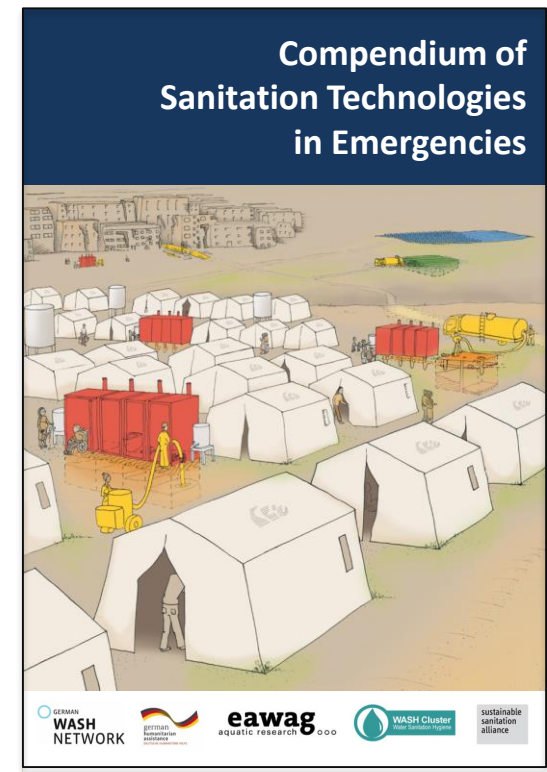


Compendium of Sanitation Technologies in Emergencies

Stockholm World Water Week 2017 | August 30, 2017



09:00 **Existing Sanitation Challenges: Reflections from Recent Emergencies**

Franck Bouvet, Global WASH Cluster

09:10 **The Compendium of Sanitation Technologies in Emergencies**

Robert Gensch, German WASH Network

09:30 **Round Table Discussion**

Structure: How to best reflect the complex and multifaceted nature of disasters (different phases, contexts etc.) in a simple, systematic and comprehensible document structure

Dissemination: How to create a constant learning platform and living document via a Compendium online platform, corresponding trainings etc. The dissemination pathway from information provision to learning.

Synergies: Potential synergies and compatibility with other ongoing activities like Sphere, HIF, SSWM etc.

10:15 **Summary from the Tables**

10:30 **End of the Session**

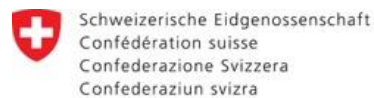
Multi Agency Publication



sustainable
sanitation
alliance



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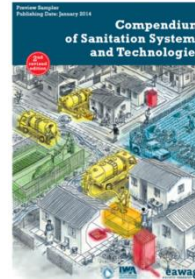
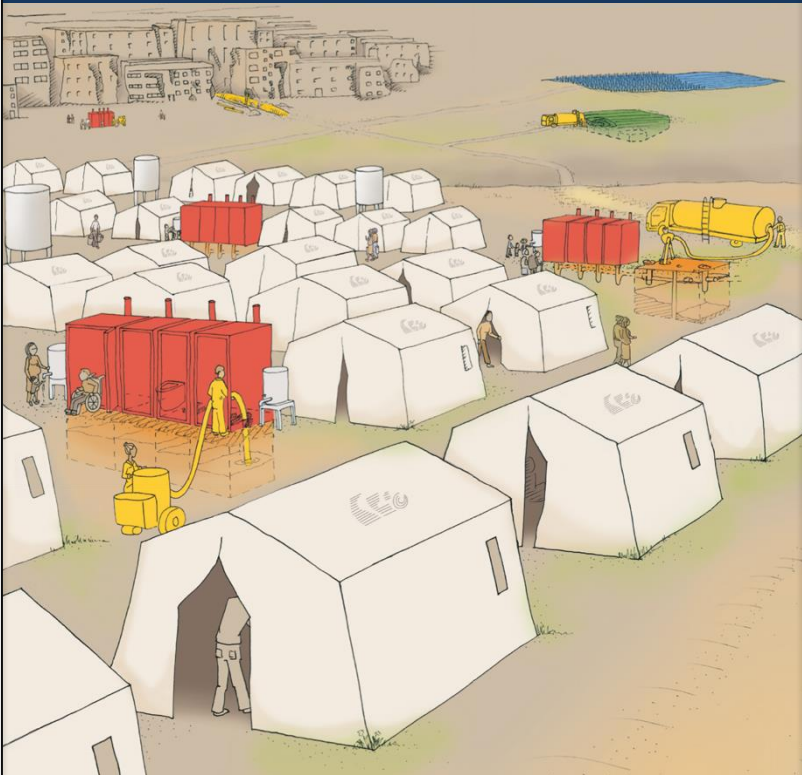


Federal Department of Foreign Affairs FDFA

- Currently **no up-to-date compilation** of sanitation technologies for emergency settings available
- Lots of **recent developments in the sector** particularly on FSM
- Existing EmerSan publications with **limited/no focus on entire sanitation service chain**
- In recent years humanitarians had to deal **increasingly with LRRD issues, longer-term protracted crisis and urban contexts** with an increased need to also take sustainability aspects into account

What it is

Compendium of Sanitation Technologies in Emergencies



Humanitarian counterpart publication to existing Eawag “Compendium of Sanitation Systems and Technologies”

- Expert peer-reviewed **systematic emergency sanitation hardware overview** that covers entire sanitation service chain
- Disaggregation of existing technologies into their **functional components**
- Providing **clarity on terms and vocabulary** used for technologies and involved products
- Mainly **capacity development** tool
- Partly a **decision support tool** referring to key decision criteria and cross cutting issues that need to be considered
- Linked to online version (living document)

INTRODUCTION

Background and Target Audience

Emergency Scenarios/Phases and Implication for Sanitation Infrastructure

Structure and Use of the Publication

Sphere Excreta Disposal Standards and Indicators

Compendium Terminology, System Template and Technology Selection

Key Decision Criteria

CRITICAL SUCCESS FACTORS

1 Inclusive, Equitable and Gender-Sensitive Design

6 Robustness and Durability

11 Resilience and Preparedness

2 Handwashing Facilities

7 Dry and Water-Based Systems

12 Market-Based Programming

3 Child Excreta Management

8 Exit Strategy, Hand-Over and Decommissioning of Infrastructure

13 Basic Assessment Requirements

4 Hygiene Promotion and Community Mobilisation

9 Institutional and Regulatory Environment

5 Rehabilitation of Existing Infrastructure

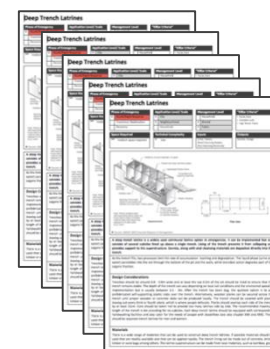
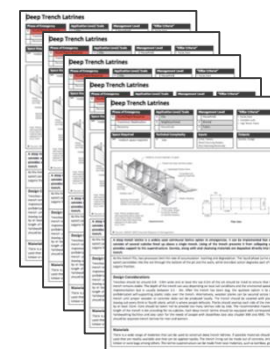
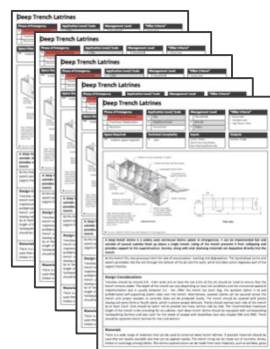
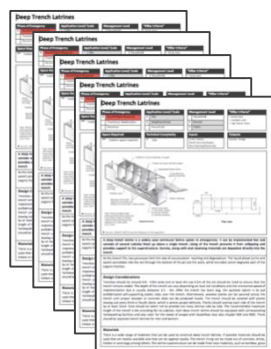
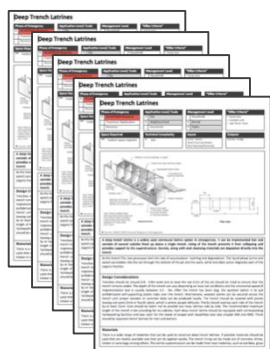
10 Urban Settings and Protracted Scenarios

TECHNOLOGY INFORMATION SHEETS

ON-SITE

TRANSPORT

OFF-SITE



CROSS-CUTTING ISSUES

| | | | | | |
|---|--|----|--|----|-------------------------------|
| 1 | Inclusive, Equitable and Gender-Sensitive Design | 6 | Robustness and Durability | 11 | Resilience and Preparedness |
| 2 | Handwashing Facilities | 7 | Dry and Water-Based Systems | 12 | Market-Based Programming |
| 3 | Child Excreta Management | 8 | Exit Strategy, Hand-Over and Decommissioning of Infrastructure | 13 | Basic Assessment Requirements |
| 4 | Hygiene Promotion and Community Mobilisation | 9 | Institutional and Regulatory Environment | | |
| 5 | Rehabilitation of Existing Infrastructure | 10 | Urban Settings and Protracted Scenarios | | |

ON-SITE

TRANSPORT

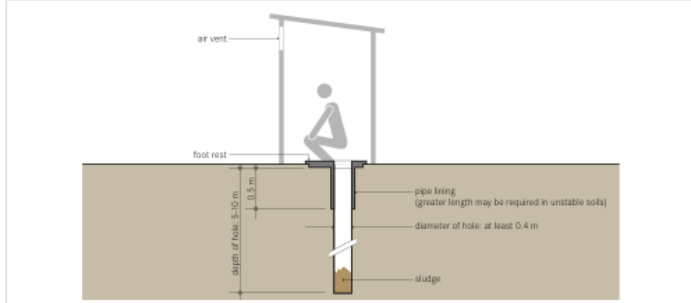
OFF-SITE

| Input Products | User Interface | Input/ Output Products | Collection/Storage (on-site) | | Input/ Output Products | Conveyance | | | Treatment (off-site) | Input/ Output Products | Use and/or Disposal |
|-------------------------|--|------------------------|-----------------------------------|-------------------------------|------------------------|-------------------------------------|-------------------------------|-------------------------------|--|------------------------|--------------------------------|
| | | | Collection/ Storage | (Pre-) treatment | | Emptying | Transport | Intermediate Storage | | | |
| Urine | U1 Dry Toilet | | S1 Deep Trench Latrine | S17 Lime treatment (Emerging) | | C1 Manual Emptying | C6 Manual/Motorised Transport | C7 Transfer Station & Storage | T1 PRE-Treatment | | D1 Application of Stored Urine |
| Faeces | U2 Urine Diversion Dry Toilet | | S2 Borehole Latrine | S18 Urea treatment (Emerging) | | C2 Motorised Emptying and Transport | | | T2 Anaerobic Baffled Reactor | | D2 Application of Dried Faeces |
| Anal Cleansing Water | U3 Urinal | | S3 Single Pit Latrine | S19 LAF treatment (Emerging) | | C3 Simplified Sewer | | | T3 Anaerobic Filter | | D3 Application of Pit Humus |
| | U4 Flush Toilet | | S4 Single Pit Latrine | S20 Caustic Soda (Emerging) | | C4 Conventional Gravity Sewer | | | T4 Biogas Reactor | | D4 Application of Sludge |
| Dry Cleansing Materials | U5 Controlled Open Defecation | | | | | C5 Stormwater Drainage | | | T5 Constructed Wetland | | |
| Flushwater | U6 Shallow Trench Latrine | | | | | | | | | | |
| Greywater | U7 Bags with Treatment Option (Emerging) | | | | | | | | | | |
| Stormwater | | | | | | | | | | | |
| Organics | | | | | | | | | | | |
| | | | S11 Pour Flush Win Pit | | | | | | T11 Composting | | D11 Use of Biogas |
| | | | S12 AquaPrivy | | | | | | T12 Vermicomposting | | D12 Fish Ponds |
| | | | S13 Septic Tank | | | | | | T13 Activated Sludge | | |
| | | | S14 Anaerobic Baffled Reactor | | | | | | T14 Heat Application, Pellets, Pyrolysis | | |
| | | | S15 Anaerobic Filter | | | | | | T15 Waste Stabilisation Ponds | | |
| | | | S16 Worm-Based Toilets (Emerging) | | | | | | T16 POST-Treatment | | |

Currently covering 62 technology options along the entire sanitation service chain

Borehole Latrine

| Phase of Emergency | Application Level/ Scale | Management Level | "Killer Criteria" |
|----------------------------|--------------------------|---|--|
| ** Acute/Rapid Response | City | ** Household | <ul style="list-style-type: none"> • Unstable soils • Rocky ground • High water table • No drilling device available |
| • Transition/Stabilisation | ** Neighbourhood | ** Shared | |
| • Recovery | ** Household | Public | |
| Space Required | Technical Complexity | Inputs | Outputs |
| • little space required | • low | Urine, Faeces, (Anal Cleansing Water), (Dry Cleaning Materials) | Sludge |



A Borehole Latrine is a technology that is used mainly in the acute response phase, when a large number of latrines has to be constructed rapidly and the site conditions do not allow for excavation of bigger pits.

Borehole Latrines are usually temporary solutions but depending on diameter, depths and number of users it is also considered a longer-term solution that can potentially last for several years. The hole is bored using either a mechanical or manual auger or a drilling machine.

Design Considerations

Depending on the soil type and drilling equipment the borehole should be between 5-10m deep with a diameter of usually between 0.3-0.5m. A pipe lining is required at the top 0.5m and may be greater in length in more unstable soil formations. The superstructure can either be simple screens around the hole (only temporary solution) or more firm cubicles. As ventilation through the borehole is not possible, the superstructure should allow for air circulation to reduce potential odour problems. The hole should be covered with a slab.

Materials

In order to construct a Borehole Latrine a manual or mechanical auger or a drilling machine is the key prerequisite. The cover slab can be made out of wood, bamboo, concrete or by using prefabricated plastic slabs. For the superstructure, materials should be used that are readily available and that can be applied rapidly (e.g. bamboo, grass matting, cloth, wood, plastic or metal sheeting). For the borehole lining pipes should be used, with a minimum length of 0.5m and the corresponding borehole diameter. Some agencies have rapid response kits for slabs and superstructure which can be used where there are few resources locally.

Applicability

A Borehole Latrine can be considered a viable solution in the acute response phase as it can be implemented very fast and provided the technology is acceptable for the users, the ground conditions allow the drilling deeper holes and that there are sufficient tools, materials and human resources available. The soil needs to be stable and free of rock, gravel and boulders.

Operation and Maintenance

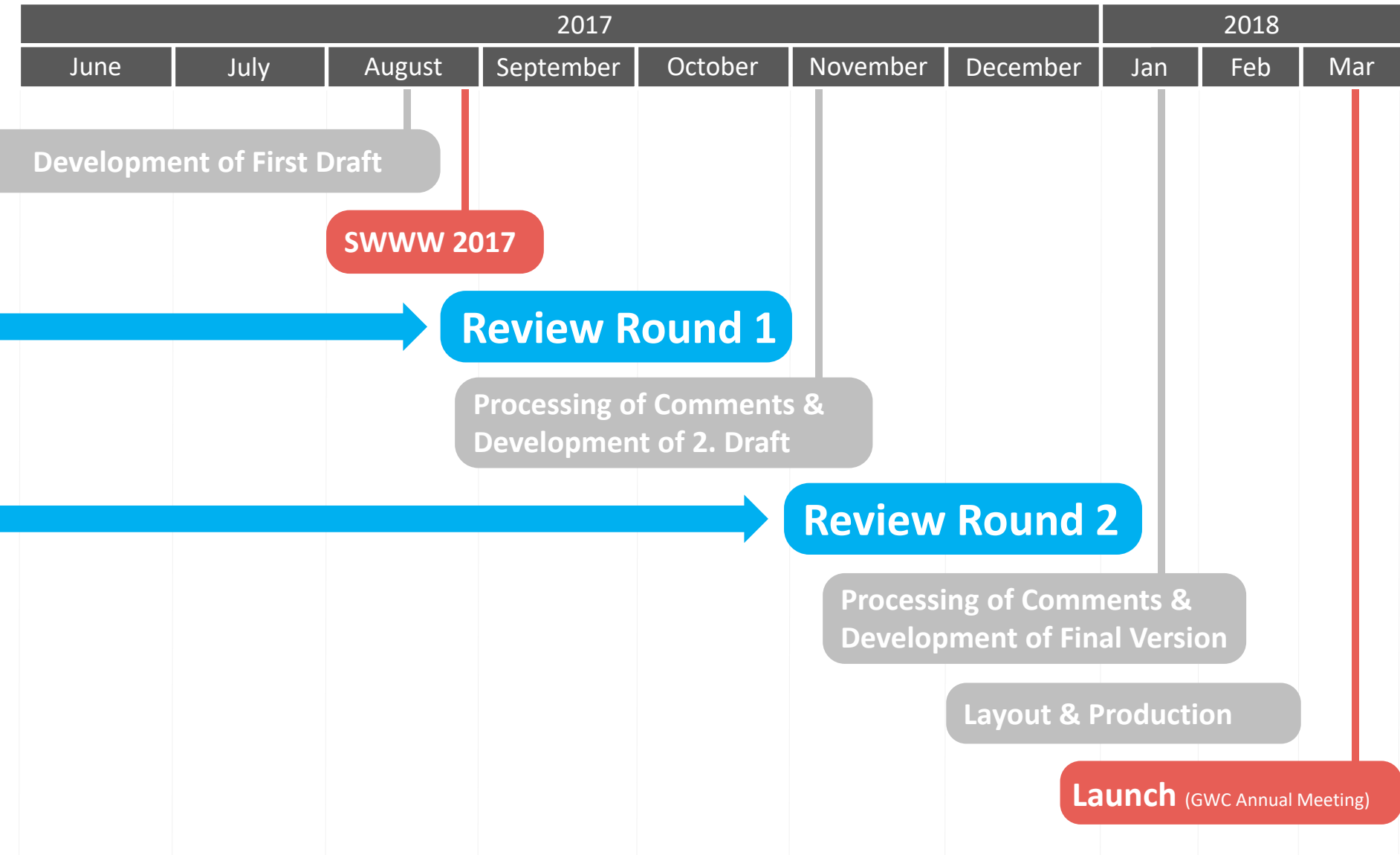
General O&M measures include routine operational tasks like checking of water availability for anal cleansing, soap and dry cleansing material and the monitoring of the condition and filling level of the hole. As desludging is usually no viable option the latrine should be decommissioned when filled up to the top 0.5m of the hole. When decommissioning the Borehole Latrine, the top 0.5m should be filled with soil and rubble which should be mounded up

- Emergency Phase
- Application Level
- Management Level
- Killer Criteria
- Space required
- Technical complexity
- Inputs/ Outputs

- Simple Drawing

- Short description
- Key design considerations
- Materials needed
- Applicability
- Operation and Maintenance
- Costs
- Software considerations
- Strength
- Weaknesses
- Key resources & QR code

Timeline



- Review process about to start right after the Water Week (September 2017)
- We are still looking for organisations/individuals with experience/expertise on specific technologies to become involved in the reviewing process
- Become involved in the later dissemination
- Provide your input as part of this session particularly on the document structure, dissemination options and synergies with other initiatives
- Contact: robert.gensch@germantoilet.org (or approach us after the session)

Thank You



Table 1

Structure: How to best reflect the complex and multifaceted nature of disasters (different phases, contexts etc.) in a simple, systematic and comprehensible document structure?

Table 2

Dissemination: Dissemination options and how to create a constant learning platform and living document via a Compendium online platform, corresponding trainings etc.)

Table 3

Synergies: Potential synergies and compatibility with other ongoing activities like Sphere Revision, Humanitarian Innovation Fund Initiatives, SSWM Toolbox etc.

SuSanA WG8 Meeting (Emergency Sanitation)

Venue: Hotel Scandic Klara, Slöjdgatan 7, 111 57 Stockholm

Time: 11:00 – 13:00

Aims of the meeting:

1. Overview of WG activities
2. Sharing of activities by WG8 members
3. Share an update on the HIF emergency FSM project
4. Explore the technical options for faecal sludge management in rapid onset emergencies

| When? | What? | Who? |
|---------------|---|---|
| 11:00 - 11:10 | Welcome and overview of current WG 8 activities | TBC |
| 11:10 - 11:40 | WG8 Strategic discussions – sharing activities, synergies and contributions to WG8 | Amy Jennings, BORDA, WG8 members |
| 11:40 - 11:55 | Further discussions on the 'The Compendium of Sanitation Technologies in Emergencies' | Robert Gensch, German WASH Network |
| 11:55 - 12:10 | Overview of the HIF emergency FSM project | Amy Jennings, BORDA Alberto <u>Acquistapace</u> , Solidarities International |
| 12:10 - 12:55 | Faecal sludge management in rapid onset emergencies – your technical review! | Amy Jennings, BORDA Alberto <u>Acquistapace</u> , Solidarities International |
| 12:55 - 13:00 | Summary of next steps - Thanks and close | TBC |