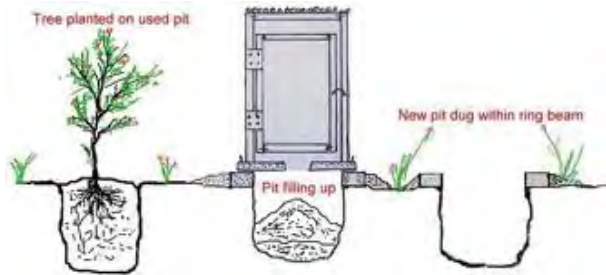


## TEMPLOO ("Temporary Loo")

The Temploo is a variation of the Arborloo, a known rural pit latrine design. The variation lies in the Temploo being a pre-fabricated package, which can be marketed through building material stores. It can be constructed as a traditional or Urine Diversion Toilet (UDT) pit latrine, without or with a sitting-type toilet bowl.

Arborloo = Pit latrine for rural areas whereby a tree (banana) is planted once the toilet is full.



Many pictures are available on the Internet explaining the principle.

The contents need to stay dry.

The squatting slab and the upper structure are reusable.

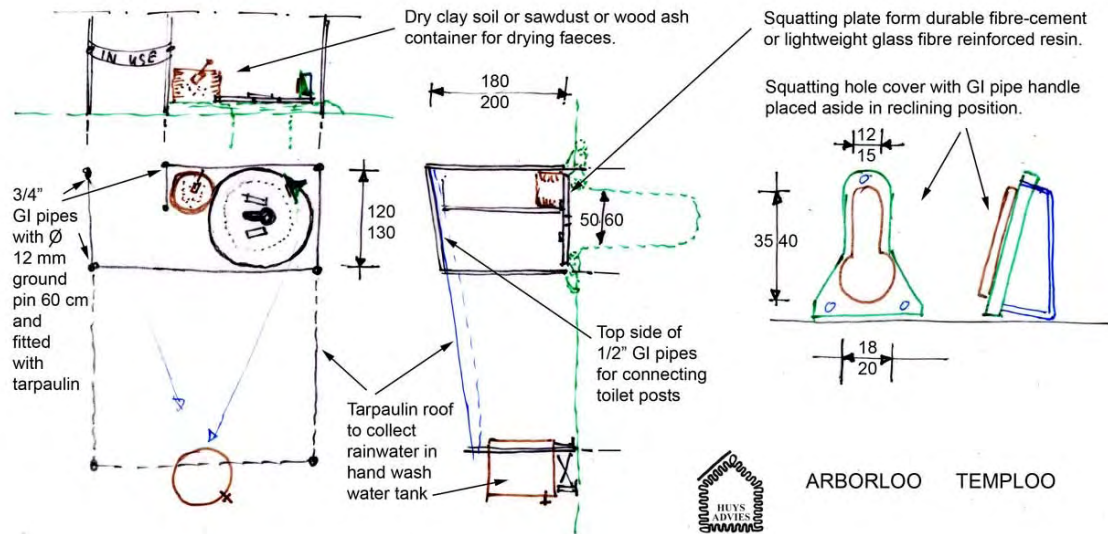
Hand-washing facility needs to be added.

**Temploo** = Temporary pit latrine (loo) for use at agricultural production fields, building sites, show grounds, sport events, camping areas or emergency camps.

The design allows for pre-fabrication. The components are lightweight, compact for easy transport and quick to assemble.

The materials should be locally available and the components easy to replace.

When the event is over, the pit latrine is closed/sealed and a tree planted, similar to the Arborloo.



### Components of the Temploo

1. A pit is dug with a diameter not exceeding 60 cm. The depth of the pit depends on the planned period of use, the number of people using it, the soil structure and the groundwater level. The faeces (<0.2 kg/day), along with the soil or sawdust used as a drying agent, amount to about 1/3 litre per defecation. There will be a slight shrinkage of the pit content due to micro biological action. For 20 persons x 60 days, the volume of the pit should be  $0.25 \times 20 \times 60 = 300$  litre. With a diameter of 60 cm, the pit should then be slightly more than 1 meter deep. With more people or a longer period, the pit should be made deeper or a second Temploo installed (one for men and one for women). In loose sandy soil, the upper sides of the pit need to be reinforced with a ring of branches.



- The squatting platform should be lightweight, round (for easy rolling) and have a centric squatting hole with footsteps. The diameter should be between 120 cm and 130 cm to have sufficient support area around the dug out pit. The squatting plate should be resistant to stacking and rough handling. It should not break when, from a vertical standing position, it then falls flat onto a hard surface, such as a tarmac road. A laminated and weatherproof impregnated timber platform is possible. A durable solution is a construction in glass-fibre reinforced resin. Reinforcement ribs can be made with concrete reinforcement bars. The upper and lower surfaces should be smooth for easy cleaning with a water jet. The heel end of the elevated footsteps should line up with the middle of the squatting hole.



- The squatting hole needs to be closed after each use. Together with the squatting plate, a good fitting closure should be supplied. The sketch shows a closure with a ½-inch GI pipe handle. When put aside, the closure remains standing on its wider rear side and the handle. The combination of the wider rear side and the handle prevents it from being dropped into the squatting hole.



- Depending on the habits of the people, the squatting platform can be fitted with a sitting-type toilet stand. In some societies, it can be recommended that both toilet models (squatting and sitting) are used. The sitting model needs to have a closing lid, which cannot be removed and used on a household ceramic toilet bowl.



- The Temploo can have a ventilation pipe, like the VIP. The ventilation pipe should project light into the pit but be sealed on the top with an aluminium or stainless steel fly screen. This way, any eventual flies will go to the light and die when they cannot escape.

- The frame of the toilet cabin can be made from ¾-inch (or thinner) galvanised iron water pipes. A concrete reinforcement bar is welded onto one end, which is pressed into the ground. A triangular plate can be welded at the connection point on which a person can stand for pressing the bar into the soil. A small eye is made on the top of each post to attach the cross bars and the tarpaulin.



- The toilet cabin can be made with a roof and the roof can be extended with an inclined sheet that leads to a barrel for the collection of rainwater. Three options are possible: (a) Only the toilet cabin, having 6 posts and one tarpaulin; (b) The same as (a), but with a roof over the toilet only; (c) The extended roof with rainwater catchment. The option of the rainwater catchment depends on the local climate conditions and the number of users for hand washing.

Under the roof overhang (in case of rainwater collection), plants can be grown that will be placed in the ground after the Temploo has been relocated.

- Inside the toilet cabin, a container is needed for dry clay soil, sawdust or wood ash. A scoop is used to sprinkle the drying agent over the fresh faeces. By keeping the content of the pit latrine dry, smells will be greatly limited. The obvious disadvantage, however, is that the pit will fill up quickly and the Temploo needs to be relocated. The manager of the toilets should ensure that sufficient drying agent is always available in the container.



- As an alternative to a door, a band or chain can be used to close the entrance opening. The band or chain can have an appropriate text to indicate when the toilet is in use.

- General hygiene is essential. Hand-washing water, especially when food is handled and on agricultural fields, should be in adequate supply. The water can be stored in a nearby barrel. The manager of the toilet facility needs to ensure that there is always adequate water, soap and toilet paper (depending on the habits of the people).



With sufficient water, the manager of the toilet can clean the squatting pan regularly, depending on the use and cleanliness of the users.

11. When water is used for anal cleaning, small containers for carrying water from the water barrel into the toilet need to be available. In this case, additional drying agent is required.



12. Instruction material. This does not necessarily need to be a poster. Text or pictures explaining the use of the facility can be printed on the tarpaulin (inside or outside) or on the container of the drying agent and water barrel. The type of picture material used depends on the local habits and cultural aspects and needs to instruct clearly the proper use of the toilet and hand-washing facility.

In many low-income countries where villagers are using communal toilet facilities, either temporarily or permanently, items such as soap, toilet paper, scoop and buckets are often stolen from the toilet. This will make the installation non-functional and should be avoided by sound agreements between the manager of the facilities and the users.



The communal facilities need to be kept clean, which means that the users need to establish a cleaning regime and protocol that assures responsibility. Generally speaking, when a small group of users need to keep the toilet facility clean themselves either daily or on weekly turns, they will take better care to avoid that the facility becomes dirty.



For communal toilet facilities such as for events, the cleaning service needs to be organised in a very efficient way. The eventual costs of cleaning, water supply, soap and (biodegradable) toilet paper need to be obtained from the users before using the toilet. The reversion of the toilet to a planted tree should be included in the costing.

### **Agriculture**

In agricultural fields where food is produced, personal hygiene is very important to avoid contamination of the food products by E-Coli (*Escherichia coli*), helminths (worm eggs) or other bacteria and viruses. Good toilet facilities and hand washing with soap, as well as thoroughly drying the hands after washing, are essential elements to minimise spreading of infections.

This means that on all agricultural and food-producing fields where labour is working, toilet facilities must be within 80 m distance of the working area (100 paces). When agricultural work is seasonal and on different fields, the Temploo needs to be moved frequently or several units erected. The people working in food production need to report immediately any sign of intestinal discomfort, while the management of labour-based agricultural food production areas needs to facilitate the curing of any incidence of diarrhoea and worm infections.

Agricultural produce companies should have a quality standard related to good hygiene practice in their agricultural fields, greenhouses, packing and food processing areas. Although in some countries specific legalisation exists about personal hygiene in the food processing industry, it does not mean that adequate external control exists to ascertain the adherence to such legalisation. Internal quality control on these issues, such as an ISSO or other certification which is backed by regular verification, can be established.

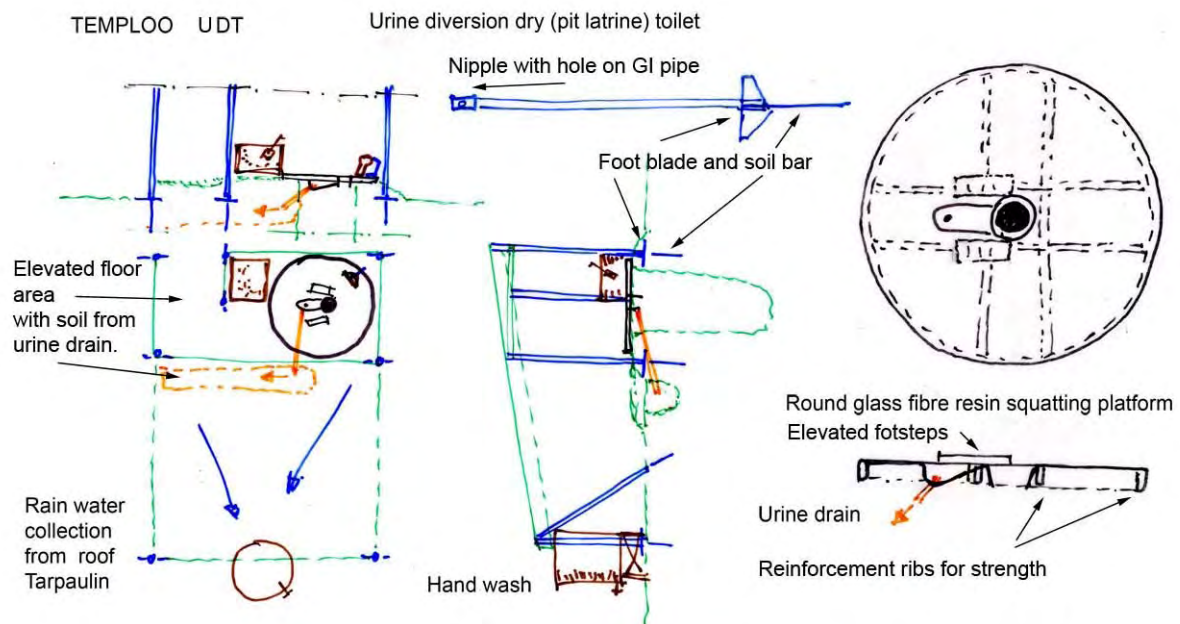
The easy availability of suitable sanitation systems in agricultural and food producing companies is important, and local manufacturing of the components of the Temploo should be realised. Picture manuals for construction should be available with the package.



### Temploo – Urine Diversion Toilet (UDT)

The potential problem of the above-indicated simple Temploo is that urine enters into the pit and adds a substantial amount of moisture to the pit content. This is even worse with water-based anal cleaning. The pit content is not easily dried by adding clay soil, sawdust or wood ash. To dry the content, a large amount of drying agent will be required and the pit will rapidly fill up, especially if the number of users is large. Although the UDT squatting pan will be slightly more expensive in making, diverting the urine will double the utility time of the latrine and is therefore a much cheaper and durable solution.

The Urine Diversion Toilet (UDT) is recommended since the majority of wet excrements are drained away to the side. The urine is a harmless and non-infectious liquid, which does not require special treatment for sanitization. By draining the urine away, it will improve the composting process in the dryer pit. The urine by itself has a good fertilizing aspect.



The squatting hole and the footsteps are the same, but the front side of the extended squatting hole is made as a urine receptacle which has its own drain.

Because the squatting platform is slightly elevated above the general ground level due to the excavated ground of the pit and the urine soak away, the urine drainpipe has sufficient slope towards the urine soak away.

The urine soak away is covered with branches and root-cloth or sisal (jute) bags and covered again with soil. After the toilet has been relocated, the soil area around the urine soak will have been substantially enriched with nitrogen fertilizer. This means that the fertilization area of the Temploo-UDT is also substantially increased.

The main advantages of the Temploo-UDT are:

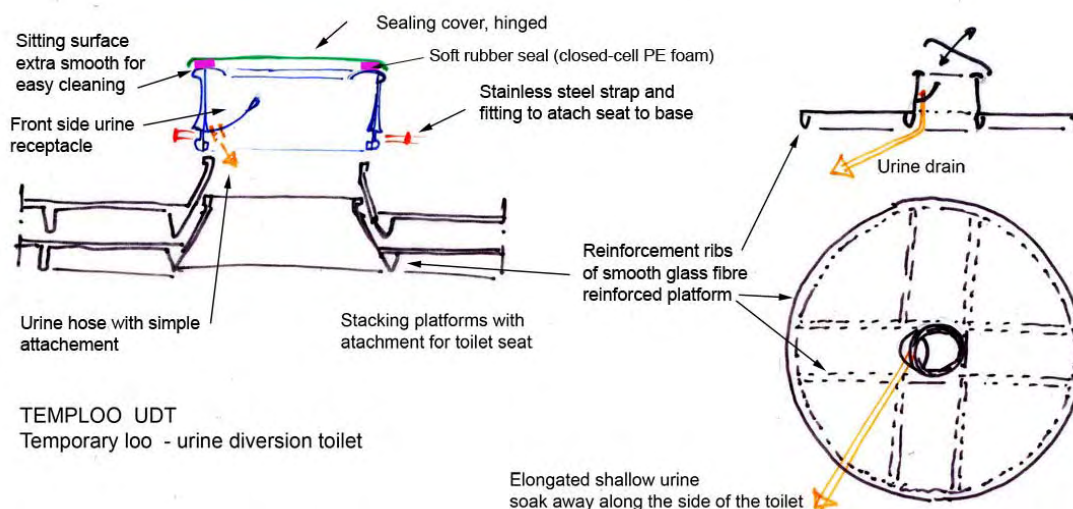
- A. More than double the user efficiency as compared with the wet single pit.
- B. Less drying agent required; only for faeces.
- C. Increased soil fertilisation around the urine soak away area.
- D. The defecation hole is about half the size of the pit latrine hole.
- E. Smaller closure fitting for the defecation hole required.
- F. Reduced fly population and reduced spreading of diseases.

The disadvantages of the Temploo-UDT are:

- G. Slightly increased cost of the squatting platform and urine drainpipe.
- H. Possibly a slight increase in transportation cost of the platform.
- I. Extra work in excavating the urine soak away and cover.
- J. Requires education of the users to minimise urinating into the faeces hole.
- K. Not suitable for standing urination.
- L. No sitting (commode) possibility for the user.

### **Temploo-UDT Sitting Toilet**

Depending on the cultural habits of the people and their desires, a sitting-type toilet can be constructed using the same principle of the earlier described Temploo-UDT.



The cost of the UDT sitting toilet construction will further increase the manufacturing cost and possibly the transport cost. The construction will be more vulnerable for vandalism and the bowl will require more cleaning work.

To reduce the transport volume, the toilet bowl can be made separate from a stackable platform and the detached unit fitted over the platform collar with a strong stainless steel fitting. This detached toilet bowl connection needs to be fitted with special bolts and tools to become adequately vandalism resistant.

The toilet seat should be smooth plastic or varnished timber so it can be easily wiped clean by the user. The toilet seat cover should lock airtight over the bowl. A soft rubber seal that does not scratch the smooth sitting surface should be used. A possible material is weatherproof closed cell polyethylene (PE) foam which is available as building material on self-sticking rolls.

When the toilet is relocated, the quality of the PE foam seal should be controlled and, if necessary, renewed. Proper sealing of the toilet seat cover is important to minimise fly population. In addition, a ventilation pipe can be installed covered at the top with an aluminium or stainless steel fly screen.

### **Instructions**

The tarpaulin wall is an excellent surface for advertisements and/or instructions.

1. The name of the manufacturer or resale agent can be printed on it.
2. The name and logo of the company using/facilitating the Temploo can be printed on it.
3. Indication "men" or "women" with pictures can be indicated.
4. User instructions can be printed on the inside and outside.
5. At the toilet exit, instructions about hand washing can be provided.
6. The contact address of the maintenance or service person can be indicated and where to report any problems, such as lack of drying agent, toilet paper or water.

The Temploo-UDT (both squatting and sitting versions) is the recommended type because of better hygiene and extra long utility (including less relocation).

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