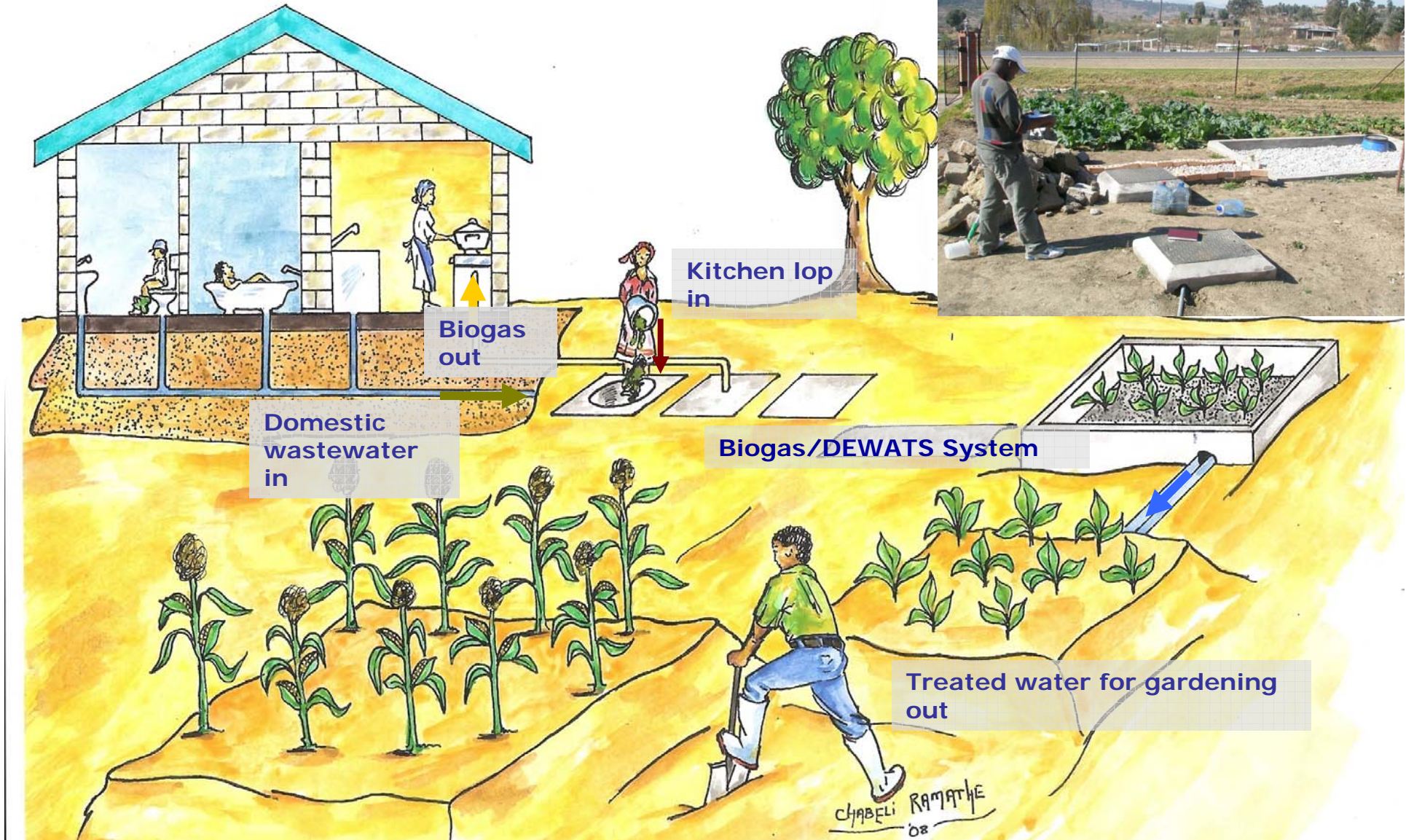
Compare investment and O&M cost of a decentralized and centralized approach

...and then decided for your project

Decentralized Wastewater Treatment



Sanitation with biogas & water recycling





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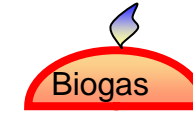


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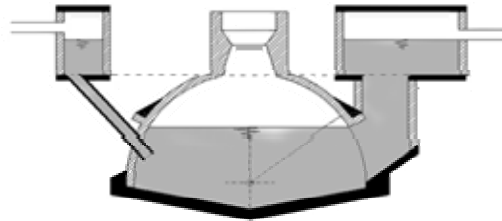


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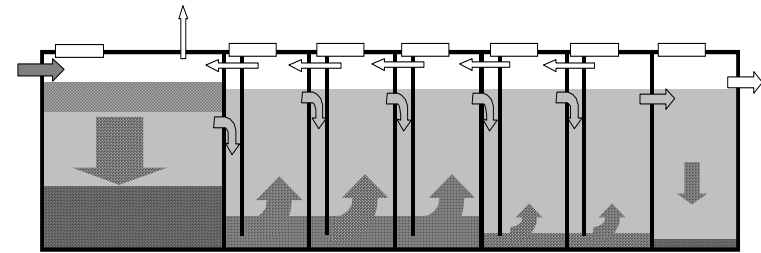
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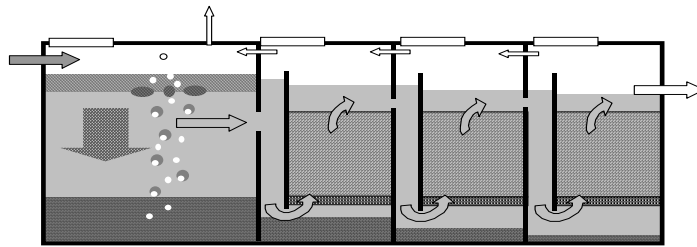
DEWATS modules



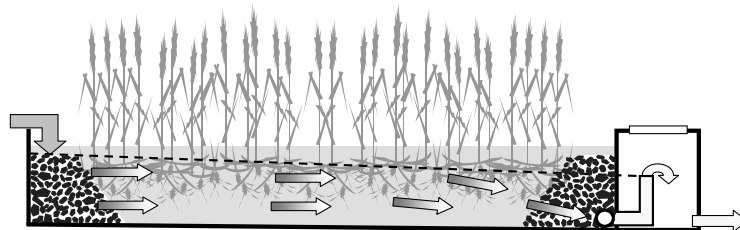
biogas plant



anaerobic baffled reactor



anaerobic filter

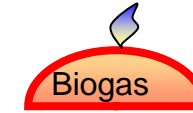


planted gravel filter





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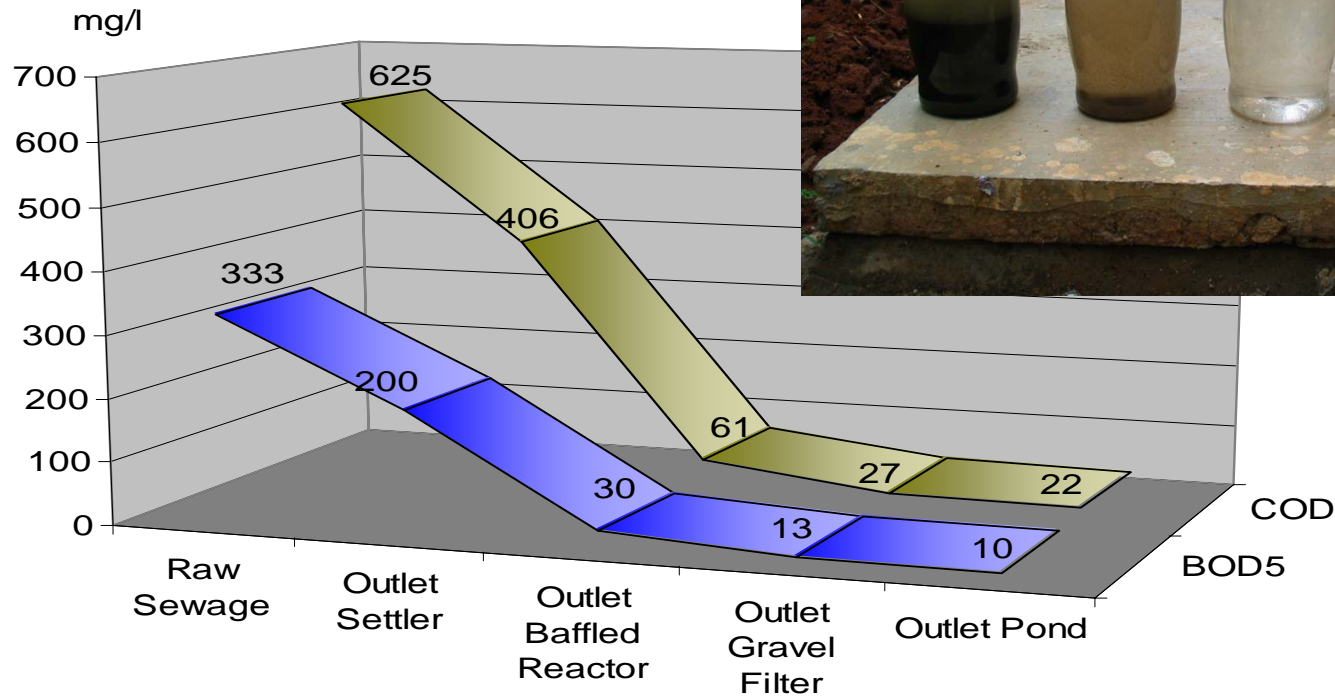
DEWATS effluent quality

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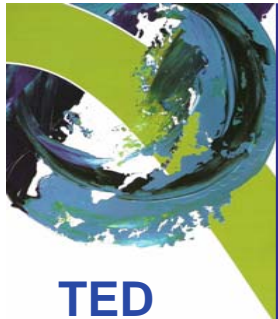
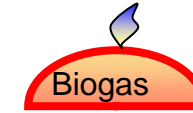
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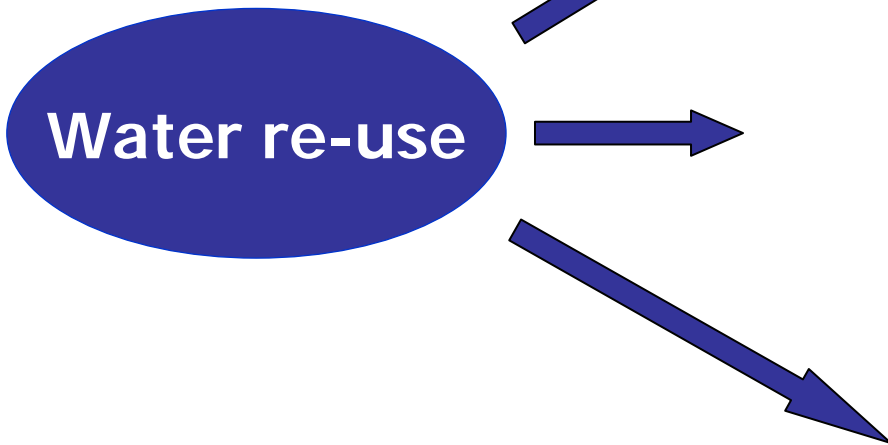


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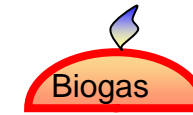


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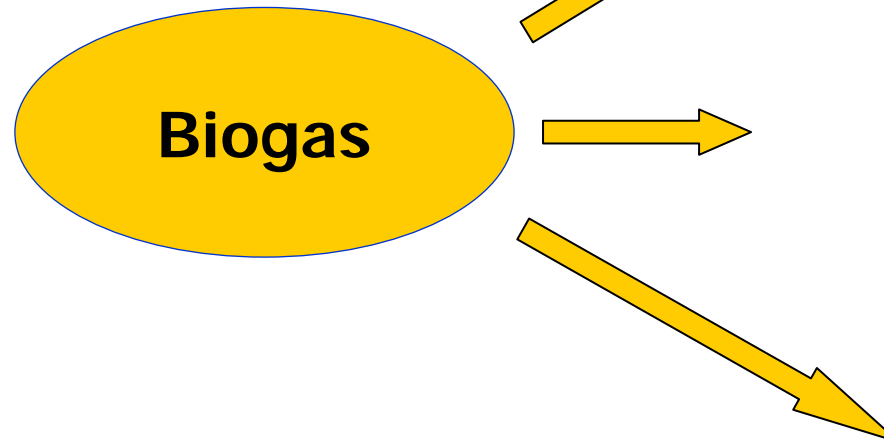


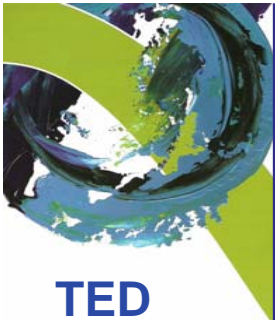
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Decentralized Wastewater Treatment



- Biogas yield 8 – 10 l per capita per day
- Gas pressure 30 – 100 cm water column
- Biogas consumption of a ordinary one flame stove 300 l per h
- Applicable for cooking and heating lightning





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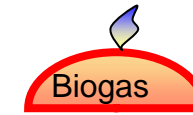


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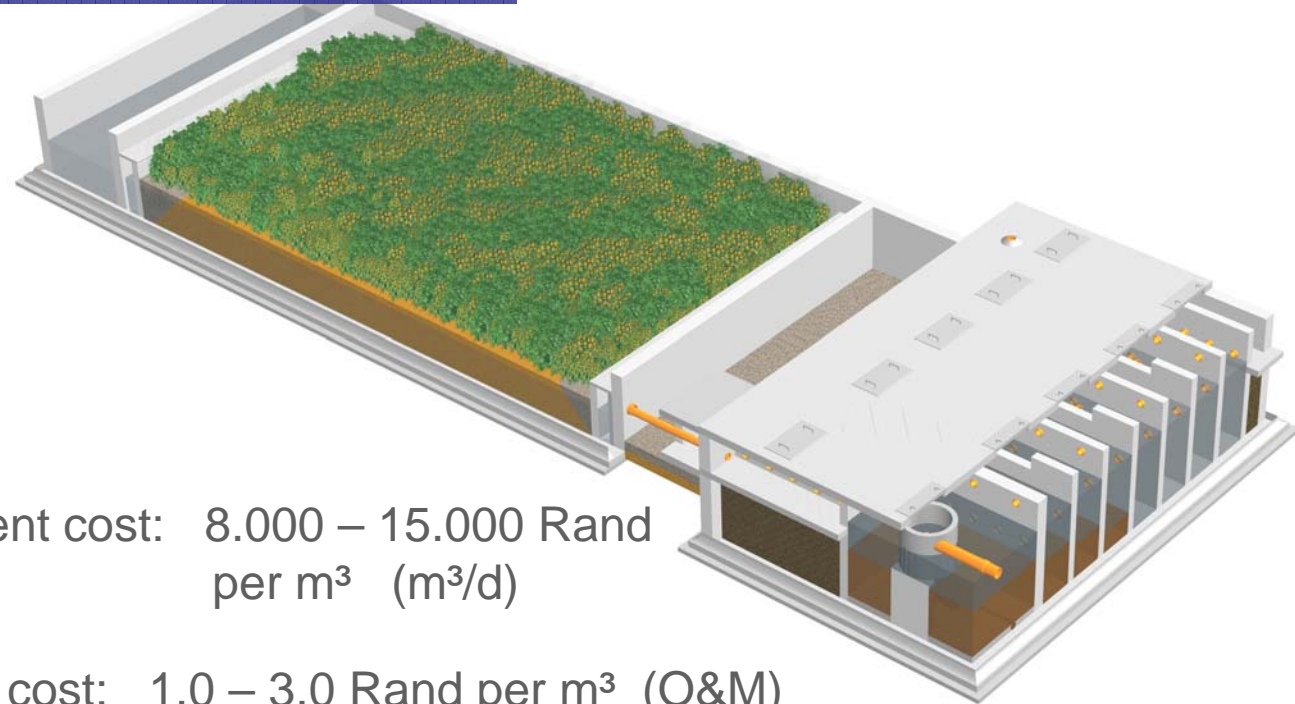


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Decentralized Wastewater Treatment



DEWATS figures



Investment cost: 8.000 – 15.000 Rand
per m³ (m³/d)

Running cost: 1,0 – 3,0 Rand per m³ (O&M)

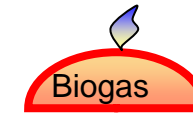
Required area: 10 – 25 m² per m³

Type of wastewater: domestic, organic food industry WW

Treatment capacity per unit: up to 150 m³ per day

Life time: 30 – 40 years

Decentralized Wastewater Treatment



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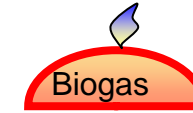
Construction of Biogas plants



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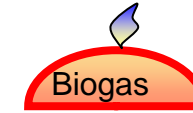
Biogas/DEWATS plants for households



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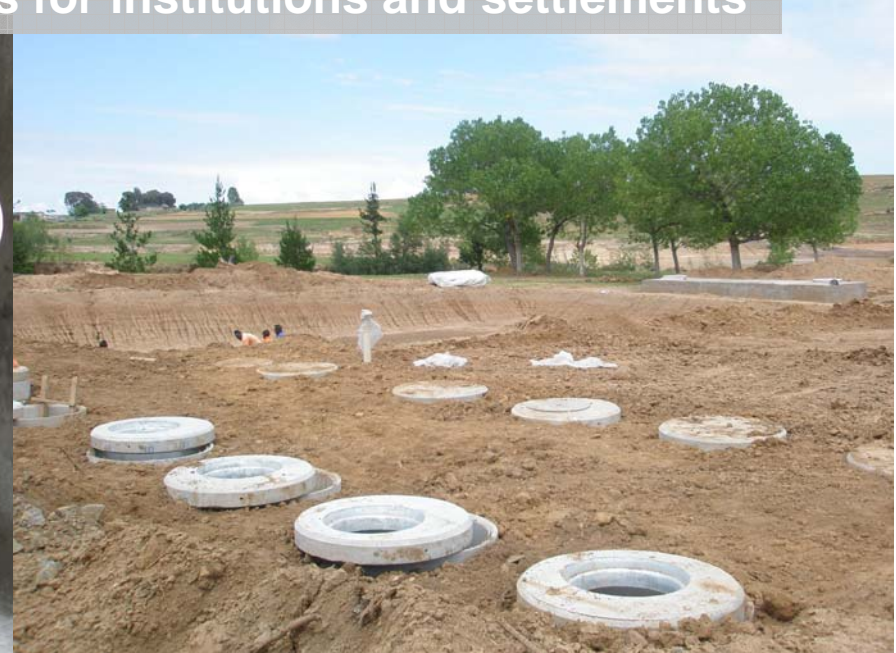
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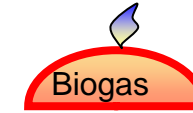


Construction of ABR reactors for institutions and settlements





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Construction of horizontal filter (PGF) for institutions and settlements





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References

- Lesotho 28 Biogas/DEWATS plants for 6-2,000 people are constructed and in operation; 6 plants in planning
- South Africa 2 DEWATS plants in planning (Durban and Waterberg)
- Zambia > 20 Biogas/DEWATS plants in planning
- World wide more than 700 DEWATS plants for operation through the BORDA network



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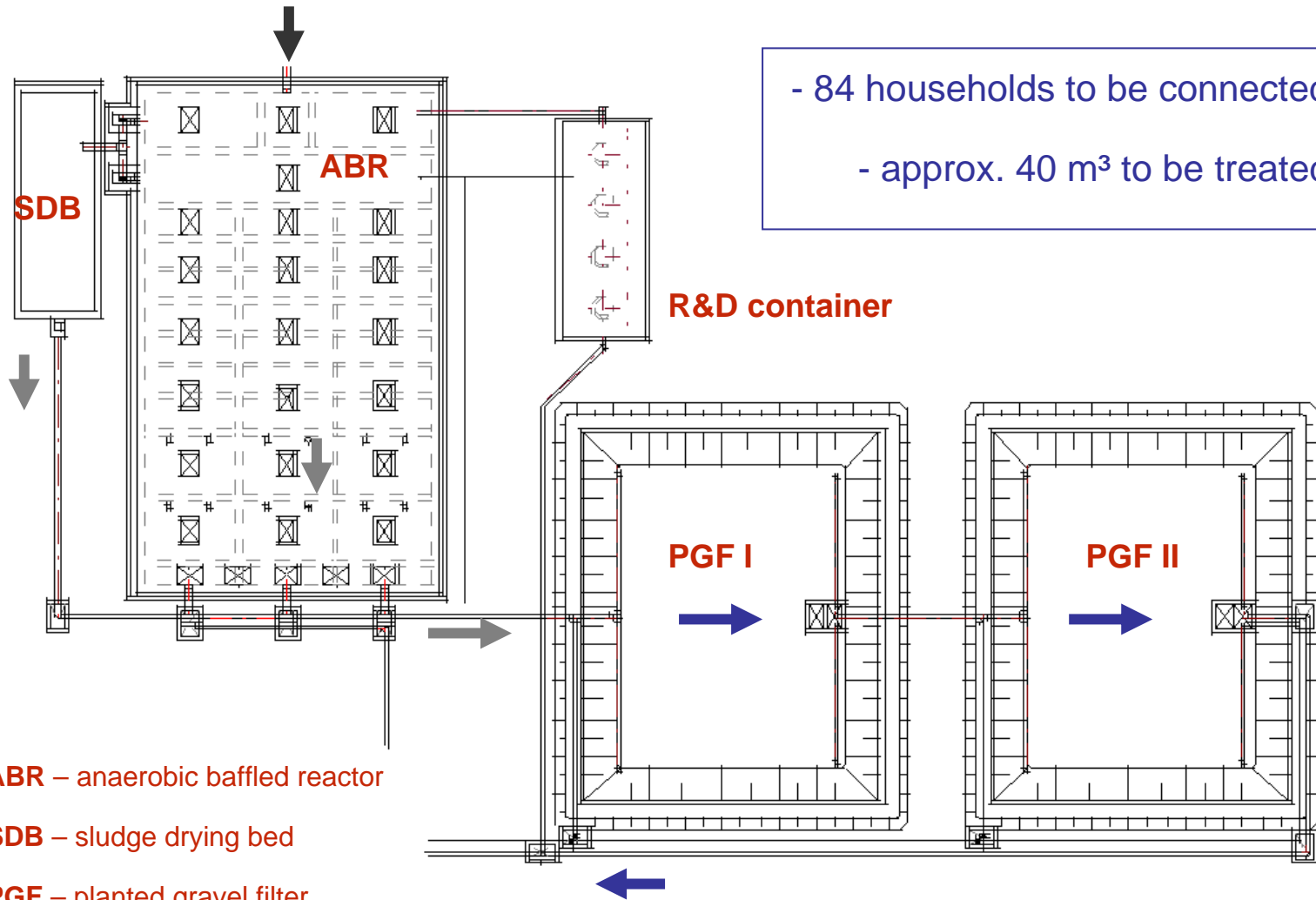
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DEWATS pilot project at Newlands Mashu / Durban



A cooperation project with eThekweni Municipality (EWS), UKZN & Newlands Mashu

Goals: → Piloting DEWATS and → agriculture research on treated wastewater





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