

# The Sanitation Decision Support tool

Results of the Sanitation Decision Support Tool. The tool was created by WASTE (www.waste.nl) and the Akvo Foundation (www.akvo.org), in order to assist people in choosing sanitation technologies. We hope this tool proves useful, any comments can be send to m.t.westra@akvo.org.

Session information

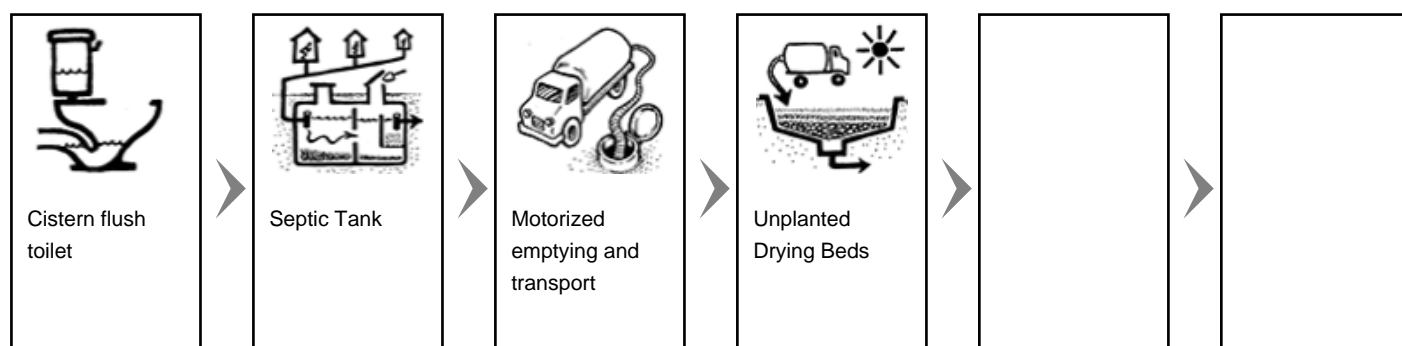
Date: Thu Jun 06, 2019

Time: 10:38:15

## Options chosen

<b>Water supply (one possible)</b> <ul style="list-style-type: none"> <li>• none</li> <li>• fetched / hand-pump / standpipe / tanker</li> <li>• <u>connection</u></li> </ul>	<b>Groundwater table (one possible)</b> <ul style="list-style-type: none"> <li>• shallow</li> <li>• medium</li> <li>• <u>deep</u></li> </ul>	<b>Soil type (one possible)</b> <ul style="list-style-type: none"> <li>• clayey</li> <li>• <u>silty</u></li> <li>• <u>sandy / gravelly</u></li> <li>• rocky</li> </ul>
<b>Space availability (one possible)</b> <ul style="list-style-type: none"> <li>• large</li> <li>• medium/large</li> <li>• <u>medium</u></li> <li>• small/medium</li> <li>• small</li> </ul>	<b>Terrain / Topography / Slope (one possible)</b> <ul style="list-style-type: none"> <li>• flat</li> <li>• <u>slope</u></li> </ul>	<b>Anal cleansing method (more possible)</b> <ul style="list-style-type: none"> <li>• <u>water</u></li> <li>• soft paper</li> <li>• hard or bulky</li> </ul>
<b>Flood prone (one possible)</b> <ul style="list-style-type: none"> <li>• not affected</li> <li>• frequent (low-lying area)</li> </ul>	<b>Vehicular accessibility (one possible)</b> <ul style="list-style-type: none"> <li>• no access</li> <li>• limited / narrow access</li> <li>• <u>full access</u></li> </ul>	

## Selected technologies



## Links to Akvopedia articles

- Cistern flush toilet:  
[http://www.akvo.org/wiki/index.php/Cistern\\_Flush\\_Toilet](http://www.akvo.org/wiki/index.php/Cistern_Flush_Toilet)
- Septic Tank:  
[http://www.akvo.org/wiki/index.php/Septic\\_Tank](http://www.akvo.org/wiki/index.php/Septic_Tank)
- Motorized emptying and transport:  
[http://www.akvo.org/wiki/index.php/Motorized\\_Emptying\\_and\\_Transport](http://www.akvo.org/wiki/index.php/Motorized_Emptying_and_Transport)
- Unplanted Drying Beds:  
[http://www.akvo.org/wiki/index.php/Unplanted\\_Drying\\_Beds](http://www.akvo.org/wiki/index.php/Unplanted_Drying_Beds)

## Short descriptions

### Cistern flush toilet



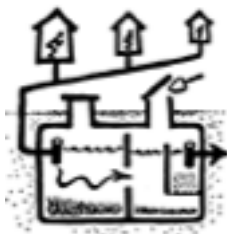
The Cistern Flush Toilet is usually porcelain and is a mass-produced, factory made User Interface. The Flush Toilet consists of a water tank that supplies the water for flushing the excreta and a bowl into which the excreta are deposited. The attractive feature of the Flush Toilet is that it incorporates a sophisticated water seal to prevent odours from coming back up through the plumbing. Depending on the age and design of the toilet, approximately 3 to 20L of water may be used per flush.

#### Relevant options

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### Septic Tank

A Septic Tank is a watertight chamber made of concrete, fibreglass, PVC or plastic, for the storage and treatment of blackwater and greywater. Settling and anaerobic processes reduce solids and organics, but the treatment is only moderate. A Septic Tank should typically have at least two chambers. The first chamber should be at least 50% of the total length and when there are only two chambers, it should be 2/3 of the total length. Most of the solids settle out in the first chamber. The baffle, or the separation between the chambers, is to prevent scum and solids from escaping with the effluent. A T-shaped outlet pipe will further reduce the scum and solids that are discharged. Liquid flows into the tank and heavy particles sink to the bottom, while scum (oil and fat) floats to the top. With time, the solids that settle to the bottom are degraded anaerobically. However, the rate of accumulation is faster than the rate of decomposition, and the accumulated sludge must be removed at some point. Generally, Septic Tanks should be emptied every 2 to 5 years, although they should be checked yearly to ensure proper functioning. The design of a Septic Tank depends on the number of users, the amount of water used per capita, the average annual temperature, the pumping frequency and the characteristics of the wastewater. The retention time should be designed for 48 hours to achieve moderate treatment.



### Relevant options

At option **Space availability (one possible)** you have selected **medium**. This means that in your situation, Septic Tank might be a suitable technology. This depends on: **Just possible as a community block or public facility**

At option **Terrain / Topography / Slope (one possible)** you have selected **slope**. This means that in your situation, Septic Tank might be a suitable technology. This depends on: **Special attention to land slide**

## Motorized emptying and transport



Motorized Emptying and Transport refers to a vacuum truck or another vehicle equipped with a motorized pump and a storage tank for emptying and transporting faecal sludge, septage and urine. Humans are required to operate the pump and manoeuvre the hose, but they do not lift or transport the sludge.

### Relevant options

At option **Terrain / Topography / Slope (one possible)** you have selected **slope**. This means that in your situation, Motorized emptying and transport might be a suitable technology. This depends on: **Special attention to heavy loads in steep slopes**

## Unplanted Drying Beds

An Unplanted Drying Bed is a simple, permeable bed that, when loaded with sludge, collects percolated leachate and allows the sludge to dry by evaporation. Approximately 50% to 80% of the sludge volume drains off as liquid. The sludge however, is not stabilized or treated. The bottom of the drying bed is lined with perforated pipes that drain away the leachate. On top of the pipes are layers of sand and gravel that support the sludge and allow the liquid to infiltrate and collect in the pipe. The sludge should be loaded to approximately 200kg TS/m<sup>2</sup> and it should not be applied in layers that are too thick (maximum 20cm), or the sludge will not dry effectively. The final moisture content after 10 to 15 days of drying should be approximately 60%. A splash plate should be used to prevent erosion of the sand layer and to allow the even distribution of the sludge. When the sludge is dried, it must be separated from the sand layer and disposed of. The effluent that is collected in the drainage pipes must also be treated properly. The top sand layer should be 25 to 30cm thick as some sand will be lost each time the sludge is manually removed.



### Relevant options