Institutional and Collective Sanitation:

Bottlenecks and Ways Forward

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Introduction

A. School sanitation

B. Sanitation for housing blocks

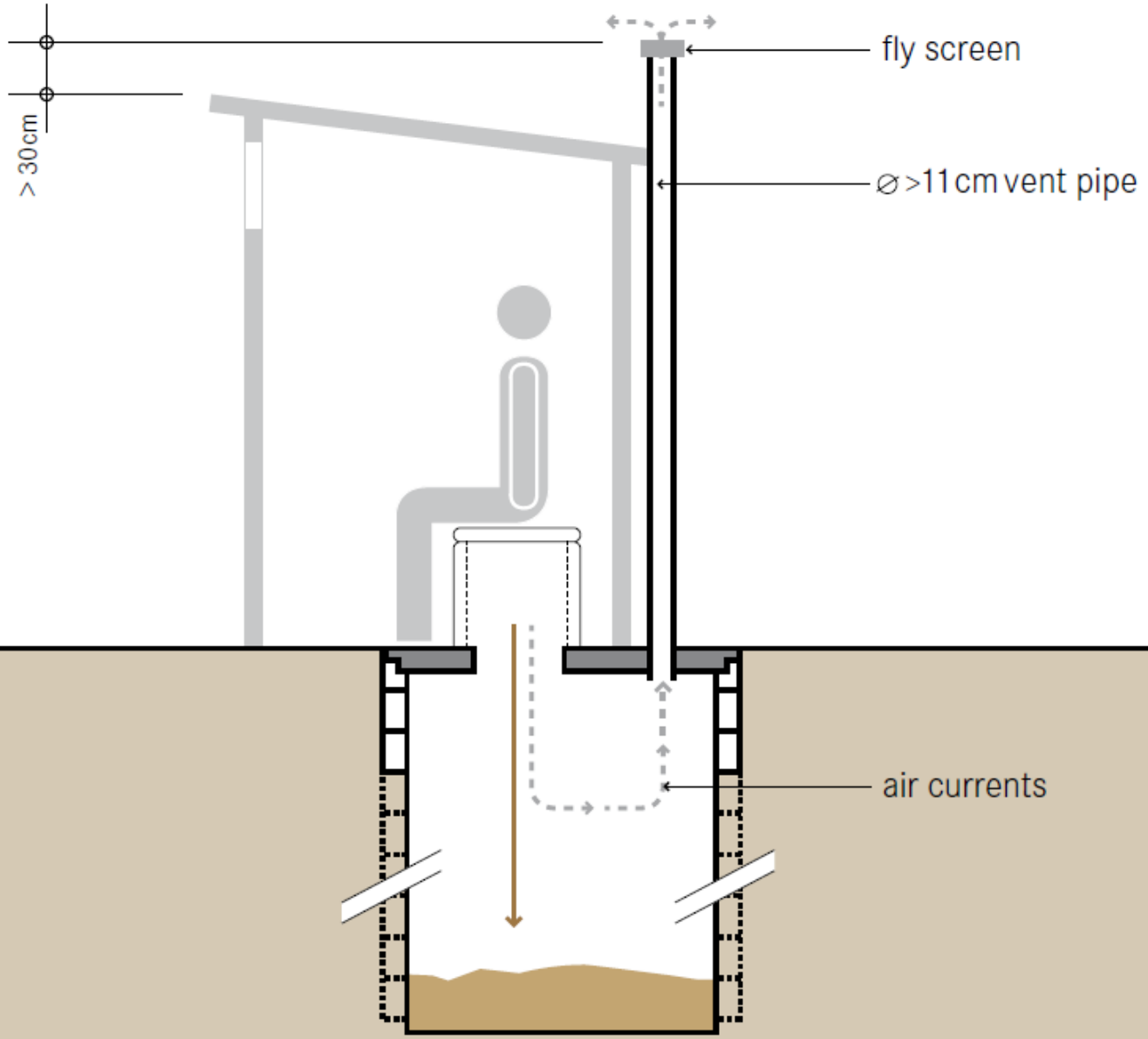
A. SCHOOL SANITATION

Distance

Ventilation

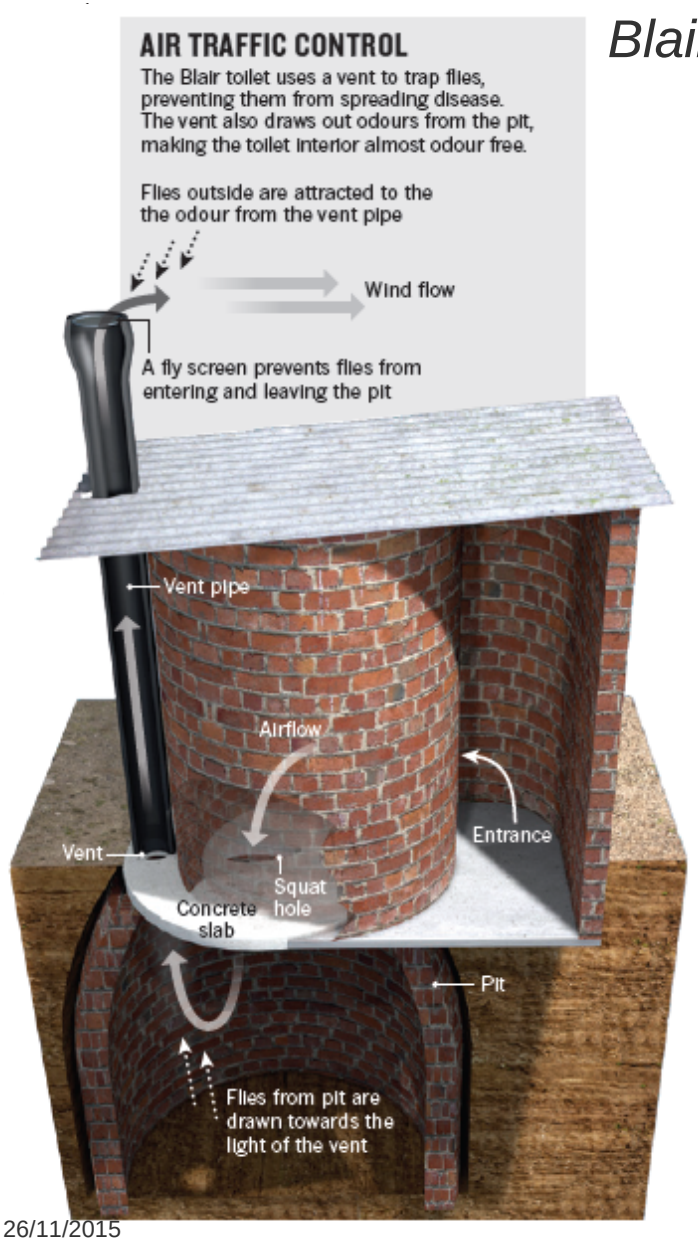
Potential for improvement

Ventilated Improved Pit (VIP latrine)



Potential for improvement

Ventilation of dry toilets



Blair latrine, Zimbabwe [2]

Smoke test


Ventilation
Number of toilets
Here 2 toilets for 434 students + teachers !!!

Anal cleansing material


Shaky
structure

Toilet surface

Toilet surface

Water for hand washing

Tap broken

Water for hand washing

Toilet paper

Bucket if no water

Tap

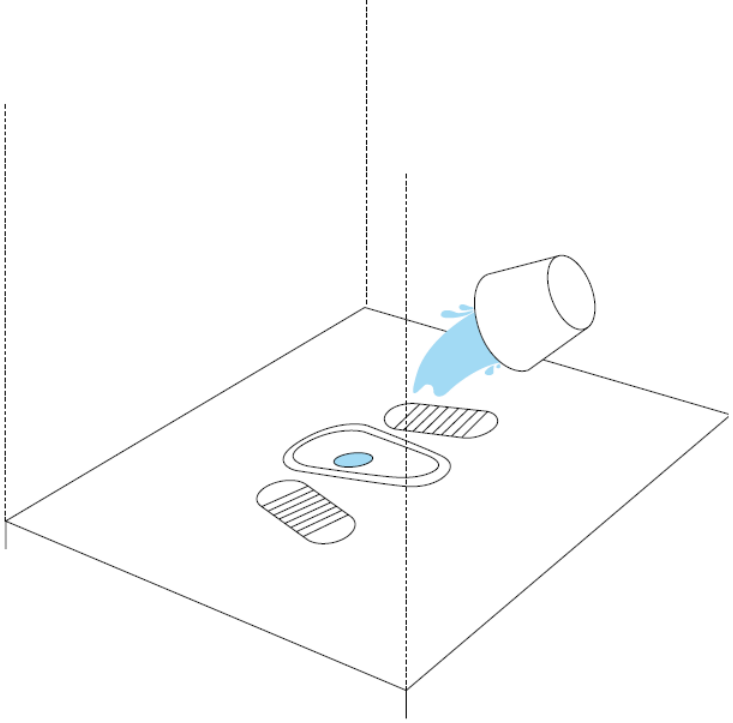
Tiles

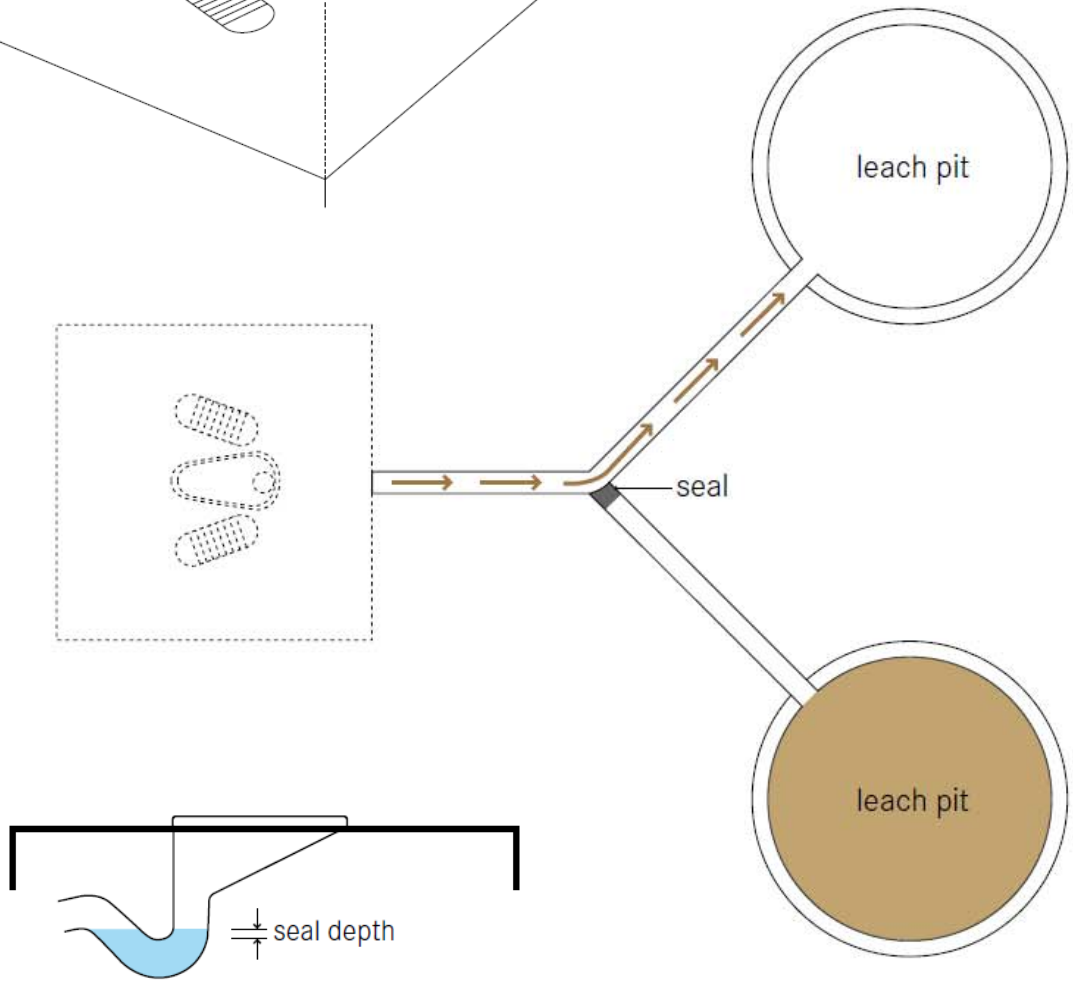

Brush to clean the toilet after use
Bin for toilet paper

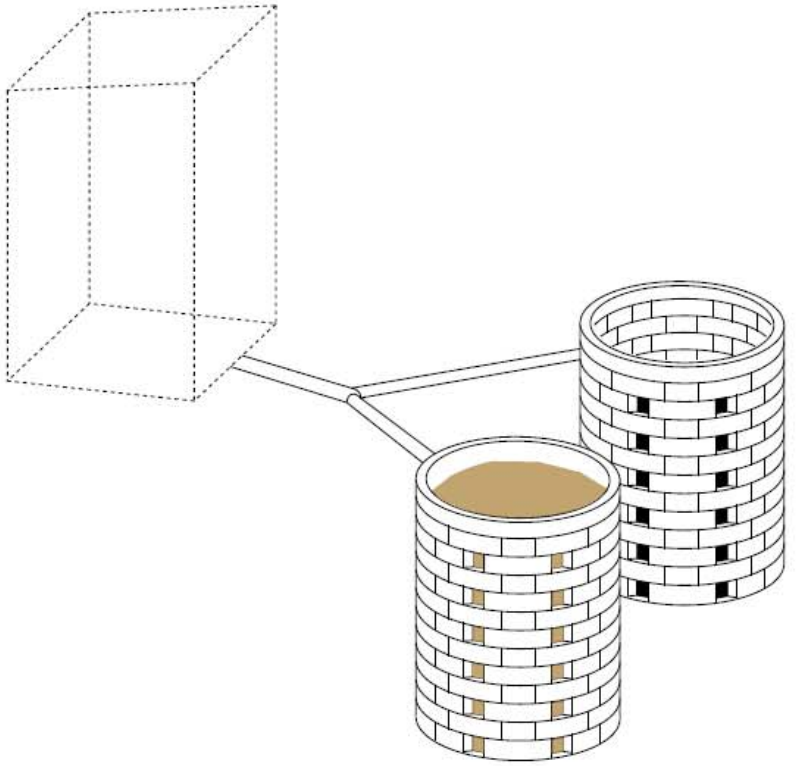
The UNICEF model

Twin pits for pour flush

⇒ ***It requires water !!!***








What does explain this miracle ?
Water stream
Motivation and awareness of Director and teachers


Pit
Dig hole for manual emptying
School toilet in the Fan mountains

Often discuss, but to be taken with care:

The Urine-Diverting Dry Toilet (UDDT or *Ecosan*)

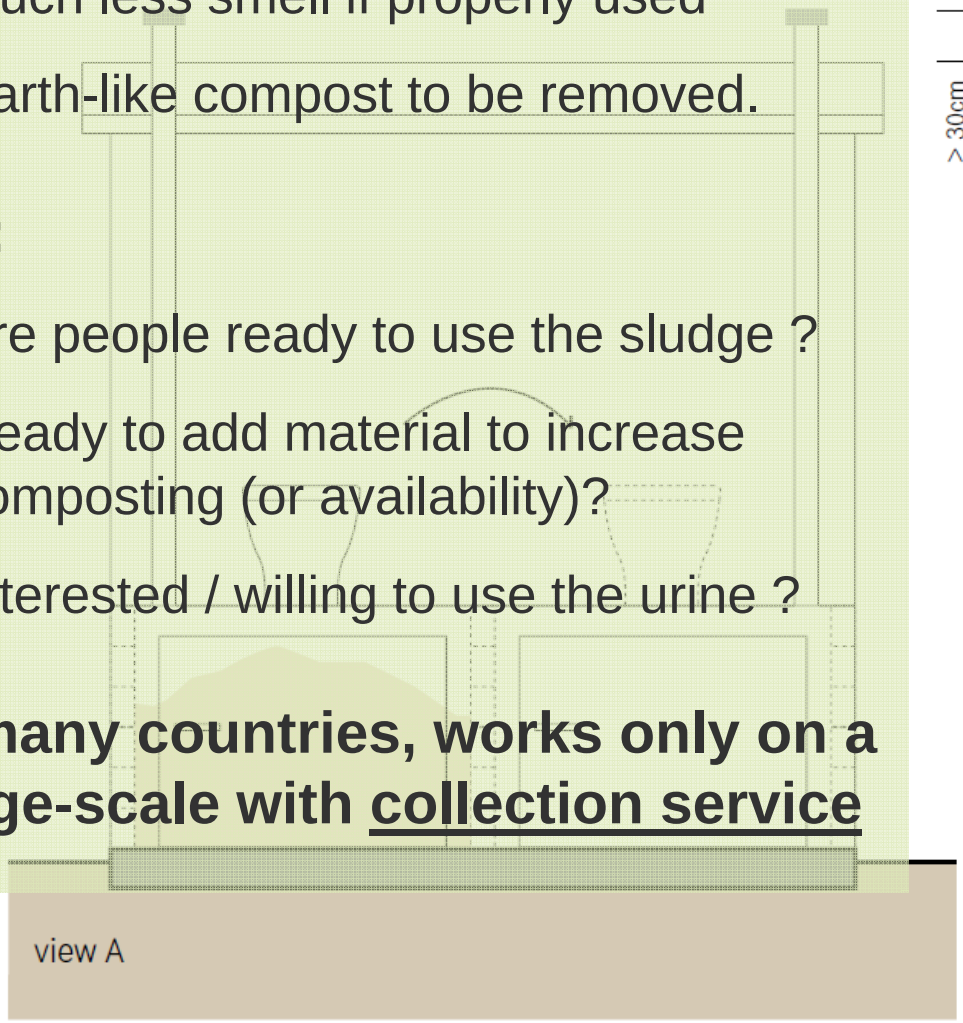
Advantages:

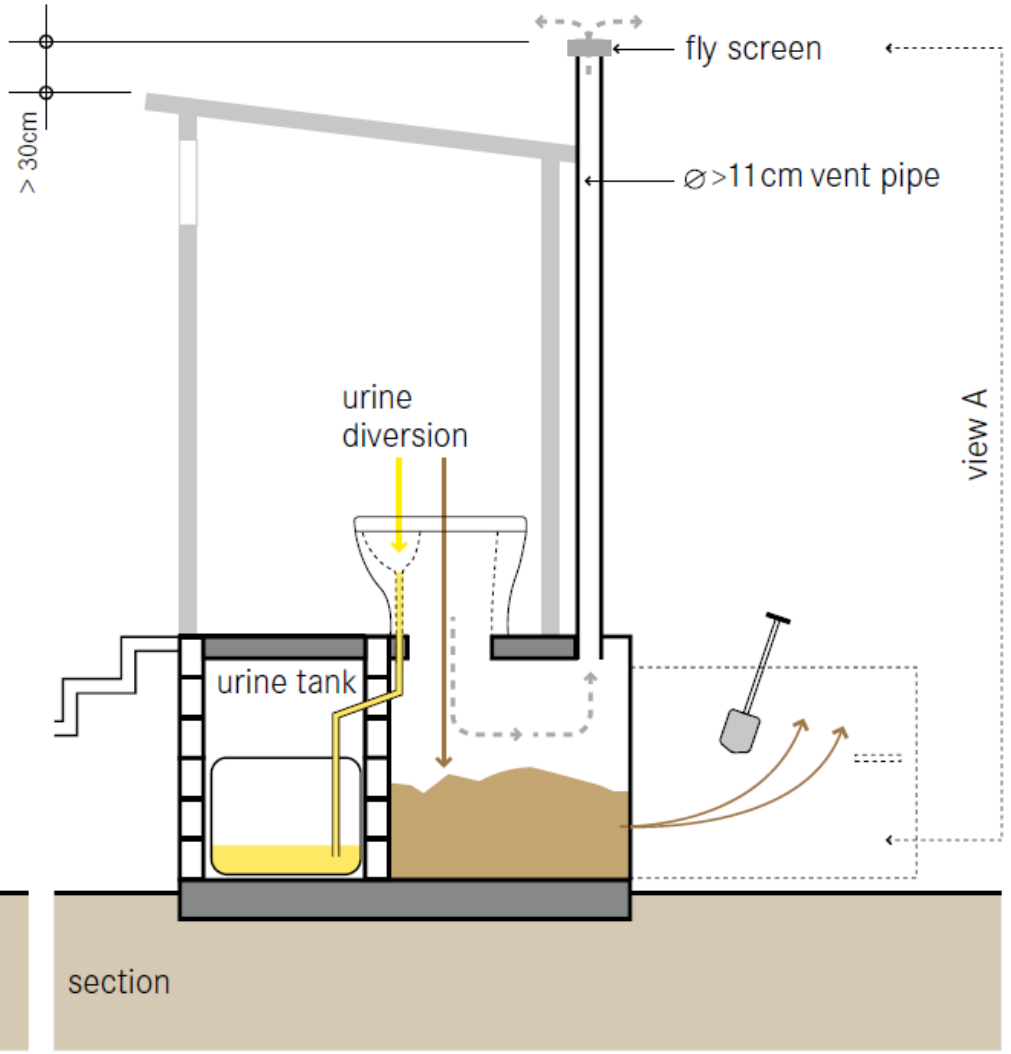
- Much less smell if properly used
- Earth-like compost to be removed.

But:

- Are people ready to use the sludge ?
- Ready to add material to increase composting (or availability)?
- Interested / willing to use the urine ?

In many countries, works only on a large-scale with collection service





School toilets

Constraints

- Lack of water

  ⇒ *Pour-flush toilets are **not** an option in most cases*

- Lack of funds to remove the sludge
- Absence of vacuum trucks
- Absence of sewer system and treatment plants

Opportunities

- Lot of space available

⇒ **Dry pit toilets seem to be the most appropriate option for most places, but can be improved !**

Institutional sanitation

Synthesis of recommendations

1. **Water supply projects:** include connection to the right points in schools and health centres.
2. **Hand washing point next to the toilet block + functioning taps**
3. **Running water against freeze** vs. **water meters in winter ?**
4. Mechanism to **ensure presence of toilet paper and soap**
5. **Toilet improvement**: focus on **toilet floor** and **ventilation**, not on superstructure
6. **Increase the number of toilets** and ensure toilets for teachers
7. Add **waterless urinals**
8. Design for **children with handicap**

Where to act ?

Regulations / enforcement:

- Codes of Practice ?
- Ministry of Education ?
- Ministry of Construction ?

Management:

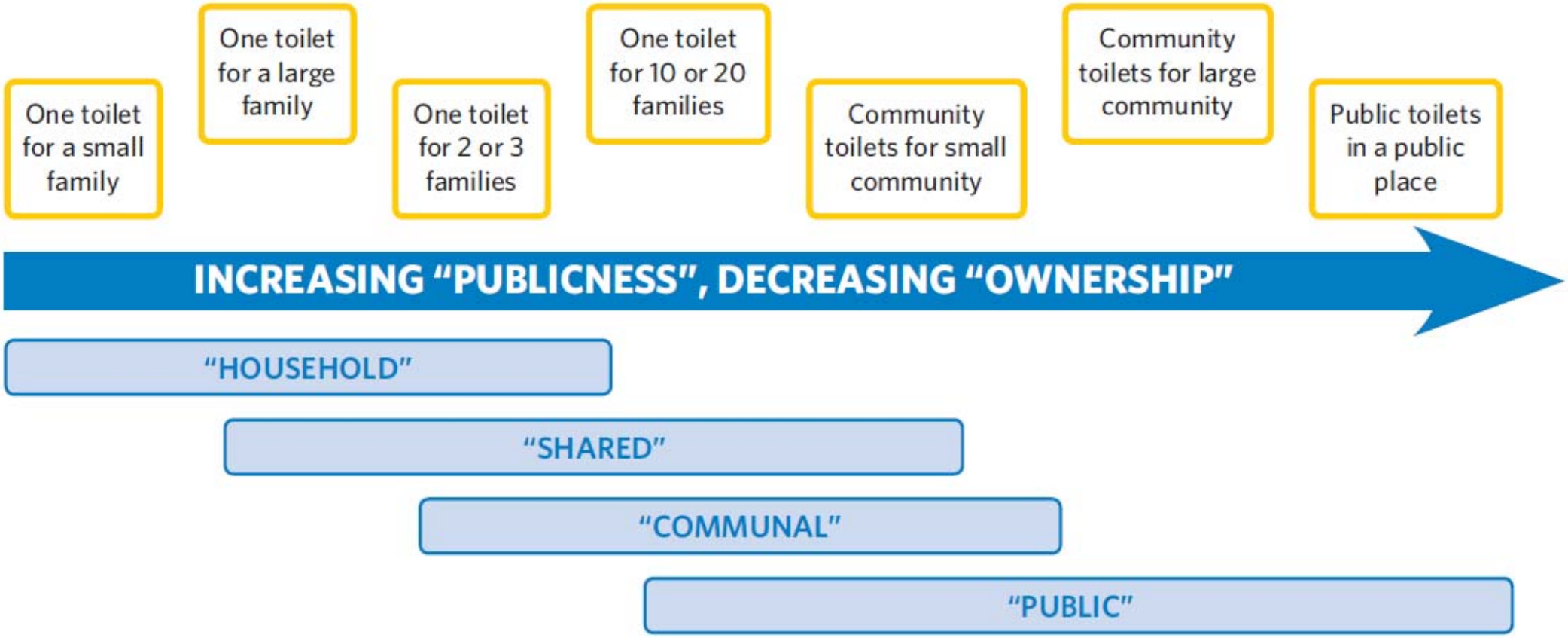
- School Directors and teachers
- Toilet paper and soap:

  ⇒ *Request children to bring a roll/soap every month/year ?*

  ⇒ *Ask parents to pay 1-2 TJS/month for this appliances (and sometimes water)?*

B. SANITATION FOR HOUSING BLOCKS

Toilets for housing blocks : different setups



Research question: What is the best configuration in each case ?

Source: [7]

Housing blocks

Case study Farkhor

Toilets for housing blocks

Case study Farkhor

Wastewater treatment system for housing blocks
Case study Farkhor

Decentralised sanitation for housing blocks

Case study of Farkhor

Current situation:

- Water taken from street taps

Rationale of the project:

- Water supply to each appartment :

  ⇒ *Wastewater consumption increase significantly*

  ⇒ ***Problem:*** *there is no sewer system*

  ⇒ *Need for infiltration*

⇒ **Will the infiltration capacity be enough ?**

⇒ **Cost for removing sludge ?**

⇒ **Cost per capita of this infrastructure ?**

Decentralised sanitation for housing blocks

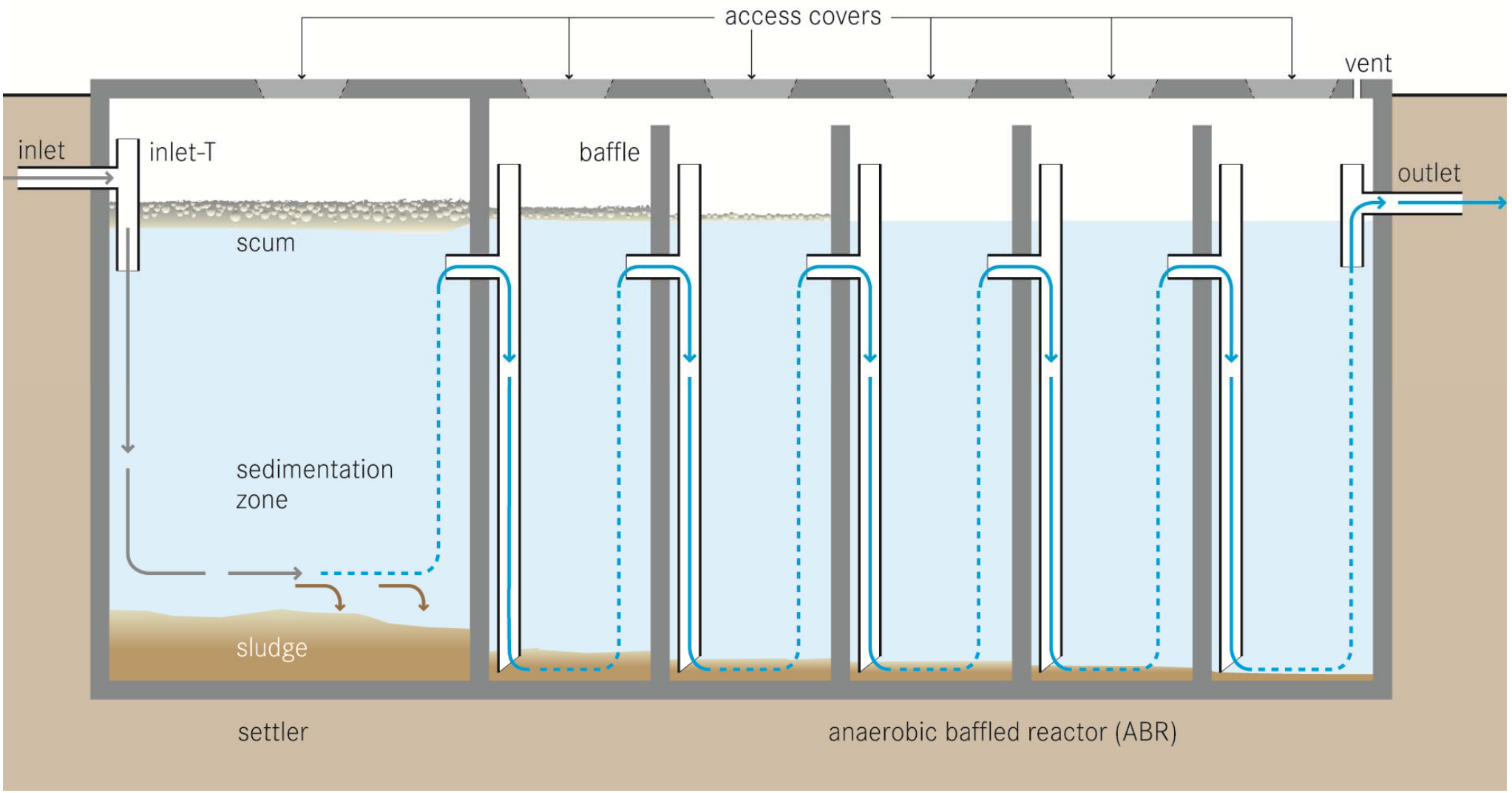
The wastewater dilemma

- What to do with the wastewater if there is **no sewer network** ?
- What if the **groundwater table is very high** (e.g. Muminabad) ?
- If not treated properly, risk to **contaminate the rivers**.
- Keep on **separating excreta from greywater** until a sewer system is built?
- Is a **vacuum truck** available ?
- Who will **manage** such small treatment units ? KJKP ?
- Need to investigate **actual water consumption**

⇒ **Need for planning beyond the housing block**

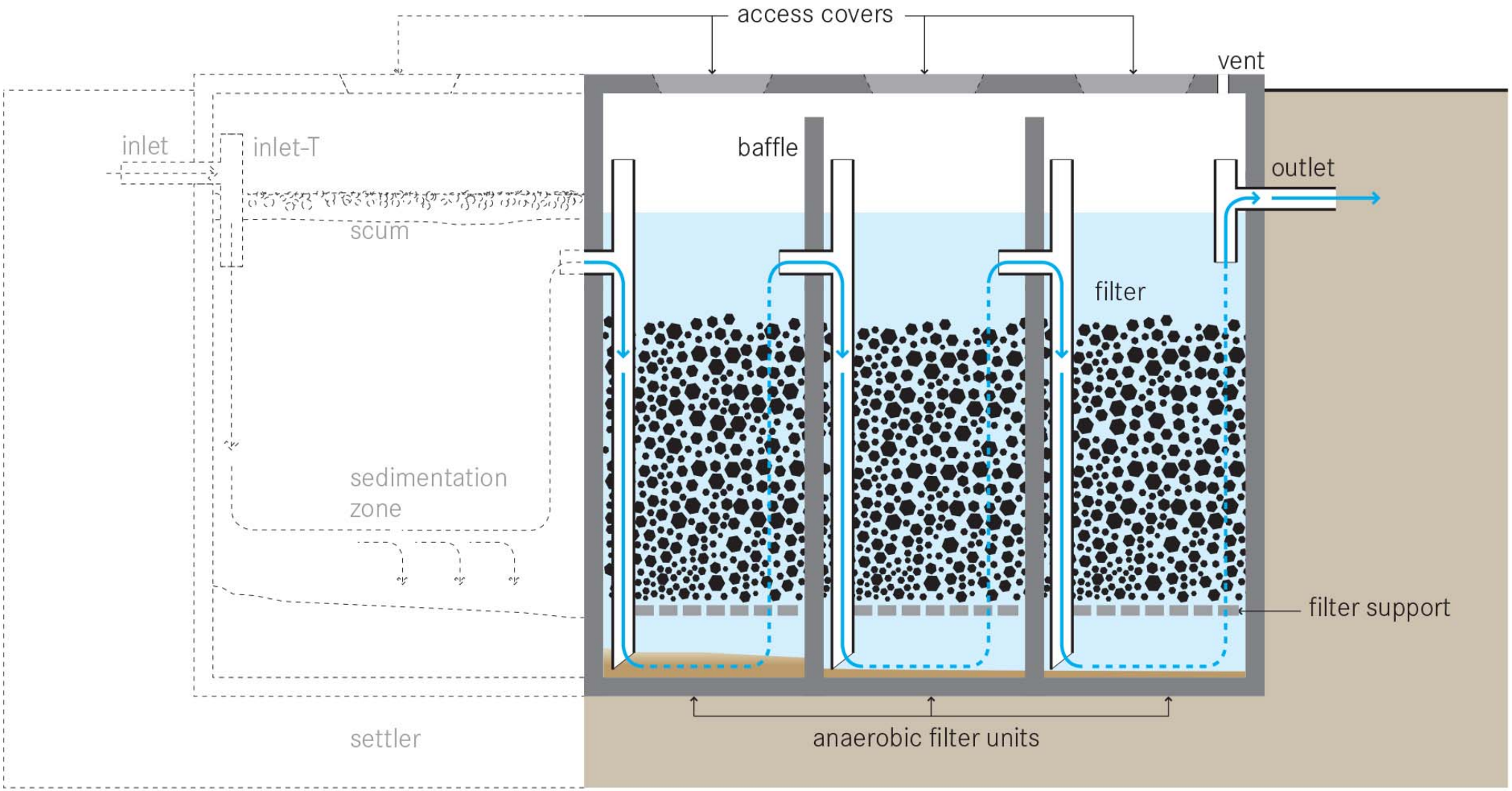
Potential improvements

Anaerobic Baffled Reactor (ABR)

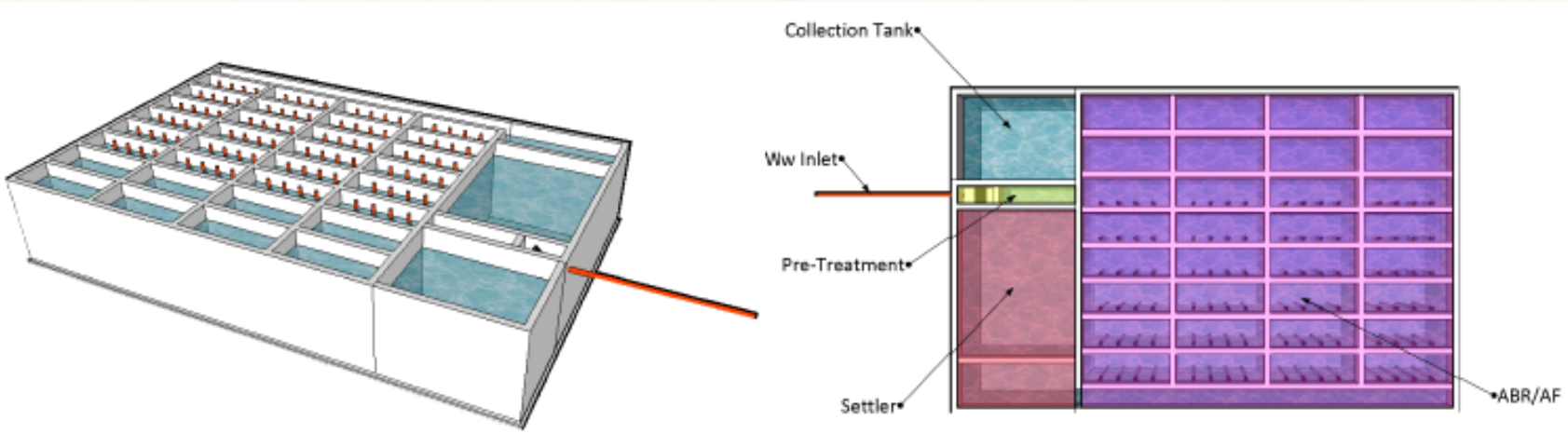


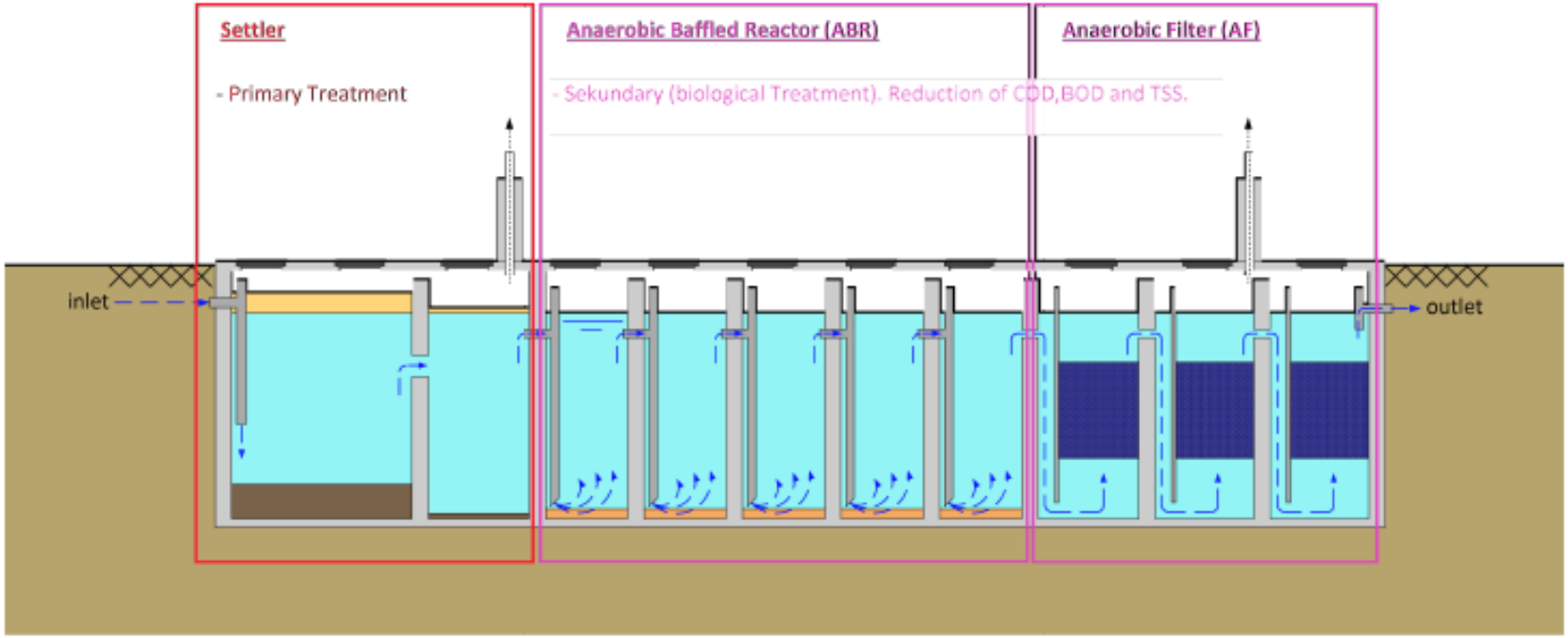
Potential improvements

Anaerobic filter



Example of an effective anaerobic system

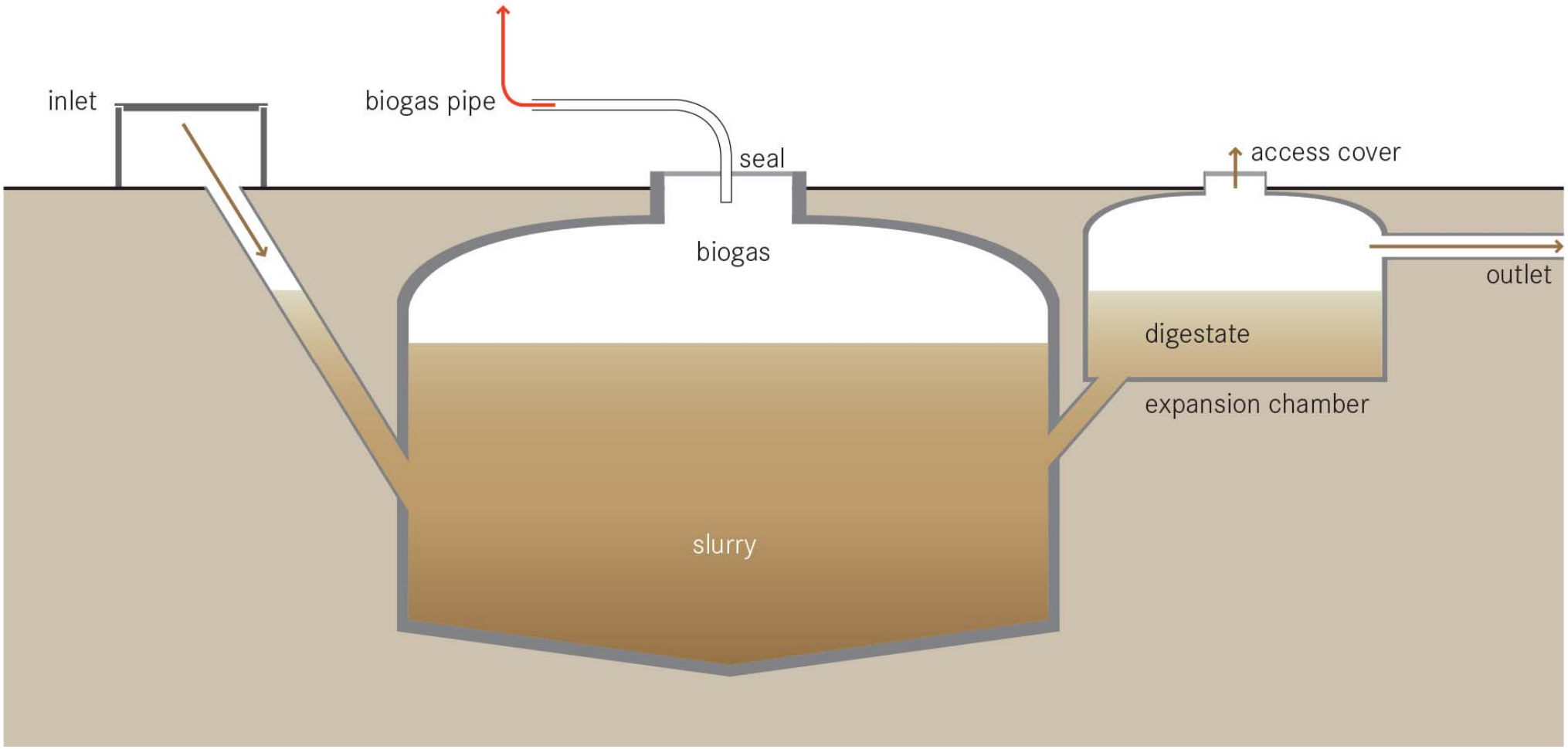




Potential ways forward

Biogas digestor

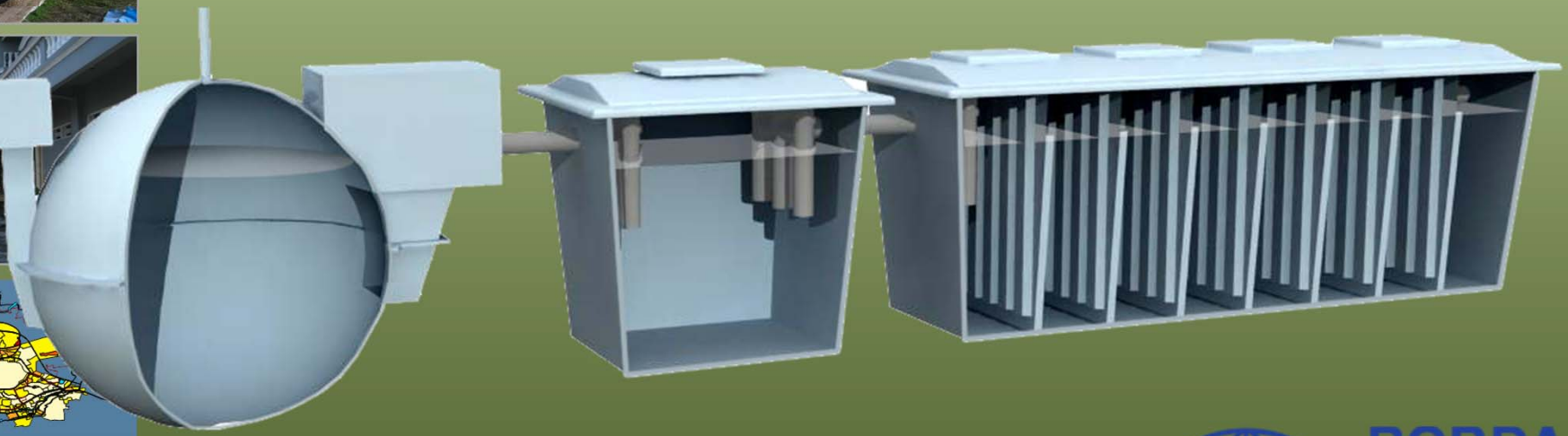
⇒ ***Interest for the use of biogas ?***



Prefab-

DEWATS

The new pre-fabricated modular solution for decentralized wastewater treatment

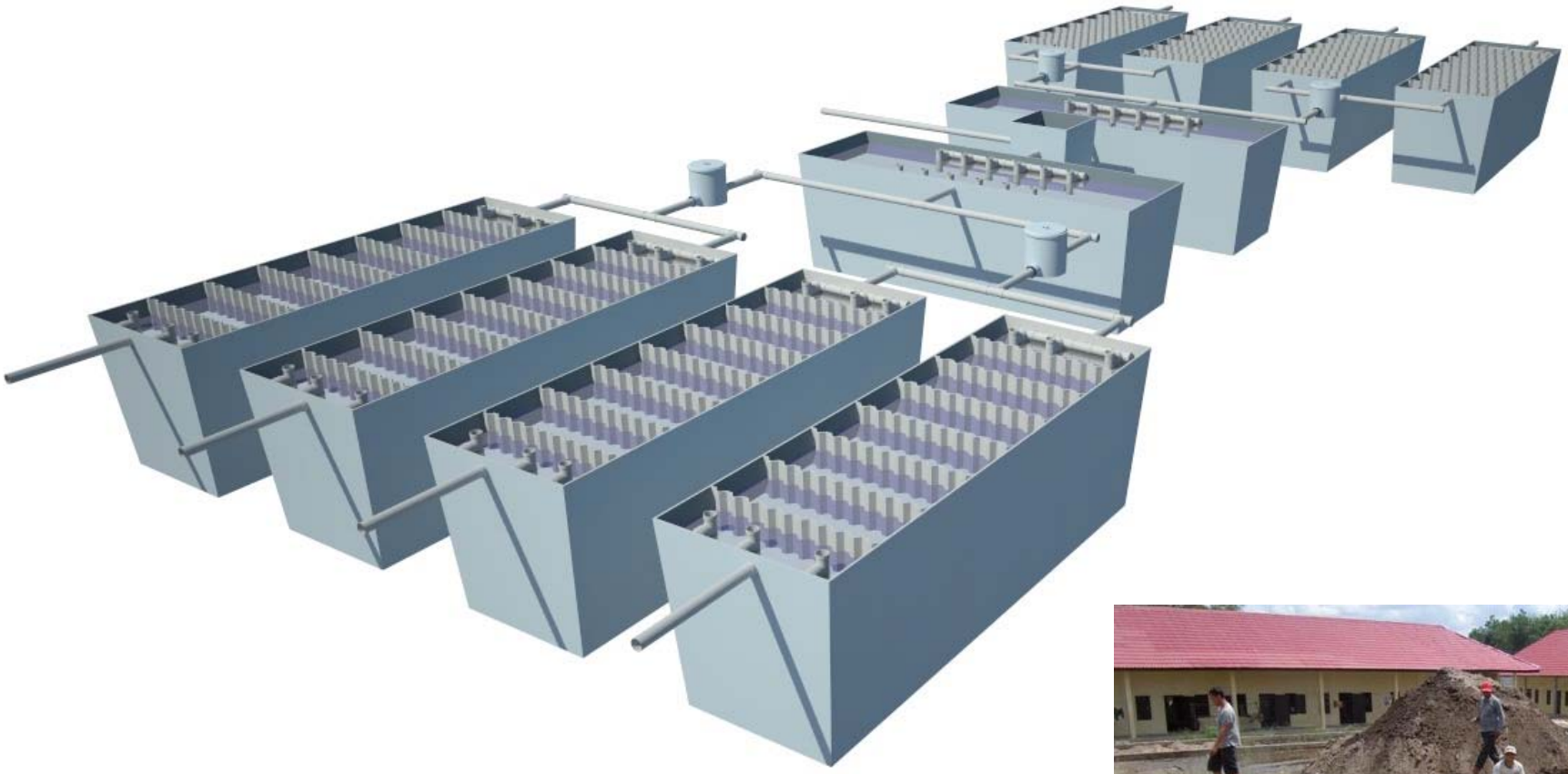


BORDA

- Prefab-DEWATS components and modules are manufactured by local companies in demand regions.

Potential improvements

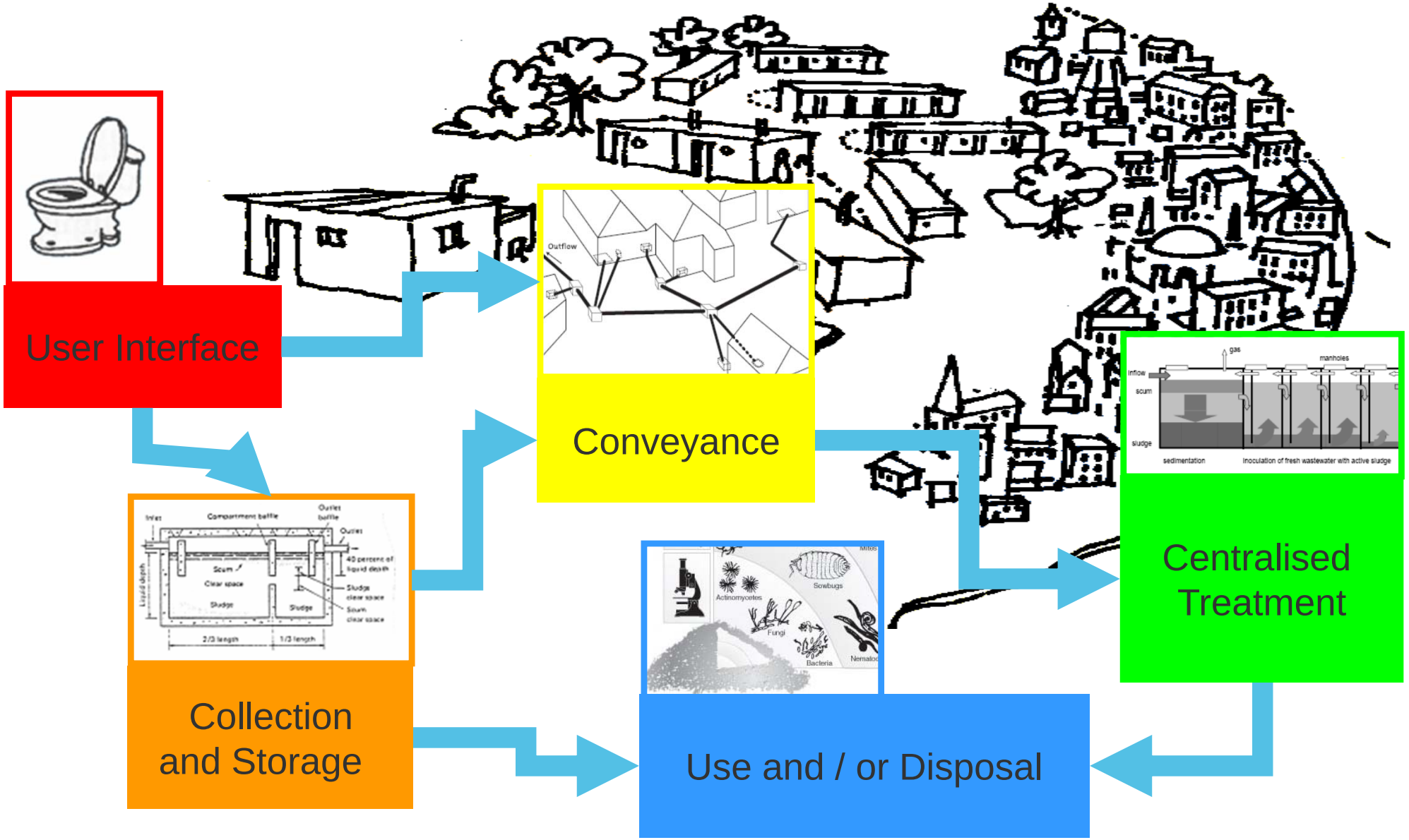
Modular prefabricated units



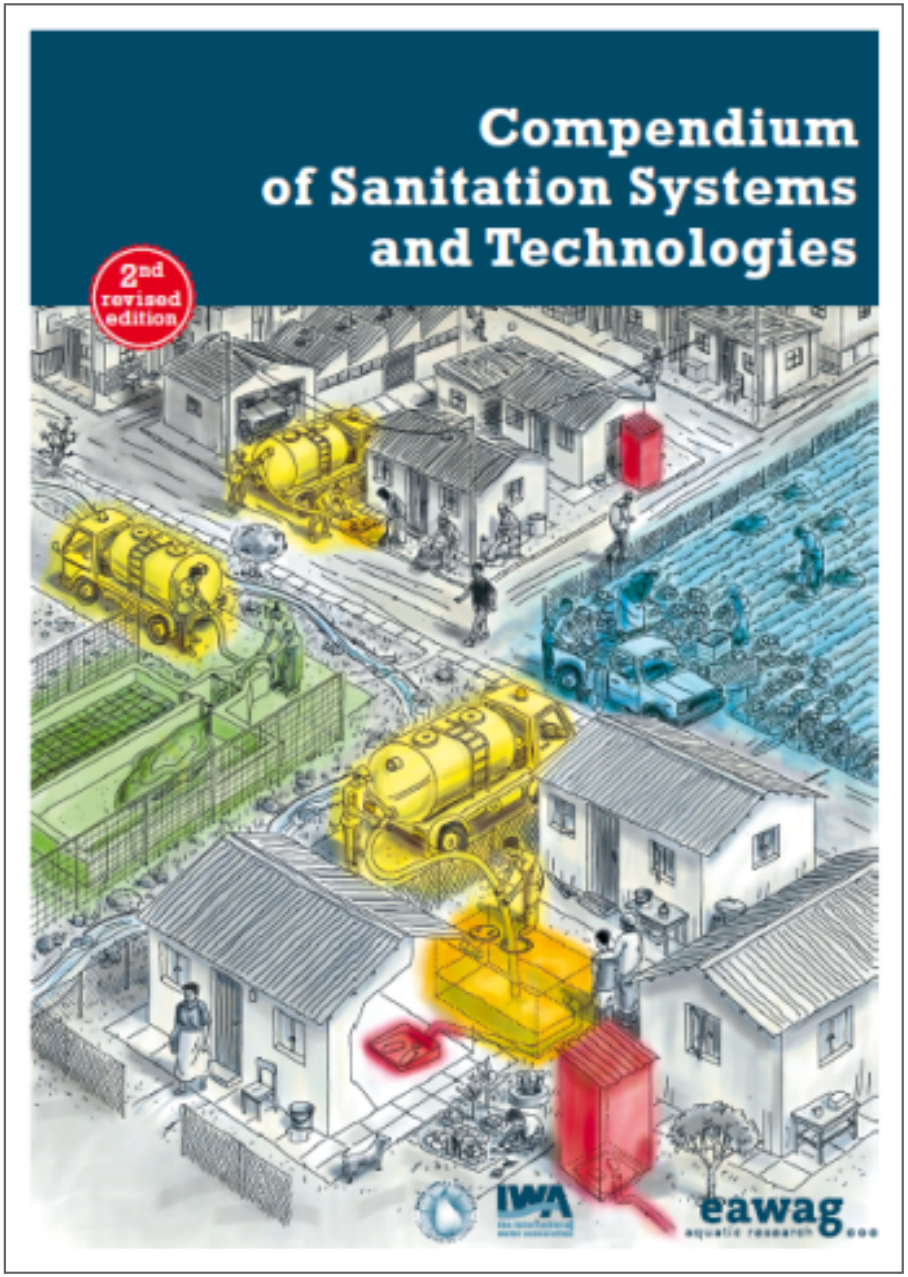
Modular prefabricated treatment plant, with 2 settlers and 8 ABRs, treating about 80 m3/day (source: BORDA, 2012)

The Systems Approach

Planning shall integrate the five different **functional groups** !!!



The Compendium of Sanitation Systems and Technologies



Currently translated into Russian !

Download:

www.sandec.ch/compendium

Thank You!

Questions?

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