



Tailor-Made Socio Economic Approaches for Integrated Water Management in Rural to Urban Driven Mutations

SoWat

Ranya AMER, Tarek HOSNY, Eslam SALAMA, Dina IHAB, Sherif ABU EL-MAGD, Harrison PIENAAR, Fhumulani RAMUKHWATHO, Pascal BREIL, Philippe NAMOUR

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Outlines

- AfriAlliance call
- SoWat AfriAlliance Action group
 - French case
 - Egyptian case
 - South Africa case
- Concluding remarks (web site, first advancements)

AfriAlliance Projects

- AfriAlliance is funded by the European Commissions Horizon 2020 programme.
- The main objective, is African and European stakeholders to work together in the areas of water innovation, research, policy, and capacity development to prepare Africa for future Climate Change challenges.
- This will drive Africa-EU cooperation in this field to a practical level by sharing (non) technological innovation for local challenges and boosting sustainable market and investment opportunities.
- The AfriAlliance project will re-enforce Water and Climate Change research and (social) innovation (R&I) cooperation between Africa and Europe through a mix of forward-looking and bottom-up innovation.
- SoWat Action Group has been chosen from more than 80 applications.

SoWat AfriAlliance Action group

Organisation and synergies

- The SoWat action group is composed of 6 partners from 3 countries: Egypt (EG), South Africa (SA) and France (FR).
- Multidisciplinary is the main strength of SoWat action group to meet climate change challenges and adaptation to increase hydrological variability.
- Indeed, SoWat partners brings complementary skills, in wastewater treatment, water use efficiency, decontamination, water conservation, nature based solutions (NBS), water management techniques, socioeconomic studies
- SoWat's partners develop operational demonstration sites (demo-sites) in a gradient of rural to urban contexts, assess solutions dealing with water stresses related to land use change.

SoWat AfriAlliance Action group

Theme # 1: Human development and capacity development needs in water and climate actions:

- Proposes to assess various NBSs on demo-sites, by means of case studies. In order to NBSs are easily managed by local users (most affected communities) a participatory management approach is required.
- Focusses on the capacity building and public awareness for wastewater recycling.

SoWat aims and objectives

1:Propose new NBSs in solutions to water scarcity due to climate change, in EG, SA and FR;

Show low-cost NBSs for water decontamination and purification.

2:Build capacity and empower local communities with knowhow on sustainable water management practices to promote SMEs;

Promote water management best practices (domestic water reuse, irrigation and feed stock production).

SoWat AfriAlliance Action group

3:Close the gap between science, technology and policy focusing on community needs and demands;

4:Support the economies of EG and SA by protecting human health and creating more sustainable job opportunities

Communication Strategy

- Improve societal awareness by interaction with the local community on NBS implementation.
- Assist capacity development by interaction, training and communication of project outputs.
- Address policy and decision-makers to adopt projects outputs.

French case

5 slides for each case

1. Project context (policy , social, low cost, suitability)
2. Site selection/description
3. Technical aspects
4. Some results ??
5. Conclusion ?? Public participation

in inception report

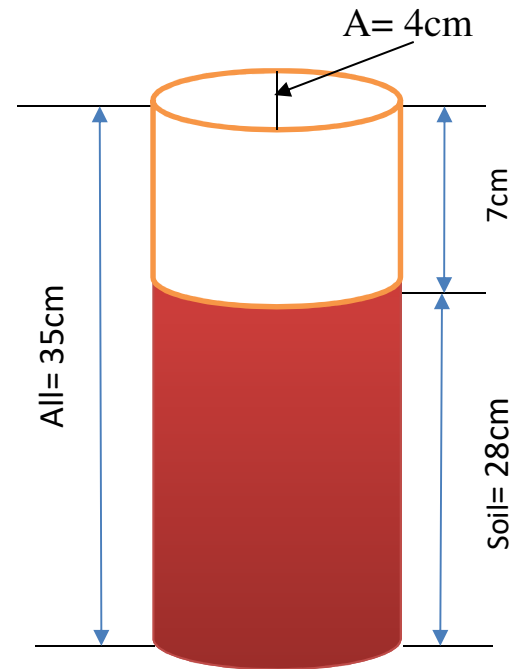
Egyptian case

5 slides for each case (5 slides for each case)

1. Project context (policy , social, low cost, suitability)
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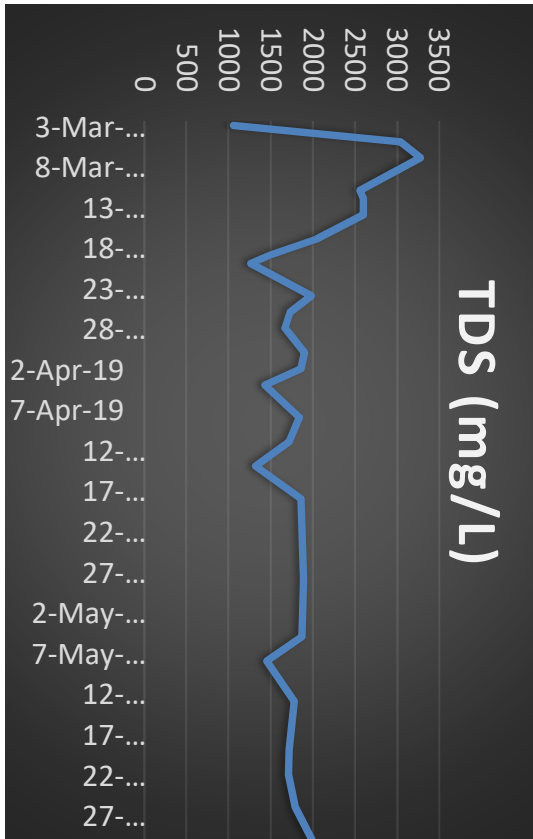
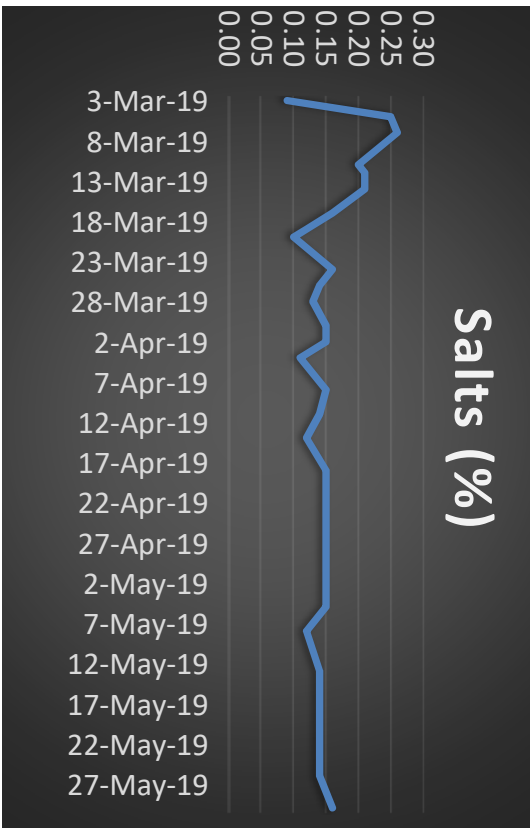
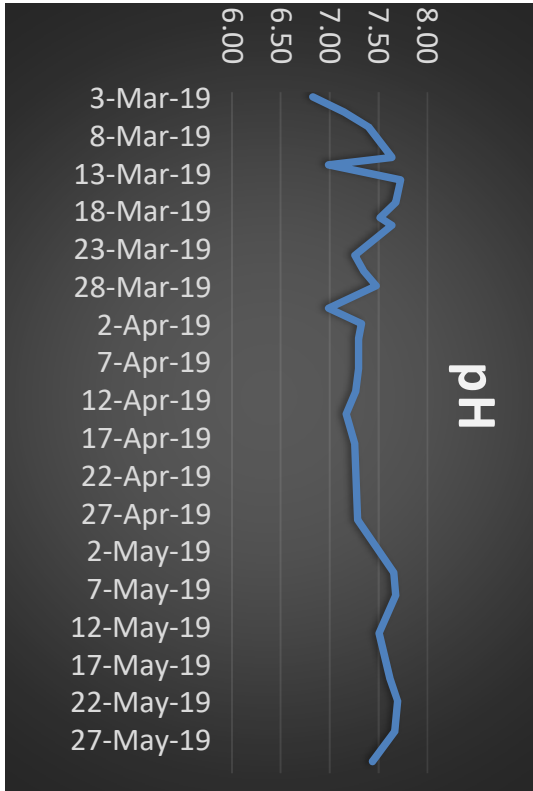
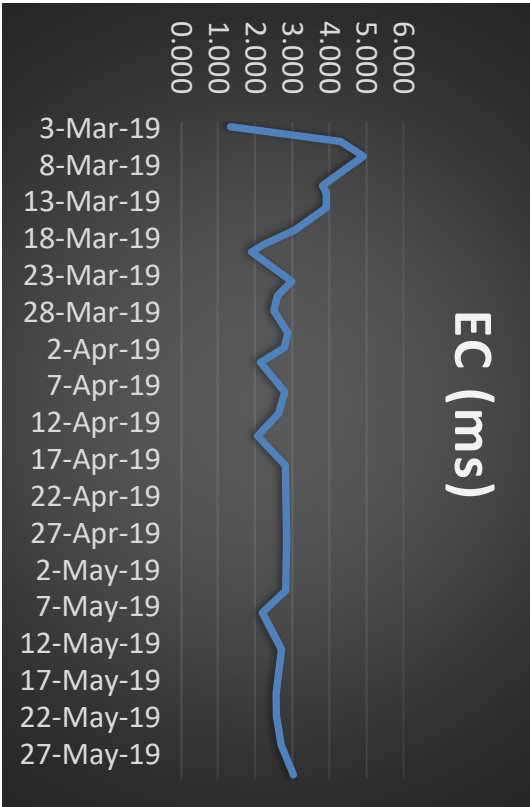
Soil Wash



The flow rate is 15 cm water in 24 hours
The volume of soil in the cylinder is 352 cm³

Soil Wash Data after 100 days

Date	Sample	Time	pH	Temp.	TDS	EC	ORP	Salts	Water Volume	Notes
			-	°C	mg/L	ms	mv	%	ml	
19-Feb-19	Tap Water	13:30	7.60	19.3	434	0.641	-35	0.03		Tap Water (Blank)
3-Mar-19	S ₁	15:15	6.83	18.1	1056	1.333	3	0.09		After 3Days
5-Mar-19	S ₂	11:30	7.15	18.9	3040	4.300	-10	0.25	35	After 2Days from S ₁
7-Mar-19	S ₃	12:45	7.4	19.5	3280	4.92	-25	0.26	35	
11-Mar-19	S ₄	14:10	7.64	19.7	2560	3.82	-39	0.20	38	
12-Mar-19	S ₅	14:10	6.99	21.1	2600	3.92	0	0.21	16	
14-Mar-19	S ₆	14:30	7.73	20.3	2600	3.92	-43	0.21	25	
17-Mar-19	S ₇	13:30	7.68	19.3	2040	3.08	-42	0.16	45	
19-Mar-19	S ₈	10:40	7.52	19.1	1490	2.23	-35	0.12	22	
20-Mar-19	S ₉	14:40	7.64	19.7	1263	1.901	-39	0.1	22	
24-Mar-19	S ₁₀	14:20	7.26	18.9	1980	2.99	0	0.16	52	
26-Mar-19	S ₁₁	15:00	7.35	19.7	1730	2.6	-25	0.14	32	
28-Mar-19	S ₁₂	13:00	7.48	21.6	1670	2.5	-32	0.13	32	
31-Mar-19	S ₁₃	11:40	6.99	18.3	1900	2.88	0	0.15	38	
2-Apr-19	S ₁₄	11:00	7.33	18.9	1860	2.79	-21	0.15	23	
4-Apr-19	S ₁₅	14:30	7.3	19.4	1430	2.14	-26	0.11	22	
8-Apr-19	S ₁₆	12:50	7.3	21.9	1840	2.8	-19	0.15	26	36 th Day
11-Apr-19	S ₁₇	11:30	7.27	21.5	1720	2.62	-18	0.14	37	39 th Day
14-Apr-19	S ₁₈	11:10	7.17	21.9	1320	2.06	-14	0.12	52	42 th Day
18-Apr-19	S ₁₉	14:05	7.26	21.5	1860	2.81	-17	0.15	28	46 th Day
28-Apr-19	S ₂₀	12:00	7.29	22.9	1890	2.85	-21	0.15	55	56 th Day
5-May-19	S ₂₁	15:00	7.66	23.2	1870	2.82	-36	0.15	45	63 rd Day
8-May-19	S ₂₂	12:00	7.68	23.5	1450	2.19	-40	0.12	25	66 th Day
13-May-19	S ₂₃	11:30	7.51	23.5	1780	2.71	-31	0.14	37.5	71 st Day
19-May-19	S ₂₄	11:00	7.62	23.8	1720	2.56	-36	0.14	35	77 th Day
22-May-19	S ₂₅	14:40	7.7	26.8	1710	2.57	-44	0.14	27	80 th Day
26-May-19	S ₂₆	11:30	7.67	24.3	1790	2.7	-38	0.14	25	84 th Day
30-May-19	S ₂₇	11:30	7.44	24.1	1990	3.03	-25	0.16	17	88 th Day



Soil Analysis

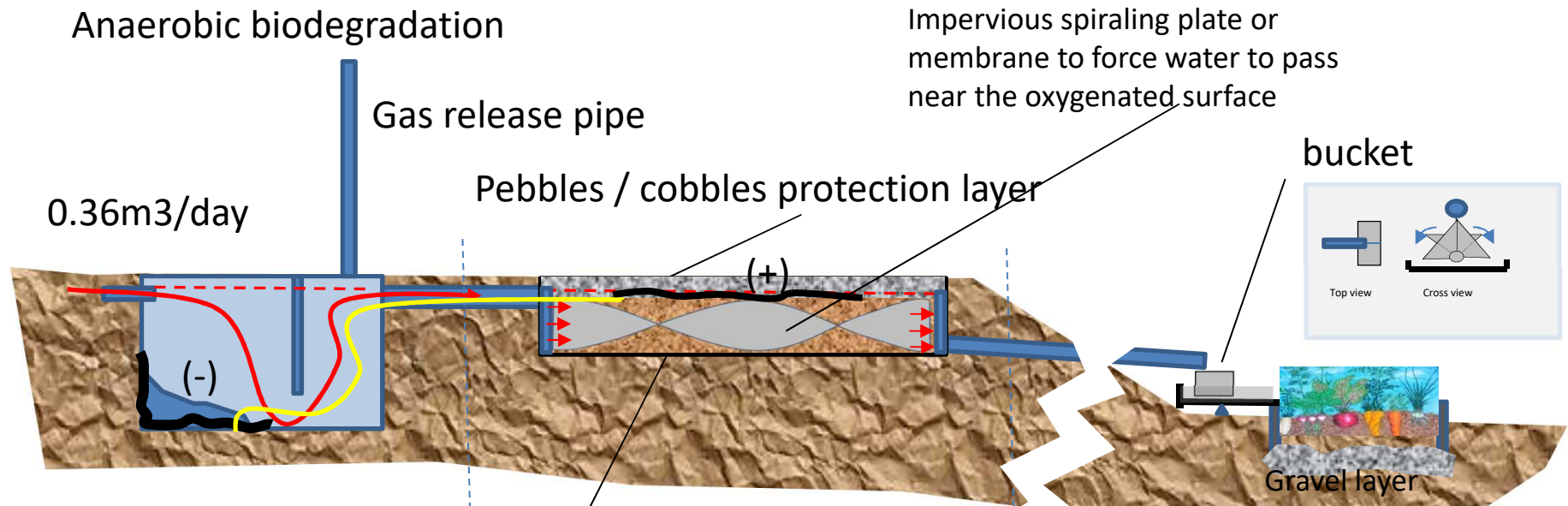
Before

Electrical conductivity (mS/cm)	pH	TDS (ppm)
5.82	7.3	4200

After

Electrical conductivity (mS/cm)	pH	TDS (ppm)
2.22	7.5	1500

Schematic diagram for the water treatment unit



Anaerobic biodegradation

Impervious spiraling plate or membrane to force water to pass near the oxygenated surface

0.36m³/day

Gas release pipe

Pebbles / cobbles protection layer

bucket

Sceptic tank principle

Medium to coarse sand
(0.25<d<1mm)

Oxic mineralization phase

Can be 3.5cm spread over 1m² each 2.4 hours with a bucket of 35 liters.

Anoxic biodegradation phase

Design Assuming
Hydraulic conductivity of 1E-4 m/s
Sand Volume of 0.5m X 1.0 m X 8.0 m
Hydraulic gradient of 0.5 m

This would be also conditions for the lab test design for the soil desalination.

Design
3-4 m³ for 5 persons

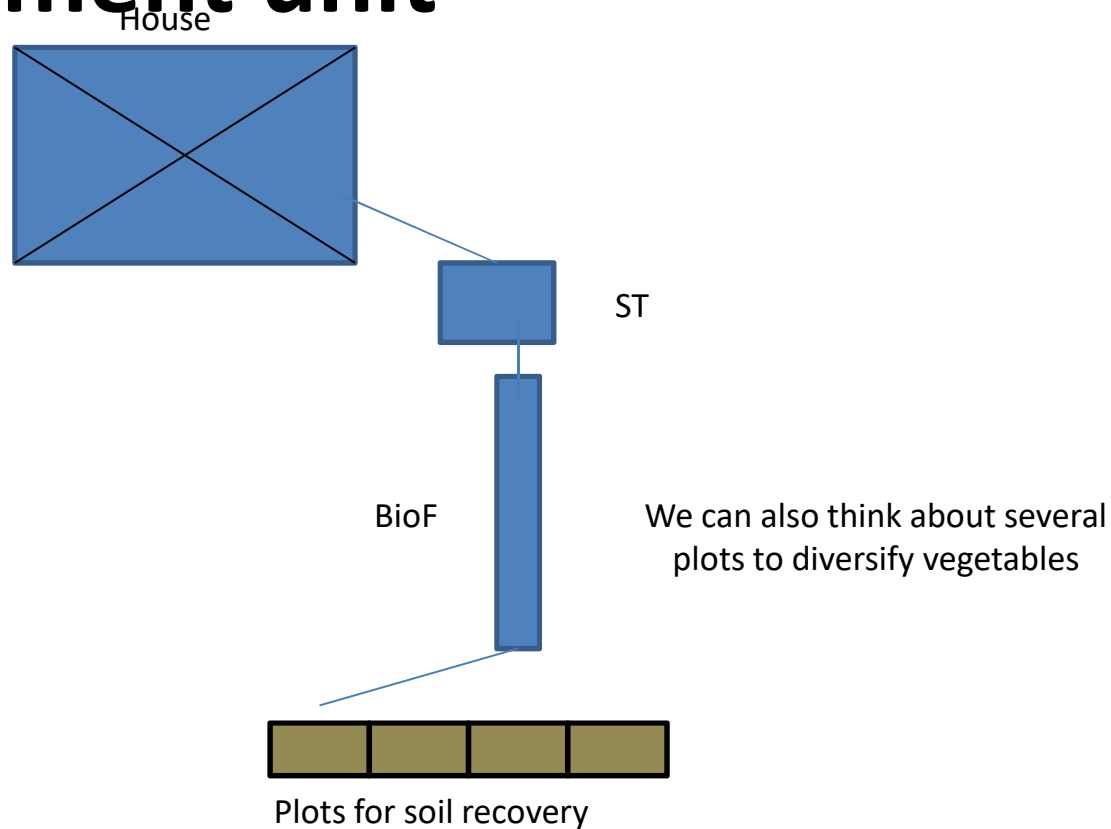
Infiltration tests are required on the field.

Must be cleaned every 3 years

Which gives:
A flux of 0.36 m³/day
Residence time of 11 days
Storage capacity of 4 m³

How to irrigate during night only?
1 puget of 0.16 m³?

Schematic diagram for the treatment unit

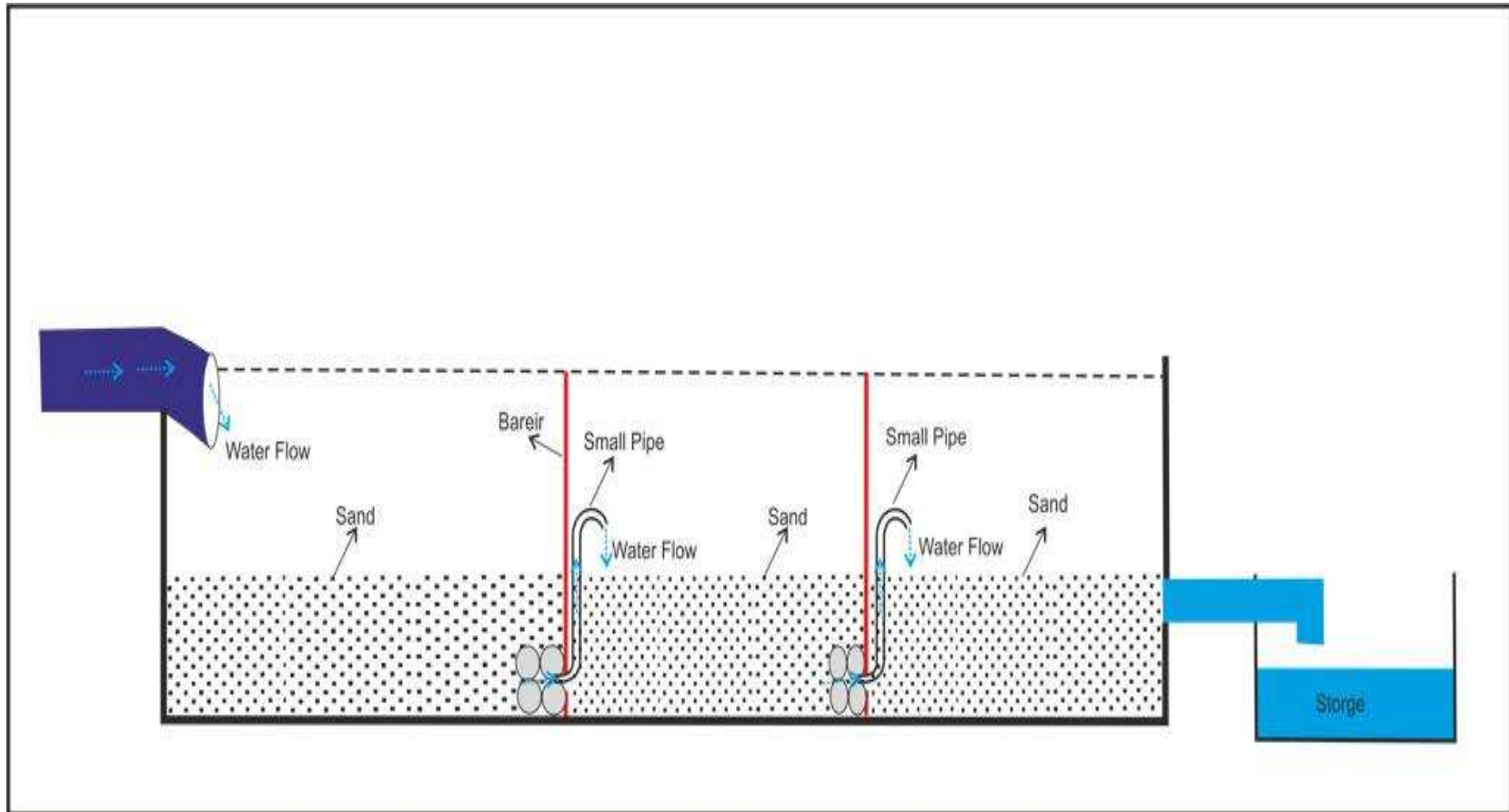


Septic Tanks made of fiber glass



5 m³
1.20 m x 4.5 m

Sand treatment tank





South Africa case

5 slides for each case (5 slides for each case)

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in inception report

General conclusion

more information



www.afrialliance.org



afrialliance@un-ihe.org



Thank you



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