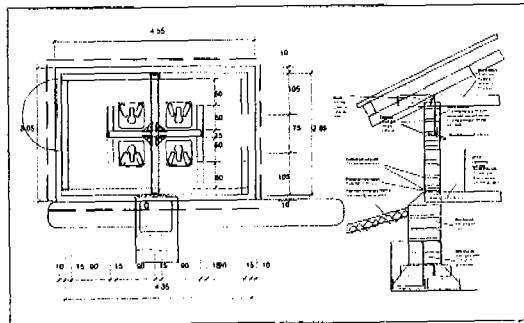


# UNICEF - Ministry of Education

## Strategic Sanitation and Hygiene Promotion for Schools



## Findings from a mini evaluation of the pilot implementation of school sanitation facilities

September 14 to 26, 2003

prepared by  
**Bjorn Brandberg**  
SBI Consulting

Malawi: Strategic Sanitation and Hygiene Promotion for Schools (SSHP)  
**Findings from a mini evaluation of the pilot  
implementation of school sanitation facilities**  
September 14 to 26, 2003  
**MISSION REPORT**

**SUMMARY**

Bjorn Brandberg visited Malawi 14-26 September 2003 with the object of assessing the project progress with focus on the Sanitation Options Catalogue and recommending on technical issues. Though the numerical targets were far from being met the progress was good with a promising enthusiasm from all parties involved. Discussions with the project management and field staff indicated that the school sanitation project has a great potential to develop into a revitalized national sanitation programme with capacity to reach nationwide coverage in rural areas.

Community mobilization for digging pits and provision of local building material was the major constraint and can be explained by the fact that huge pits and demanding soil conditions had to be balanced against benefits that were generally not understood by the community members. Linking the programme to community service and self help construction of private latrines may facilitate and pave the way for a more generalized sanitation programme in a very promising way.. In order to attain a better cooperation with the communities it was agreed to explore the support of the religious organizations<sup>1</sup>.

In order to facilitate the understanding of the catalogue, without hampering the need of more and better sanitation, it was decided to divide the catalogue in to three parts, the CATALOGUE (addressing principally headmasers and community leaders), CONSTRUCTION DRAWINGS (addressing principally buiders and supervisors)and SUPPORT INFORMATION (for everybody interested in learning more)<sup>2</sup>.

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<sup>1</sup> Collaboration with has been explored in many countries. Some material, originating from a World Bank project in Angola has been tested by CPAR in Chinteché and found very relevant for Malawi. The texts "Sanitation and the Christian Church" and "Translating Faith into Works" have been included in Part 3 SUPPORT INFORMATION.

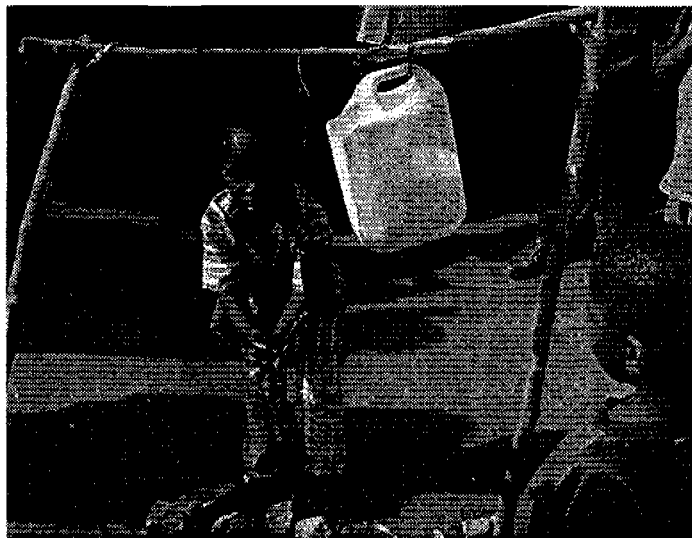
<sup>2</sup> The catalogue has been revised accordingly and is anticipated to be updated gradually, eventually to become a national sanitation manual and a solid base for a national sanitation policy.

## **PREAMBLE**

In support of the Strategic Sanitation and Hygiene Promotion for Schools and promotion of improved sanitation general the Consultant B Brandberg visited Malawi from the 4<sup>th</sup> to the 23<sup>rd</sup> of September with the objective of reviewing the Sanitation Technology Options Catalogue and make a mini evaluation of the project.

The arrival of the consultant was made to coincide with a UNICEF sponsored study by a team from Mozambique who also participated in the tour (Nkhata Bay, Mzuzu, Kasungu and Dowa, during week No 1, September 16 to 20). The acting head of WES-UNICEF, Ms Belinda Abraham, headed the mission. In the field the mission was accompanied by implementing NGOs and supervising government officers.

A second trip was undertaken to Kasungu with the objective of assessing problems and possibilities identified during the first trip and to find out what improvements could be made on the catalogue. Terms of reference have been attached as annex No 1.



**Children teach children  
(and their parents) better hygiene**

## **FINDINGS**

Despite the fact that the numerical target, in terms of latrines built, has not been met the Malawi SSHP Project has achieved commendable progress providing a strategic foundation for a national sanitation and hygiene promotion programme. In consultation with the schools and the community representatives the project have opted for building solid, not always low cost solutions. Given that this is done in response to demand, this has resulted in credibility in the relation between the project and its counterparts.

### **Strategic School sanitation**

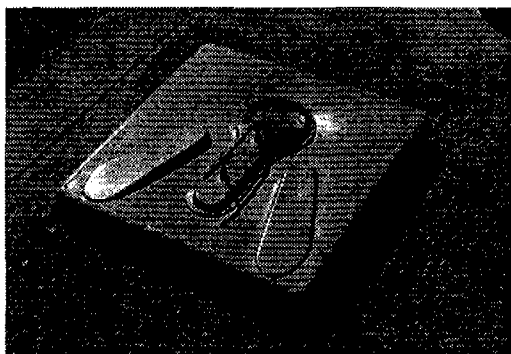
Schools need good latrines. Schools provide a nationwide well developed network with excellent credibility and communications. In collaboration with churches the programme will be able to reach the whole country with minimal increase of staff.

### **Existing school latrines have a role to play:**

1. Existing school latrines should be improved and used waiting for the new ones to be ready. (This is a useful and pedagogical exercise, which could become of great value for the pupils and the whole community.)
2. After this they should become demonstration latrines for how families can improve their own latrine wit SanPlats and hand washing facilities (leaking tin).

### **Teachers, Pupils and Parents have a role to play together**

1. Teachers teach pupils the importance of hygiene and clean toilets against disease transmission
2. Pupils take the message to the families teaching better hygiene at home:
  - how traditional latrines can be improved
  - how to make a simple and effective hand washing facility



**Improved sanitation and hygiene brings health to the family**

### **The use of the catalogue**

A catalogue of technical options for latrines, hand washing facilities and urinals has been developed and used in the field for selection and construction of school sanitation facilities. The catalogue addresses itself to the Project Management Team, School staff, community representatives and local contractors, specifying the expected product in terms of geometry and technical details and standards. It also serves as a base for an agreement between the project and its counterparts, especially the contractors. Its value in creating a general awareness is beyond discussion and it has been instrumental in analysing possibilities and preferences. Not surprisingly, it has proven difficult to use in the field as there are difficulties in reading English and in interpreting technical drawings.

The use of the catalogue needs to be redefined and possibly replaced by a set of documents for the different uses and users including simplified drawings and instructions in local languages (at least Chichewa).<sup>3</sup>

### **Construction of facilities**

In the two districts, Kasungu and Nkhata Bay, school latrines were constructed, some completed, others underway. Meetings with pupils, teachers and representatives for the community confirmed that the latrines were seen as a great improvement to the schools, contributing to raising the status of sanitation in the community. The latrines were with minor exceptions professionally built and had some creative diversions from the catalogue designs. As a whole the impression was very positive and the enthusiasm remarkable.

Important pedagogical opportunities have, however, been lost when it comes to the introduction of urinals and hand washing facilities. Given that these possibilities had not been discussed earlier, this is not said as a criticism but as an advise for the future.

- Special attention needs to be paid to the manufacture and installation of SanPlats as they are a key element in the Sanitation and Hygiene Promotion strategy.

Field staff and local contractors commonly have difficulties in reading technical drawings. The English language also presents difficulties. At the same time the catalogue will serve as part of the contract between the contractor and the project. A balanced adaptation of the guidelines may be required to facilitate implementation in the field.

### **Choice of technology options**

The objective of the construction phase was to test the different types of latrine in a realistic environment. Participative methods were used to choose between the options presented in the catalogue. Fore some latrines scale models had been built. There was a confusing pattern in the choice of latrine types. Only VIP latrines had been chosen (almost exclusively two-compartment types in Nkhata Bay district and four-compartment types in Kasungu), which made the evaluators assume that communication of technical options was a problem. It was obviously difficult for staff members to explain the new latrine types presented in the catalogue.

Repetition of a limited number of similar latrines could be understood both positively and negatively. Eventually it is positive to have a small number of alternatives, which are well accepted by the population as training and supervision would be easier. From an evaluation point of view, however, the construction of different options is necessary.

- Procedures for participatory selection of technical options for latrines urinals and hand washing facilities need to be revised.
- Demonstration latrines need to be built for the participants to be able to see what the options really looked like and understand advantages and disadvantages.

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<sup>3</sup> A revised version of the catalogue has been annexed to this report, now divided into three parts: Part 1, a CATALOGUE which in a simplified way shows the principal technical options, Part 2, CONSTRUCTION DRAWINGS and Part 3 SUPPORT INFORMATION

## **Simulation**

In many cases unnecessarily tight or wide openings and passages in the latrines were recorded. Some walls could also have been made lower. This type of mistakes can be avoided by simulation. This was trained during the school sanitation seminars using loose bricks on the ground can be made to illustrate space and function of the latrines.

## **SanCentres**

The value of promotion of improved sanitation is questionable if realistic assistance is not offered at the same time.

The need of building special demonstration centres where the community can see realistic options in full scale was mentioned a number of times by many participants. Such centres could also be starting point for a nation wide delivery system for sustainable promotion and implementation of family latrines in the communities.<sup>4</sup>

- The construction of SanCentres with a selection of demonstration facilities and participatory casting of SanPlats (round and square) is recommended, initially at selected places, eventually at all schools to facilitate spin off effects for sustainable sanitation in the communities.
- The possibilities of making the SanCentres an income generating activity for the schools should be explored as it may generate both income and enthusiasm for sanitation promotion.

## **Improvement of existing latrines**

In most cases more than a year had passed from the decision to start to the construction of the new latrines. During this time the old latrines have been in use as they were. With very little effort the existing latrines could have been improved using SanPlats with tight fitting lids, and a new mud smear on the floors to make the latrines easier to clean, more hygienic and more pleasant to use.

Given that the existing latrines are of the same type as the latrines built by the community at their homes, there is pedagogical value in improving these for the time of the construction period to demonstrate how community latrines can be improved.

It is of pedagogical importance that improved school hygiene and sanitation is given maximum attention as early as possible in any intervention. Any latrine-building programme is an event that should be explored for promotion of sanitation improvements and hygiene.

- Engaging the PTAs and pupils practically in the rehabilitation of old latrines would make it a pedagogical opportunity with possible important promotional effects in the whole community.
- There is a need for step-by-step guidelines for the establishment of the project at school level.

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<sup>4</sup> In Swaziland the establishment of SanCentres managed by PTAs as a means of income generating for the school has been discussed for a number of schools. This is also seen as a way to respond to the need of sustainable sanitation services to HIV infected families and support for home based care of AIDS victims.

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### **Installation of hand washing facilities**

Few latrines had the hand-washing facilities installed. Many opportunities to demonstrate solutions that are replicable in the community were lost. From a hygienic and pedagogical point of view, this should be the first thing to happen on the site. The catalogue includes simple technologies (for example the Leaking Tin, as implemented in Dowa by the cholera prevention programme), which could have been installed close to the existing latrines, which were in use during the construction time. More sophisticated solutions using permanent tanks and taps belong in the more permanent structures.

- For the future, it is recommended that urinals (and hand-washing facilities) are built first.

### **Water tanks and mosquito breeding**

Within the project there seems to be a strong preference for establishing water tanks for the washing of hands. A problem of water tanks is that they provide an excellent breeding place for malaria transmitting mosquitoes (anopheles). The washout systems installed (3/4 inch gate valves) are too slow to efficiently empty the water tanks.

One of the visited schools (Interaide-Namete) had solved the problem in an excellent way, using a 2 inch PVC pipe allowing to flush out the water in less than a minute, making sure that no remaining larvae or eggs were left in the tank. This system also avoided the risk of blocking by leaves and other debris.

An other possibility to stop mosquito breeding would be to pour a few drops of oil on the surface of the water, enough to destroy the surface tension, for the mosquito larvae to drown.

### **Construction of urinals**

In most places urinals had not been constructed. Priority had been given to the building of the latrine structures. From a pedagogical point of view, the opposite is recommended as pupils otherwise would be encouraged to urinate in the new latrines (as open urination is discouraged). Giving priority to urinals would allow the pupils to discover that existing latrines would become more pleasant if not soaked with urine.

- For the future it is recommended that urinals (and hand-washing facilities) are built first.

### **Training of builders**

Some errors in the construction process indicate poor training of supervisors and builders. In some cases supervisors had been recruited who had not participated in the training. Examples of such errors were installation of vent pipes and poor quality of SanPlats and 9-inch walls instead of four-and-a-half as specified in the catalogue.

- For the programme to have an impact in the communities there must be a follow up procedure to guarantee that there is a trickle down effect of all recommendations to the builders and other grass-root stake holders in the programme.



### **Training of supervisors**

Given that the field supervisors have the daily task of keeping in contact with the contractors, the training of supervisors is as important as the training of the contractors. Many of the supervisors obviously did not participate in the sanitation seminars and seriously lack in the knowledge about the different technical options and latrine building in general. For an expansion of the programme a substantial amount of training is required at all levels.

- It is recommended that training take place in a field environment.

### **SanPlats and Lids**

The quality of SanPlats is not up to standard. They were commonly made using with black second hand oil, which seriously stained the surface. Lids are often not available and frequently poorly made.

The SanPlat is the key element in the Malawi national latrine-building programme, which the school sanitation programme is tailored to spearhead. Practical training with excellent result, was done with programme officers during the Sanitation Workshops in Kasungu and Nkhata Bay in 2001.

- Poorly made or poorly installed SanPlats should be replaced.

There is no justification for poor SanPlats in school latrines.

### **Vent pipes**

To avoid penetration of the roof sheets the vent pipes had been installed at the side of the building rather than at the top of the building. From a functional point of view the chosen way of installing the vent pipes off set to the pit is not recommended as both ventilation and fly control will be hampered.

- A revision of the design to combine the advantages of visibility and good function, if possible, should be considered.<sup>5</sup>

### **Doors**

In many cases, doors have been installed in positions where there is no rain protection. In one case the unprotected door was a veneer door, which definitively will be damaged by the rain.

A common complaint is that locks are stolen. A general comment is that doors use to be the first element that needs repairs or replacement. This can be avoided by using welded security doors which cannot be damaged and which are locked with padlocks, which have no resale value without the key.

- Wooden doors for boys and junior girls should be avoided.
- Introduction of welded steel doors of reinforcement bars should be considered.<sup>6</sup>

## **PITFALLS AND OTHER HINTS**

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<sup>5</sup> Such designs have been included in the revised version of the catalogue.

<sup>6</sup> Proposed design can be found in Part 3 CONSTRUCTION DRAWINGS.

### **Drainage**

So far only one serious pitfall has been identified, the drainage around the building. Digging of huge pits commonly results in that a wide funnel is created of the excavated soil leading rainwater to the place of the latrine. As in many places in Malawi, roof waters are beautifully caught by a gutter shaped apron, leading it away to a lower place, where the water can be infiltrated. This is however of no use if the surface water infiltrates around the structure and eventually reaches the pit.

- All excavated soil should be spread in such a way that rain water never accumulates and infiltrates close to the latrines, as this eventually may end up in the latrine pits and cause both smell and splashing inconvenience.

### **Entrances**

In most cases there was a step at the door, which makes the latrine difficult to use for handicapped people.

- The excavated soil can be used to create a soft ramp to make the entry to the latrine simple also for pupils with severe handicaps.
- The dimensions of entrances should be tested with simulation to get appropriate dimensions. As a rule no passage should be less than 60 cm. Wider passages may be required for handicapped people and place where people meet.

### **Protection of builders**

Digging deep latrines can be dangerous, not only because of the risk of pit collapse, but also of falling stones and mud lumps. The deeper the pit, the stronger the impact of the falling material. A falling stone or a mud lump hitting a person's head can actually kill him. The problem can be prevented or reduced by not allowing the excavated soil to accumulate too close to the edge of the pit.

- A minimum of half a meter should be cleared all the time by one of the workmen. A wider clear space may be required if the accumulated soil heaps are big. It may be wise to start spreading the soil already at the time of the excavation as it reduces the risk for the people working in the pits, and is something which needs to be done sooner or later in any case. Spreading the soil to its final position also helps the builder to assess the final height of the pit lining and the floor.

### **Paint on the floor**

Painting without dripping is obviously very difficult for the builders, resulting in that nicely cemented floors become very messy and look untidy.

- If no other solution is found it is recommended that the SanPlat and the floor screte are installed after the walls have been painted and a floor skirting is painted to cover the cement that may have stained the wall.

Staining of SanPlats is not acceptable.

## **CONCLUSIONS**

The possibilities of achieving a considerable improvement of sanitary conditions in Malawi schools have increased drastically during the last years. Findings from surveys and seminars are now materializing in an increasing number of schools. Communities are participating and there is a sense of ownerships among all involved parties. Attention needs to be paid to details as mentioned in this report.

- Special attention should be paid to the pedagogical possibilities of
  - temporary improvement of existing latrines to be used by the school during the time of construction
  - construction of temporary or permanent urinals to reduce smell and soaking of floors
  - installation of temporary hand washing facilities, which can be replicated in the community, for use in the existing latrines during the construction time.

It can be anticipated that participative construction of SanCentres at the schools can have a catalysing effect for sanitation in the community. This could also be a response to the urgent need for improved sanitation for home based care in the community.

## **ACKNOWLEDGEMENTS**

I am very much obliged to a vast number of people of which I first want to mention the representatives Catherine Mbengue and Runar Soerensen for their commitment and support to the children and families in need of better sanitary conditions that made this project possible and feasible. Belinda Abraham went miles to make my visit to Malawi useful and pleasant (with special thanks for the emergency supply I got when my suitcase was missing). Jane Mlota helped with all the logistic arrangements and preparations for timely payments. Harry became a good friend during the many miles and many evenings we spent together. Field staff from PMT, CPAR and Concern Universal, together with Contractors, Headmasters, Teachers representatives for the communities and other people in the field, not only spent time with us, but shared their knowledge, experiences and enthusiasm. I have done my best to encompass all in this report, in the School Sanitation Catalogue, in Construction Drawings and the Support information. Finally I want to thank Domingos Chiconela and Mozambican team for their contributions to make the trip useful and enjoyable.

Mbabane in October 2003

Bjorn Brandberg

# Terms of reference

## Terms of Reference for the Revision of the School Sanitation Technology Catalogue for Malawi

### 1.0 Background:

The Government of Malawi, in conjunction with UNICEF and Department for International Development (DFID)-UK is implementing the School Sanitation and Hygiene Promotion Project (SSHP) in two districts: Kasungu, and Nkhata Bay. The purpose of the project is to develop and adopt programmatic approaches including national standards and guidelines for sanitation facilities and hygiene promotion on primary schools with links to the surrounding communities.

In June 2001, a national sanitation review was undertaken to assess sanitation facilities and identify a number of options to be considered for implementation in schools. The facilities assessed were latrines, urinals, and hand washing facilities. Three regional teams were established headed by NGOs: Concern Universal in southern region, Water Aide in central region and CPAR in the northern region. The teams visited 13 districts (Nkhata Bay, Mzimba, Rumphu, Chitipa, Karonga, Mzuzu City Assembly, Blantyre, Chiradzulu, Mangochi, Salima, Kasungu, Lilongwe and Ntcheu) and 40 facilities within communities and schools. During the review, children spoke very candidly about their sanitation facilities and gave good insights for improvements. From the findings, children appear to be effective and keen advocates for improved sanitation both in their schools and communities.

Based on the outcomes of the focus groups and review of the interview guides from both households and schools, the following points were highlighted for consideration in making design modifications to sanitation facilities:

- **Spatial planning of latrines is very important and often overlooked in sanitation promotion.**
- **Latrine spacing between girls and boys is important.**
- **The issue of theft in schools is a growing concern and effects the use and maintenance of facilities.**
- **Where no risk of collapse exists and the soil is easy to dig, pit depths should be increased.**
- **The front walls of multi-chamber latrines could be modified and used as part of a wall to a urinal.**
- **Children continuously stated the issue of privacy with latrines.**
- **Modification in the latrines for disabled and young children**
- **Improved workmanship, to ensure sound and safe structures.**
- **Multi-compartment latrines over a single pit**
- **School latrine designs recommended for the catalogue:**
  - Blair latrine / VIP using cement blocks
  - Traditional improved pit latrine with dome slab/ san slab, and with a permanent superstructure.
  - Double vault latrines
  - VIP
- **Urinals:**

#### **Hand washing facilities for schools**

UNICEF identified Mr. Bjorn Brandberg, an international consultant to take part in the sanitation review, and make technical modifications on the existing latrine designs. Some outcomes from the modifications were:

- Foot operated lid

- Female urinal
- Urine diversion in latrine to separate from solid waste
- Permanent latrine structures
- Latrines with hand wash facilities inside and waste water diversions
- Improvements for ventilation, and construction of roofs

A draft catalogue was made with the inclusion of these options. A follow-up training with district and national counterparts on the various sanitation options was held in February 2002. The options were further reviewed at district level to identify four options to be presented for school selection. A number of options were to be constructed in cluster schools to serve as models for other schools and communities.

In July 2003, a review of the sanitation options catalogue and designs being implemented was held with project partners. The major concern for UNICEF was the fact that despite the numbers of options in the catalogue schools/districts were opting for the traditional designs. The review brought up some issues related to the catalogue:

- The draft catalogue needs to provide better guidelines, standards and specifications for latrine, urinal and hand wash construction. Where possible, separate and detailed drawings of each modification should be presented.
- There should be inclusion of other designs, which were identified in the national sanitation review but did not appear in the catalogue.
- Catalogue should be made user-friendlier to allow officers to facilitate choice among communities/ schools with limited exposure to sanitation facilities while at the same time having sufficient detail for local contractors to use. It is understood that the catalogue should be to provide schools and contractors guidance in selecting designs. It should not be a technical blueprint for designs but at the same time it should illustrate as clearly as possible what modifications may be made to improve school facilities for students, particularly girls.
- The revised catalogue should also address current pitfalls, constraints, errors with existing latrine construction- therefore providing some sort of 'corrective guidance'

## **2.0 Purpose, outputs and inputs:**

### **2.1 Purpose:**

Following previous work in the development of a draft sanitation technology options catalogue, the Consultant will make modifications on the first draft by incorporating comments, observation and suggestions from project partners.

Under the Acting Head of Water and Environmental Sanitation, the Consultant will:

- Participate in the Study Tour of School Sanitation and Hygiene Promotion Activities in Malawi lending support for translation and interpretation based on his vast knowledge of Malawi and Mozambique and his fluency in both English and Portuguese.
- Evaluate school sanitation and hygiene facilities in terms of designs, materials used, implementation procedures, usage and sustainability.
- Present clear and concrete recommendations for improvements and identify opportunities that need to be sustained or strengthened in a report for project partners and UNICEF.

Revise Sanitation Technology catalogue by improving design depictions balancing the need for details with child-friendly and easy to conceptualise drawings. The revised catalogue will be based on the earlier draft Sanitation Design Catalogue with inclusions of new drawings

and revisions based on visits and discussions with project partners. Beyond this, there will be need to design at a later phase a user-friendly catalogue using pictures and drawings. This latter catalogue is not in the Terms of Reference for this consultancy.

The Consultant will work closely with identified District Building Supervisors and possibly locally identified artists to ensure good information exchange and capacity building.

## **2.2 Outputs ( Deliverables)**

The Consultant will be responsible for two main deliverables:

- Consultancy report with clear and concrete recommendations for improvements to the School Sanitation and Hygiene Promotion activities, with specific focus but not exclusively relegated to child/gender-friendly latrine designs
- Revised School Sanitation technology options catalogue-incorporating comments from project partners, students, teachers and observations.

## **2.3 Inputs/ Payments**

UNICEF will provide appropriate DSA and transport for the Consultant to participate in the Study Tour and community/school visits with project partners.

The total value of the contract is \$8400.00. The Consultant will be paid a daily fee of \$400.00 based on L4/ Step7, his experience, advanced education and past work with UNICEF. The Consultant will be paid 30% of the total contract fees upon signing of the contract. Final payment of 70%, will be dependent on the completion of trip reports, submission of all travel claims and receipts.

Because of the shortage of workspaces with the UNICEF office, UNICEF will endeavour to identify accommodation that has adequate office facilities and appropriate workspace.

## **3.0 Timeframe:**

The proposed consultancy will be for a period of twenty-one (21) days from 15 September to 5 October 2003. The Consultant will travel to Malawi for the 15 to 26 of September to participate in the Study tour and community/school visits with project partners.

The Consultant will return to Swaziland to finalize catalogue. The final deliverables will sent by postage with electronic copies in CD Rom by October 10, 2003.

## Comments to terms of reference

In section **1.0 Background** to the terms of reference a number of concerns have been listed and are commented on below:

- **Spatial planning of latrines is very important and often overlooked in sanitation promotion.**
- **Latrine spacing between girls and boys is important.**

Siting guidelines for latrines and urinals were discussed during the sanitation seminars and conclusions included in the draft catalogue (page 6). The guidelines were confirmed during this mission. See also Appendix no ....

- **The issue of theft in schools is a growing concern and effects the use and maintenance of facilities.**

Targeted are in the first hand are locks to wooden doors. Missing locks result in misuse after school hours on commonly also vandalism. Designs in the catalogue have been adapted to permit the use of security gates to the latrines where possible.

- **Where no risk of collapse exists and the soil is easy to dig, pit depths should be increased.**

In stable soil with no risk for collapse the standard depth have been set to 5.5 m. The security of the soil should be assessed by an experienced local person used to digging latrines and or wells. The need of lining can also be assessed by inspecting existing latrines with a torch. Minor erosion (100 mm vertically) close to the surface in the pit is due to moistening but the pit contents is acceptable and should not be considered as a serious problem unless other reasons give reason for concern

- **The front walls of multi-chamber latrines could be modified and used as part of a wall to a urinal.**

Yes. It can also be combined with a hand washing facility which empties in the urinal hence helping to reduce smell.

- **Children continuously stated the issue of privacy with latrines.**

This is understandable but the risk for abuse must also be taken in consideration. Bullying in latrines is not uncommon and can be traumatic for the pupils exposed to it.

- **Modification in the latrines for disabled and young children**

Entrances are recommended to have no steps, hence making it easier for handicapped children to use the latrines. Setting the SanPlat with an elevation 2-3 cm over the floor level will help blind people to find the drop hole and the foot rests with minimal risk of unpleasant surprises.

- **Improved workmanship, to ensure sound and safe structures.**

The visited latrines were with no exception well built, sound and safe. Details can always be improved. Most important is the training of the supervisors who will transmit the special hints that may be required. Interpretation of drawings is a bottleneck and trained project staff should be available to assist.

- **Multi-compartment latrines over a single pit**

Building a Multi-compartment latrine over a single (unlined) pit has proven hazardous as the long side frequently collapses under the combined load of the soil pressure and the load of the superstructure. Lining helps but partitioning walls make it safe as they prop up the long side. Partitioning walls are also required for the VIP pit ventilation system to function as planned as the rule of thumb is: One pit, one drop hole and one vent pipe. If not the airflow may go from one drop hole via the pit to another to another cubicle and you can have a serious problem of smell and flies<sup>7</sup>.

- **School latrine designs recommended for the catalogue:**

- Blair latrine / VIP using cement blocks

VIP/Blair latrines can be built in many ways and with many materials. The characteristic vent pipe of the VIP/Blair is recommended for school latrines but problems are common. A set of rules should be adhered to. A generous gap between the walls and the roof all around reduces the risk to the point where the risks may become marginal-to the point where the justification of the vent pipe can be questioned.

Burning of bricks takes a toll on forest resources. There are good reasons for the protection of the soil (rain and wind erosion) and eventually also for the rainfall. On the other hand it is a labour intensive technology very well known by the population in Malawi, which the population most probably will not give up until all wood is finished. On the other hand wood is a renewable resource as trees can be planted. Bricks can also be burned using other material like dry grass and husks as done in for example Madagascar.

Cement can only be manufactured in factories. It is a monetary drain on county side and the individual farmer. Making cement blocks, and especially compressed soil cement blocks is an interesting alternative but it requires equipment, which commonly is not always available.

- Traditional improved pit latrine with dome slab/ san slab, and with a permanent superstructure.

- Double vault latrines
- VIP

- **Urinals:**

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<sup>7</sup> For cases where the smell and fly problem has not been solved by technical means enzyme based products exist (E.g. TOILET SMART) which can help. The same products are also designed for reduction of the filling up rate.



**Hand washing facilities for schools**

# **Proposed policy on Establishment of School Latrines, use of SanPlats, Cubicles, SanCentres, , Doors, Urinals and Hand Washing Facilities**

Schools are chosen not only because of need, but also for their documented willingness to support community sanitation and hygiene improvements. Priority should be given to schools who have active health and sanitation clubs with a proven commitment to hygiene and health.

## **Establishment of SanCentres with Demo-latrines and hand washing facilities**

Chosen schools commit themselves through their School Leadership and PTAs to support community sanitation through:

### **Improving the existing school latrines**

- With SanPlats and general improvements, to become a good example for the community
- Construction of simple but functional urinals for boys and girls, to make the existing latrines more hygienic

### **Supporting improved sanitation and hygiene training**

- Teaching hygiene classes as life skills training
- Supervision of use and cleanliness of school latrines
- General support to the health and sanitation club
- Supporting child to child hygiene and health education

### **Support improved sanitation and hygiene in the community**

- Maintain and show demonstration latrines to the community
- SanPlat production for the community

## **Use of SanPlats**

The SanPlat is the key building element for improvement of latrines in Malawi. In order to strengthen this process the installation of SanPlats should be done with care not to damage the aspect and function and general appreciation of the SanPlat.

- SanPlats should be produced preferably with the all-in-one plastic mould, sanded and waxed to highest finish.
- San Plats should be installed after walls have been painted. If this is not possible the SanPlats should be sufficiently covered.
- SanPlats should be installed with an elevation of minimum 3 cm over the surrounding floor.
- Lids for SanPlats should be manufactured in such a way that it matches the quality of the SanPlat.

## **Doors**

Doors are often the first thing to get damaged on a school latrine; the use of doors should be reduced to where it is required for privacy reasons. For reduction of theft, steel gates with pad-locks on a chain are more appropriate.

### **Proposed policy:**

#### **Doors should be used for the following situations:**

- Toilet rooms for senior girls and teachers
- Other rooms where a steel gates are inappropriate for privacy reasons

#### **Steel gates should be used for the following situations:**

- Openings that need protection from theft and unauthorized access.

## **Urinals**

Urine normally is a completely harmless liquid<sup>8</sup> with considerable agricultural value. It is especially rich in nitrogen but also in phosphorus potassium and a wide range of microelements. Some plants, like tomatoes, may be sensitive to the salt contents (NaCl). For salt resistant plants like leafy vegetables, maize and other tall grasses, urine is an excellent substitute for chemical fertilizers, which lack the microelements. Its systematic collection for agricultural use may be of great importance for Malawi. Breaking the cultural barrier may be a challenge.

Urine has a strong smell. Mixing urine with faeces makes it worse. This is a reason why latrines commonly have a strong smell. This is specially true for school latrines, having many users.

An other problem is the filthiness caused by urination in latrines, as the floor commonly becomes seriously filthy, leading to that people refuse to use them. This problem is especially important for traditional latrines were mud floors are used. Introduction of urinals for both boys and girls is therefore necessary.

Urinals are commonly combined with traditional bathrooms which is a good solution that should be encouraged as the bathing water reduces the smell. The common use of diverting the effluent to some kind of plants makes good use of the fertilized water.

### **Proposed policy**

1. Urinals should be introduced as a first step in improving traditional latrines.

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<sup>8</sup> Urine is normally sterile. Exceptions are people infected with the bilharzia nematode (bilharziose) and hepatitis A.

Transmission of bilharzia (schistosomiasis) happens when the infected person urinates in waters infected with a water snail, which not is the case in school latrines and urinals.

Hepatitis A can be transmitted by urine the oral route. This is assessed as a minor problem most probably because most African children develop immunity in early childhood. Improved hand washing would eliminate this problem.

2. Urinals for traditional latrines should be made simple as an example of how a urinal can be made at the homestead.
3. New urinals should be built and taken in use before the new latrines are

## **Training of supervisors**

The experimental implementation phase of the SSHP Project has shown that there are problem in reading drawings. Selection of models of school latrines has been biased towards known models and little experimentation. Problem in reading drawings has also resulted in that the built latrines differ from the drawings in the catalogue.

As a first step to overcome this problem, it is recommended that demonstration latrines are constructed rather than showing on technical drawings. Further supervisors need to be trained in reading drawings and memorizing essential latrine building principles.

- It is recommended that the training is carried you as on the job training.
- Special attention needs to be paid to the training of active field personnel in key positions who would become the training of trainers.

If the trainers of trainer are not properly trained, there is a considerable risk that irrelevant information and technically inappropriate solutions will be disseminated over the country.