# Compendium of Sanitation Systems and Technologies


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SuSanA
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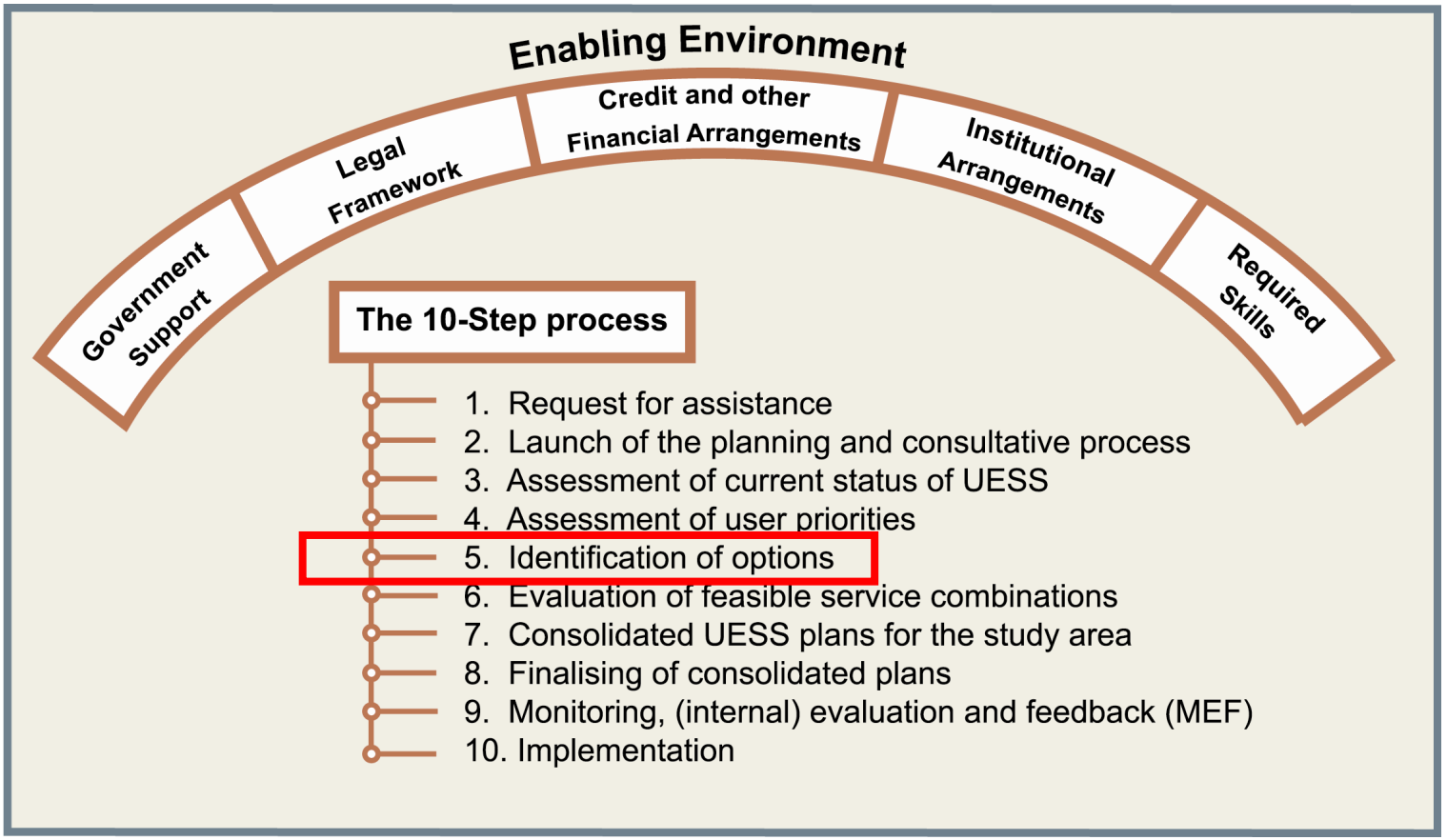
# HCES Concept



## Goal of the Compendium

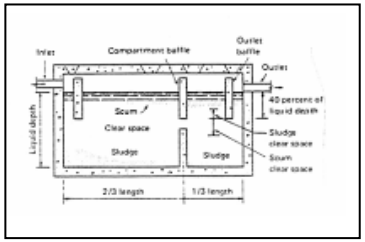
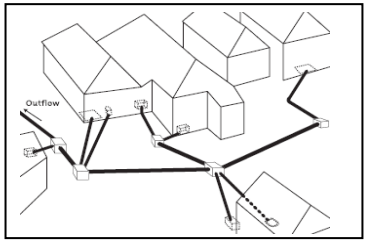
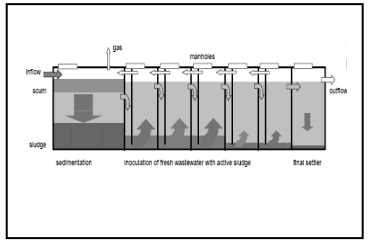
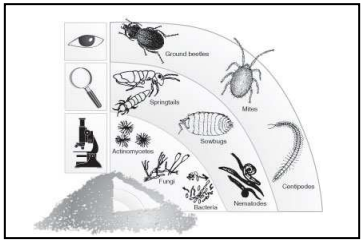
- **Expose** the user to a broad range of sanitation systems and technologies
- understand and work with the **system concept**
- **Compile and compare** different technologies

→Show possibilities apart from the norms

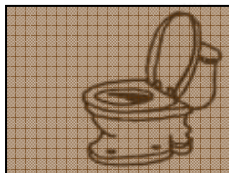
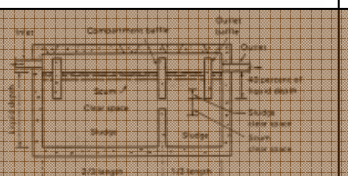
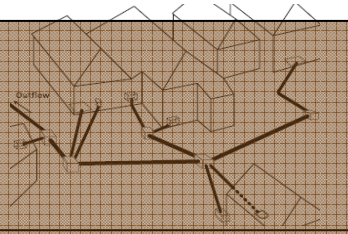
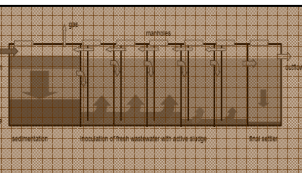
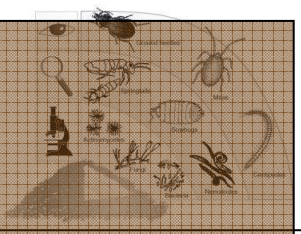
## Parts of the Compendium

- Inputs/Products
- Functional Groups
- System Templates
- Technology Information Sheets

# Functional Groups- perform a task

| User Interface | Collection Storage | Conveyance | (Semi-) Centralised Treatment | Reuse and Disposal |
|---|---|---|---|---|
|  |  |  |  |  |
| -Dry Toilet<br>-Urine Diverting Dry Toilet<br>-Urinal<br>-Pour Flush Toilet<br>-Flush Toilet | -Single Pit<br>-Single Pit VIP<br>-Alternating Dry Double Pit<br>-Alternating Wet Double Pit<br>-Double Dehydr. Vaults<br>-Aquaprivy<br>-Septic Tank<br>-Composting Chamber | -Manual Emptying<br>-Mechanical Emptying<br>-Simplified Sewers<br>-Small-Bore Sewer<br>-Conventional Gravity Sewer<br>-Jerry can/tank | -Imhoff Tank<br>-Anaerobic Baffled Reactor<br>-Anaerobic Filter<br>-Trickling Filter<br>-Waste Stabilization Ponds<br>-Finishing Pond<br>-Constructed Wetland<br>-Co-composting<br>etc. | -Application of Urine<br>-Application of Dehydr. Faeces<br>-Compost<br>-Irrigation with Wastewater<br>-Aquaculture<br>-Soak Pit<br>-Leach Field<br>-Incineration<br>-Land application<br>-Surface Disposal |

# Summary

| User Interface | Collection and Storage | Conveyance | (Semi-) Centralised Treatment | Reuse and Disposal |
|---|---|---|---|---|
|  |  |  |  |  |
| -Dry Toilet | -Single Pit | -Manual Emptying | -Imhoff Tank | -Application of |
| -[illegible] | | | | s |
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| | | | -Co-composting | on |
| | | | Etc. | -Surface Disposal |

- There are 8 system templates each with possibly hundreds of system configurations
- 8 Inputs; 3 Products
- 5 Functional Groups with 51 technology descriptions
- Meant for sanitation professionals- not a crash course!

# Where do we stand now? Where are we going?

- The ‚‘Compendium‘ concept was conceieved in 2003 as one of the essential tools to support the HCES Guidelines
- The content has been developed and revised over the last few years and was re-interpreted, developed and synthesized within the NETSSAF WP3 Deliverable
- In January of 2008 the draft Compendium was sent out to an expert panel of 10 reviewers- we are currently in the last of the stages of collecting, compiling and digesting the comments
- The final draft will be available in Stockholm and a final publication can be expected by the end of 2008

# Pathogen reductions (log units) achieved by health-protection control measures

| Control measure | Pathogen reduction (log units) | Notes |
|---|---|---|
| **Excreta & urine Treatment** | **2–6** | The required pathogen removal depends on the combination of the treatment and selected health-protection control measures |
| **Crop selection and means of application** | **2-4** | Higher risk: Root crops and crops that grow just above (lettuce) and in partial contact with the soil. Lower risk: Crops with the harvested parts not in contact with the soil. |
| **Pathogen die-off** | **2-4** | Die-off on crop surfaces that occurs between application and consumption. The log unit reduction achieved depends on climate (temperature, sunlight intensity), crop type, etc. With-holding time essential in risk reduction |
| **Produce washing with water** | **1** | Washing salad crops, vegetables and fruit with clean water. |
| **Produce peeling** | **2** | Fruit, root crops. |
| **Produce cooking** | **5–6** | Immersion in boiling or close-to-boiling water until the food is cooked ensures pathogen destruction. |

# Microbial barrier assessment

- Selection of treatment, handling and reuse combinations
- Selection of representative model organisms for bacteria, viruses and parasites
- Apply a quantitative reduction approach for system validation and comparisons (TARGET)
- If possible to further work on a modelling approach for determination and combination of system configurations and determination of Pinf (probability of infections (LONG TERM GOAL)