MASS OPEN DEFECATION? SITUATIONAL ANALYSIS OF FAECAL SLUDGE MANAGEMENT IN GHANA

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INTRODUCTION

- Across the developing world, rapid urban growth has led to an increase in unplanned settlements.
  - One area of particular concern is access to sanitation, (Katukiza et al. 2012; Tumwebaze, 2014).
- Despite progress made over the MDG period, in 2015, nearly one third of the world's population (2.4 billion people) still lacks access to basic sanitation facilities;
  - Of these almost one billion people (13% of the global population) defecate openly, (WHO, 2016).

INTRODUCTION

- Sub-Saharan Africa continues to have the largest sanitation gap:
  - Only **30%** of the population in 2015 had access to improved sanitation facilities compared with **62%** in developing regions as a whole and **68%** globally (WHO, 2016).
- Ghana's progress in relation to water and sanitation broadly reflects that across sub-Saharan Africa,
  - Only an estimated 15-26% of Ghanaians had access to improved sanitation by 2015, with almost a fifth (18.8%) practising open defecation (WHO/UNICEF, 2015; Republic of Ghana, 2015).

INTRODUCTION

- Subsequently, the Sustainable Development Goals (SDGs) calls for renewed commitment in improving access to sanitation.
- **SDGs Target 6.2 –** "*By 2030, achieve access to adequate and equitable sanitation and hygiene for all, and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations*"**.**
- The government of Ghana, in close collaboration with DPs, and NGOs, has many existing strategies and interventions to improve access to sanitation:
  - Creation of Ministry of Sanitation and Water Resources
  - CLTS for rural sanitation
  - GAMA Project
  - etc

INTRODUCTION

- Admittedly, much attention has been paid to the ecological and health effects of unimproved sanitation options, particularly open defecation.
  - How about the disposal of untreated faecal sludge from improved sanitation options such as WC and KVIP, into the environment on daily basis?
- Meanwhile, the emptying, transportation and disposal of sludge from toilet facilities can pose a significant health risk alongside organisational difficulties (Water Research Commission 2007).
- This presentation therefore seeks to examine faecal sludge management in Ghana and the risks it posses to the environment and human health.

MOTIVATION

- The purpose of this presentation is twofold:
  - Draw our attention to the near complete neglect of proper faecal sludge management in Ghana.
  - Generate debate and provoke discussion on the way forward.

METHODS

- Secondary data:
  - Ghana Population and Housing Census data
  - Ghana Demographic and Health Survey
- Level of analysis
  - Basic crude estimates

BASIS FOR ANALYSIS

- At the national level, the proportion of dwelling units with a water closet (WC) was **15.4%** in 2010, representing 841926 dwelling units (GSS, 2013- National PHC Report).
- The GDHS (2014) puts the proportion of the population using a Flush/pour flush to piped sewer system or septic tank at **18.5%**.
  - How much faecal sludge does this translate into?
  - Do we have an idea of where faecal sludge from theses dwellings are disposed?
  - What potential effects does this have on health and the environment?
  - What practical measures have we taken [or are we taking] to ensure safe disposal?

GENERATION OF FAECAL SLUDGE: CRUDE ESTIMATE

- Proportion using a Flush/pour flush to piped sewer system or septic tank.
- Absolute population using a Flush/pour flush to piped sewer system or septic tank.
- Total amount of faeces generated per day **(Pop using flush x Av. Faeces/person/day)**
- Total amount of faeces generated per week **(Faeces/day x 7)**
- Total amount of faeces generated per month **(Faeces/week x 4)**
- Total amount of faeces generated per annum **(Faeces/month X 12)**

GENERATION OF FAECAL SLUDGE: CRUDE ESTIMATE

- Proportion using a Flush/pour flush to piped sewer system or septic tank **(18.5%)**
- Absolute population using a Flush/pour flush to piped sewer system or septic tank. **(0.185x27,000,000=4,995,000)**
- Average faeces/person/day = 100g-400g=250g=0.25kg.
  - **Can be greater in carbohydrate-dominant meals in Ghana**
- Total amount of faeces generated per day **(4,995,000x0.25kg=1,248,750kg)**
- Total amount of faeces generated per week **(1,248,750kgx 7=8,741,250kg)**
- Total amount of faeces generated per month **(8,741,250kg x 4 = 34,965,000kg)**
- Total amount of faeces generated per annum **(34,965,000 kg X 12=419,580,000kg)**

GENERATION OF FAECAL SLUDGE: CRUDE ESTIMATE

- Total amount of faeces generated per annum **=419,580,000kg**
- **Add urine and water used in flushing**
- **Add faecal sludge from pit latrines etc**
- **Your estimate is a good as mine!!! Billions kg of faeces**
- **How much of these is treated properly before disposal???**
- **What is the capacity of Lavender Hill Treatment Plant and others?**

SHIT BUSINESS IS SERIOUS BUSINESS

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SHIT BUSINESS IS INDEED A SERIOUS BUSINESS; BUT TO WHAT END?

MASS OPEN DEFECATION?

Discharge of faecal sludge at Kumasi, Ghana (photo: Linda Strande)
Source: Strande et al (2014)

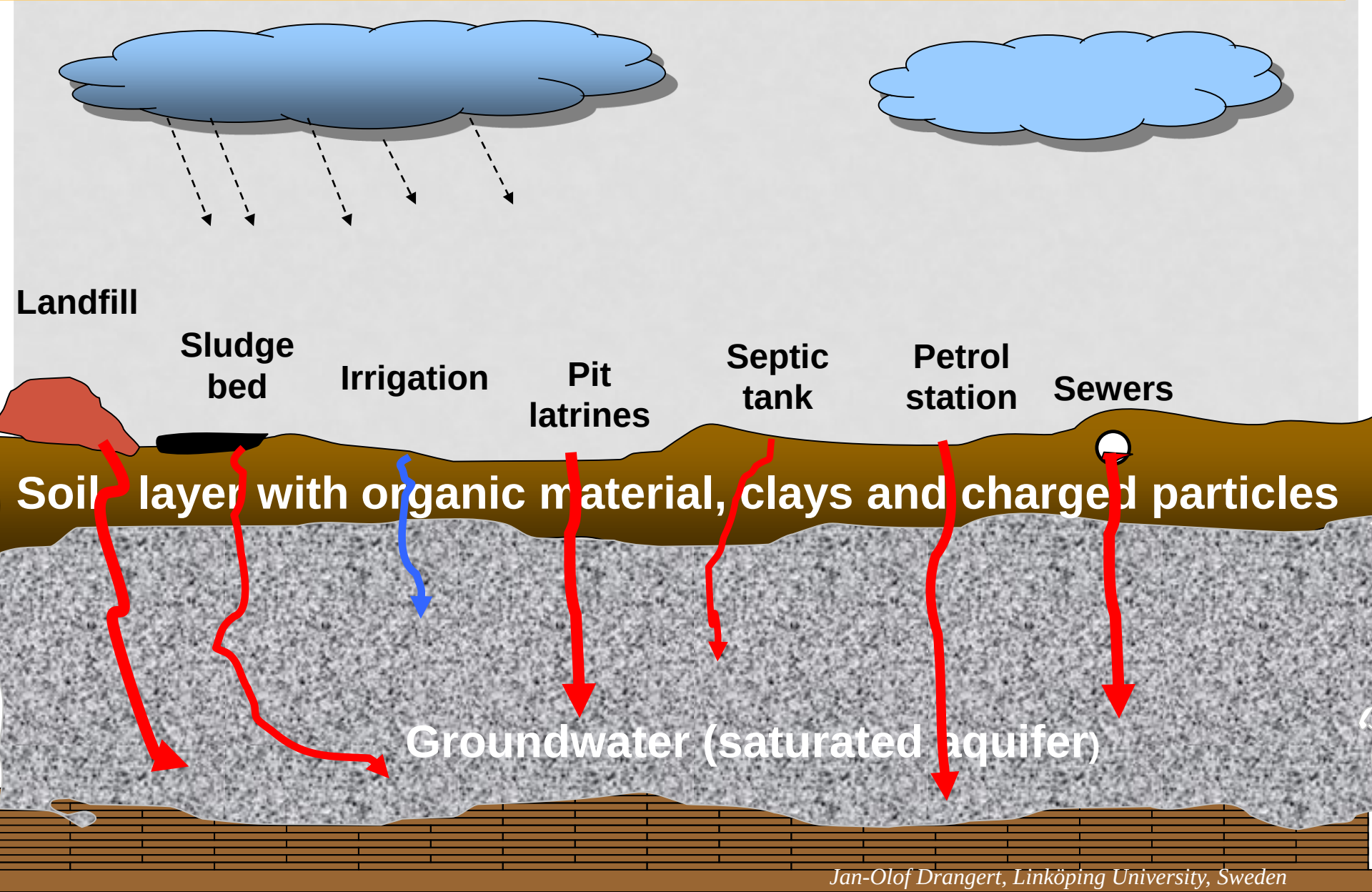
SMALL VS LARGE-SCALE OPEN DEFECATION

Who are we deceiving?

THE "DANGERS" ARE OBVIOUS

- Each gram of faeces in an open field contains:
  - 10 million viruses,
  - 1 million bacteria, and
  - 1000 parasite cysts
- The excrement contaminates water bodies (groundwater and surface water) directly and indirectly through run-off.
- Causing illness such cholera, diarrhoea, dysentery, trachoma, etc

URBAN *UNINTENDED* VERTICAL FLOWS OF CONTAMINATION



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FAECAL SLUDGE MANAGEMENT: A "SECOND GENERATION" CHALLENGE FOR CLTS?

CATEGORIES OF CLTS COMMUNITIES

Level	Status (Indicative Time Frame	Minimum Indicators
1	**ODF- Basic (2 Months)**	No visible faeces acc… …rlies, domestic and wild animals in the e… …munity
2	**ODF (6 Months)**	No visible faece… …households own and use improved lat… …hand washing facilities. All household… …cess to and use latrine.
3	**Sanitised Community (12 Months)**	No vi… …ces. 100% of households have imp… …ines with hand washing facilities. All s… …(schools, market places, churches, …s, health posts etc) have improved latrines. …er refuse management. Proper waste water …anagement.
4	**Sustai… San… C…ty (48 Mo…)**	Community has maintained its Sanitised Community status for three successive years

No faecal sludge management?

Source: MLGRD (2013)- Revised protocol for CLTS verification and certification

FAECAL SLUDGE MANAGEMENT (FSM) IN CLTS

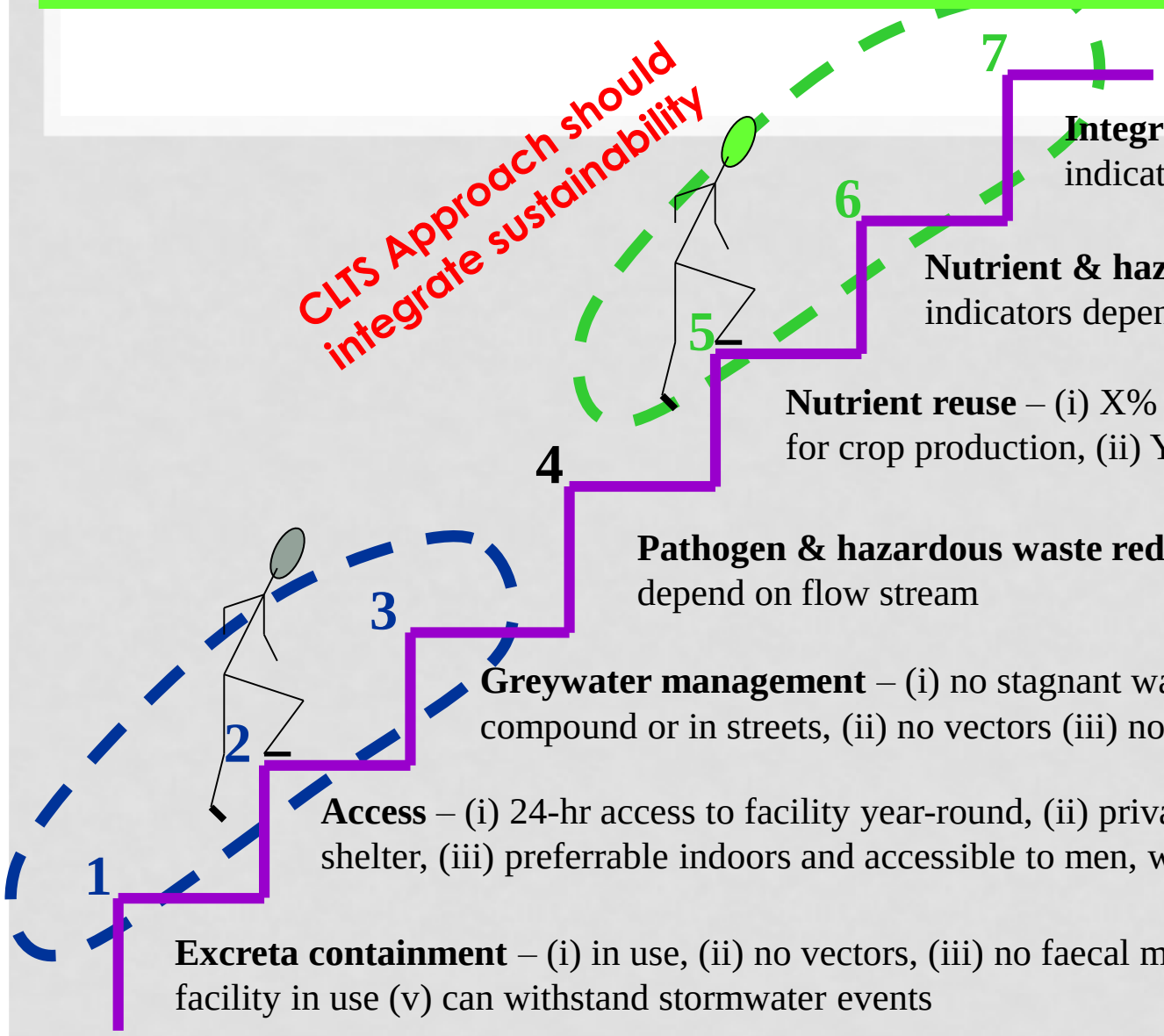
- In practice, has FSM been given much attention in CLTS in Ghana?
  - No!!! Because we assume that we are operating in rural areas where land is not an issue or there are nor flush toilets
- Is FSM not a serious problem in CLTS?
  - We assume it is not, but the risk is high.
- Do we assume pits will NOT get full?
- Do we assumed that new pits will always be dug?

FAECAL SLUDGE MANAGEMENT (FSM) IN CLTS

- According to Chambers and Myers (2016), when pits in rural areas are filling or full there are four options:
  - Stop using and dig another pit.
  - Empty the pit.
  - **Use sparingly [potential for open defecation].**
  - **Abandon and revert to open defecation.**
- In Ghana, SNV (2014) found that in 53.1% of cases, excreta had been emptied into a hole on the compound and just left open.
- **Is it something to worry about?**
- **Is it something we have to do something about?**

THE NEED FOR HOLISTIC FAECAL SLUDGE MANAGEMENT

A SANITATION LADDER FOR IMPROVED FUNCTIONS



Integrated resource management – indicators depend on flow-stream

Nutrient & hazardous waste containment – indicators depend on flow-stream

Nutrient reuse – (i) X% of excreted N, P, K is reused for crop production, (ii) Y% of used water is reused

Pathogen & hazardous waste reduction – indicators depend on flow stream

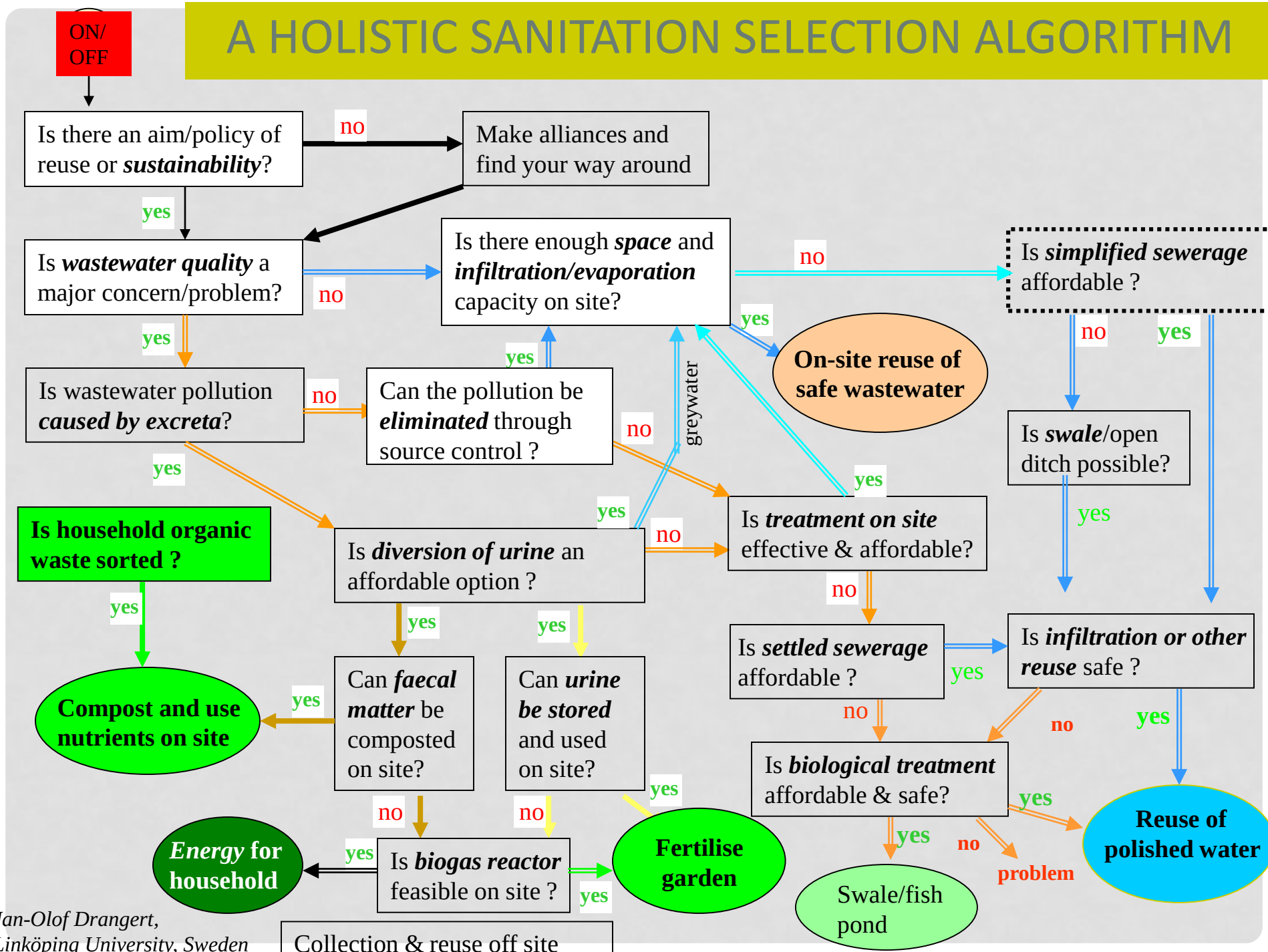
Greywater management – (i) no stagnant water in compound or in streets, (ii) no vectors (iii) no pollution

Access – (i) 24-hr access to facility year-round, (ii) privacy, personal security and shelter, (iii) preferrable indoors and accessible to men, women, children, elderly

Excreta containment – (i) in use, (ii) no vectors, (iii) no faecal matter, (iv) hand-washing facility in use (v) can withstand stormwater events

Adapted from Kvarnström et al., 2010

A HOLISTIC SANITATION SELECTION ALGORITHM



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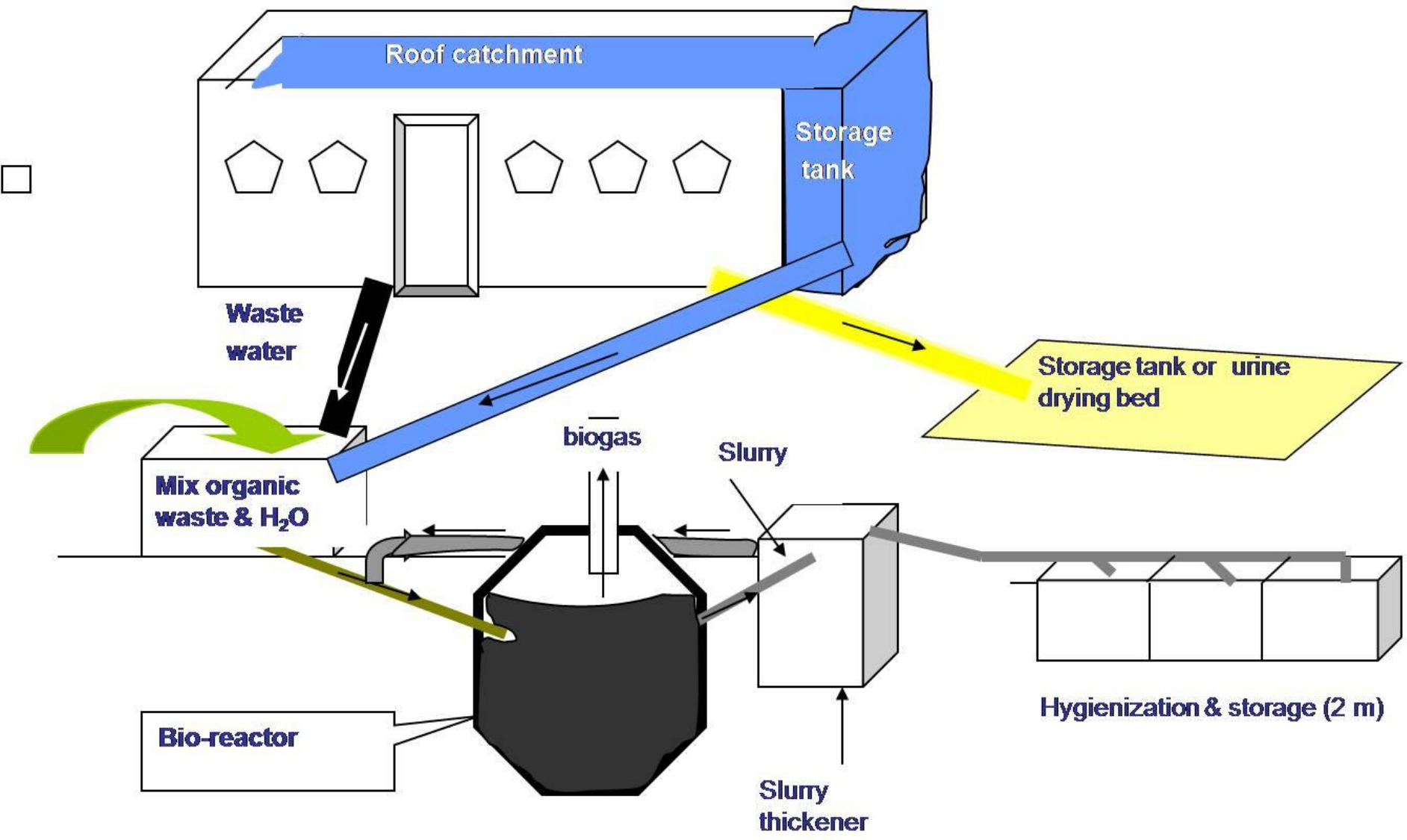
WHERE DOES URINE AND FAECAL MATTER END UP?



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CONCLUSION

- As we take stock of how many households are **building and using** their own toilets, **we should also be taking stock of what happens to the faecal sludge after the pits are full.**
- We need a holistic and integrated approach to sanitation.

THANK YOU