*Introduction to the 3 reports for*

# Evaluation of the Appropriateness of Ecological Sanitation in Relation to the Social, Cultural and Economic and Financial Context of Sri Lanka

**Constanze Windberg,**
**Consultant**

The opinions expressed in this paper are those of the author and do not necessarily constitute an endorsement by UNICEF.

**Structure of the document**

The Terms of Reference stated three major deliverables namely:

1) List of past project related to ecological dry composting toilets
2) Assessment of ecological sanitation options and approaches: 17 key questions
3) Stakeholder Analysis, identification of potential partnerships and alliances

This document contains one report for each of the deliverables (Report 1 – 3). Each report presents the respective findings and can be read independently.

Additional to the above mentioned deliverables a circular to be distributed by Ministry of Health was prepared, three power point presentations were prepared and a paper was presented at the 32nd WEDC conference in Colombo. The circular and the presentations are included in the electronic version. The WEDC paper is included after this section. It provides an overview of the findings.

The document is structured as follows:

- Cover paper including recommendations
- WEDC paper
- Terms of Reference
- Report 1 – List of current ecosan related activities
- Report 2 – Research on Key Questions a - p
- Report 3 – Stakeholder Analysis

**Recommendations**

(see also Recommendations in Report 1)

At the moment the conditions in Sri Lanka are very supportive for ecosan approaches. There is a momentum and several activities related to ecosan (see Report 1). The following recommendations based on the consultancy could be given:

Do not target the poor only!

The results of this consultancy, in particular of the stakeholder analysis, should be used soon as possible.

The Sanitation Task Force should form a working group and develop an action plan and strategies for the implementation of ecosan approaches, which target different stakeholders.

The establishment of an Ecosan Forum is recommended. The Ecosan Forum could play a key role in marketing and information dissemination and could launch a hotline, website or brochures.

Information dissemination and training should be priority at the moment. Training modules should be developed and distributed to different stakeholders. Alliances have to be formed and existing networks utilized. Misconceptions have to be addressed and the value of BOTH faecal compost and urine has to be explained. Make use of the mass media.

Education material, in particular posters explaining the use of ecosan toilets to be posted inside the toilet, should be developed soon as possible.

The experiences of the Pilot from 2001/02 should be properly evaluated. The presented results already contain an evaluation of visited sites. More attention should be paid to users perception on reuse of the material. A group discussion with ecosan users of the pilot phase is recommended. Technical adjustments should be implemented. This evaluation has to be disseminated widely. Additional pilot projects are not needed. The main effort should be in marketing ecosan approaches and implementing on a large scale.

Compost factories have to be brought on board.

Ceramic and up-market versions need to be developed.

The promoters of ecosan should built ecosan toilets in their offices.

Relevant policies and guidelines need to be streamlined. Responsibilities should be defined.

Research institution should coordinate their specific activities and identify knowledge gaps to be addressed by each institution according to their expertise. A link to the several ongoing Vermi-Compost research activities (e.g. Gami Seva Sevana, Kurunagale District, Makandure Agriculture Research Station, Horan Agriculture Research Station…) should be established.

**32nd WEDC International Conference, Colombo, Sri Lanka, 2006**

SUSTAINABLE DEVELOPMENT OF WATER RESOURCES, WATER SUPPLY AND ENVIRONMENTAL SANITATION

# Ecological Sanitation
# Compost toilets in Sri Lanka: An appropriate solution?

*Constanze Windberg, Germany, Philippe Barragne-Bigot, Sri Lanka*

*Ecosan toilets were introduced to Sri Lanka in 2001. There is an increasing interest in ecosan technologies with NGOs and INGOs and Ministries (Ministry of Urban Development, Ministry of Health). In 2005/6 approximately 50 ecosan toilets were constructed and several upcoming projects include ecosan technologies. However, there is no sound ecosan strategy existing yet. The efforts of the different stakeholders have to be bundled and streamlined. Misconceptions have to be clarified and the limited experiences in Sri Lanka discussed. To facilitate the sustainable introduction of ecosan, UNICEF contracted an international consultant to evaluate the appropriateness of ecological sanitation in relation to the socio-cultural, economic and financial context of Sri Lanka. Preliminary findings are presented in this paper.*

## Background

UNICEF WASH programme in Sri Lanka is providing essential support to line ministries, relevant district government agencies, NGOs and CBOs to meet the water, sanitation and hygiene needs of the Tsunami affected population. The assistance is also extended to include war affected and rural communities in non Tsunami affected areas.

Currently, the strategy is gradually shifting from relief to address construction and development perspectives.

Ecological toilets have already been promoted at pilot scale in Sri Lanka in 2001 (Calvert 2002) as a way to save water, provide sanitation where other alternatives prove infeasible. Several evaluation studies exist but core questions remain. An ecosan strategy is not finalized.

UNICEF and Government counterparts (MoH), partner NGOs (World Vision, Action Contre la Faim, OXFAM, ITDG) and other organizations hired a consultant to evaluate the appropriateness of ecological sanitation in relation to the socio-cultural, economic and financial context of Sri Lanka. The consultant has to answer a series of 16 questions covering technical, social and financial concerns. Preliminary results of the study are summarized in this paper.

## Ecological Sanitation

**Eco**logical **san**itation (ecosan) is based on the consistent implementation of the "closing the loop approach" (Nutrient Cycling), where urine and faeces are regarded as resources rather than waste. If collected separately and sanitized they can be used as organic fertilizer or as soil conditioner (see Figure 1). Ecosan is a holistic approach towards the treatment of all kind of wastewater – greywater (generated in kitchen, bathroom), brownwater (generated in flush toilet), yellowwater (urine and water), blackwater (faeces and water) – and undiluted human faeces. It provides viable alternatives to cost intensive and unsustainable central wastewater management solutions as well as to environmentally unsustainable on-site solutions such as pit latrines and septic tanks.

Ecosan approaches facilitate the improvement of sanitation and livelihoods and sustainable natural resource management without contaminating land and water resources (see Figure 1).

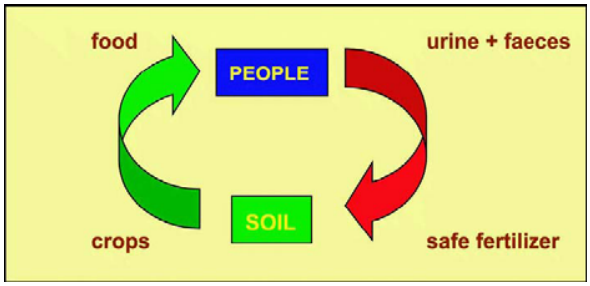



**Figure 1. Improving sanitation and livelihoods through the ecosan concept**

Source: www.ecosanres.org

### Ecosan Toilets

There is a variety of ecosan toilet technologies available, from cost intensive vacuum systems combined with a biogas plant to less expensive single chamber desiccation/composting systems. The on-site low-cost technologies for private households can be grouped in urine-diverting and non diverting systems, and in single and double chamber systems. Ecosan toilets are normally raised above ground.

## Ecosan Toilets in Sri Lanka

Even though forty urine diverting dry toilets (UDDTs) were introduced in Sri Lanka in 2001 by the National Water Supply and Drainage Board (NWSDB) together with EcoSolutions, UK, the ecosan toilet is still quite an unknown technology in Sri Lanka. Approximately 50 additional UDDTs were constructed in Sri Lanka in 2005/6 by several organisations. Due to the inaccessibility of the Northern and the Eastern regions of the country it is difficult to ascertain how many of these toilets are still in use. In general there is increasing interest in the ecosan technology in particular by INGOs.

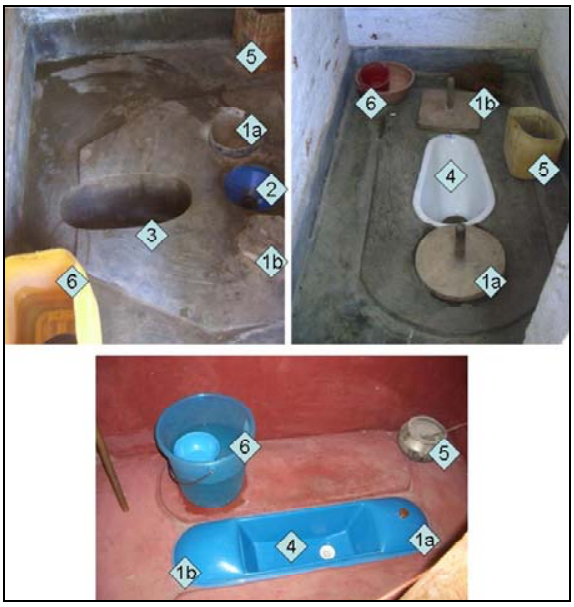
The technology used in Sri Lanka so far is the UDDT. The UDDTs in Sri Lanka are commonly referred to as "compost toilets". The systems are all double vault systems. Photograph 1 shows a newly constructed compost toilet and its immediate surroundings in Hambantota district. The picture also shows a compost bin distributed by local NGOs to several households. A sustainable ecosan concept should be imbedded in a holistic solid and liquid waste management concept.


**Photograph 1. Ecosan toilet in rural Sri Lanka**

Before usage the floor of the empty vault is covered with straw. After each use ash is added to cover the feacal material. The material is stored in the first vault until the second one is full. The storage time varies between one and five years. The sanitation process of the faecal material stored in the closed vault is a combination of composting and desiccation. The chambers are closed with bricks which have to be removed for opening. Urine and wash water are drained via a common pipe to a soak pit or a evaporation bed. On top of the soak pit trees or other plants are grown to use the nutrients of the urine (see Photograph 1). However, an active reuse, applying urine or composted/dried faecal material as fertilizer or soil conditioner to the soil, was not observed or documented.

The toilets are mainly outside the house, some are attached to the house and only two or three are inside the house.

Different generations of squatting pans can be seen in Sri Lanka. Photograph 2 illustrates different designs clockwise from the oldest to the newest model. Additional models are just being developed by the NGO Practical Action.




**Photograph 2. Different squatting pans in Sri Lanka**

1) Section for Faecal Material
   1a) Chamber in use 1b) Closed chamber
2) Section for Urine
3) Section for Wash Water
4) Section for Urine + Wash Water
5) Ash
6) Water for Washing

### Site Visits

In 2001 forty compost toilets were implemented by NWSDB. In 2005/06 approximately 50 compost toilets were constructed by several NGOs and INGOs. 26 compost toilets were inspected in four different districts namely; Colombo, Kaluthara, Matale and Hambantota. Twenty two of these toilets were built in 2001 and four compost toilets were built in 2006. All compost toilets were double chamber urine-diverting systems with squatting pans. Of the 26 inspected toilets only 14 were used, two were not accessible. Three compost toilets were converted into pour-flush toilets; two were abandoned, one compost toilet was demolished, one under construction and one broken.

The sites in Matale and Colombo are densely populated. Toilets are attached to the house or are inside the house, whereas at the other sites toilets were found outside.

Only in Bulatsinthale and Hambantota all existing compost toilets could be visited. In Matale 20 toilets were implemented by a local NGO in 2001/02. However, since the then responsible field officers left the area, the location of only 10 toilets is still known. Of the ten toilets known, seven were visited, two are said to have collapsed, and one is inaccessible in hilly area. The ten compost toilets in Colombo, in Rathmalana and Willorawatta, were installed

by a local NGO. At the time of the visit nobody at the office was able to verify the location of the five compost toilets built in Willorawatta.

All the used compost toilets were in a good to very good condition. There was rarely any smell and no flies. Often the urine / wash water pipes were damaged.

## Compost toilets - An appropriate solution for Sri Lanka?

Ecosan toilets are raised above ground, they do not use water, they are permanent, can be inside the house and no access for gully suckers is needed. Therefore ecosan technologies offer a solution for a wide range of problems, e.g. high ground water table, rocky or sandy soil, water scarcity, dense settlements. But also in areas without any of the afore mentioned problems, the ecosan toilet should be considered as an appropriate and environmentally sound sanitation technology. To get more detailed information on the advantages of ecosan technologies, please refer to the wide range of ecosan literature.

The ecosan approach offers appropriate solutions for every environment. However, ecosan toilets as such are not a guarantee for sustainability. For any chosen ecosan technology to be sustainable depends on political commitment, community awareness and acceptance, and the right marketing approach. Without a demand there is no use for an appropriate technology. Without a favorable political environment there is no incentive for the market.

Compost toilets have to be marketed as an attractive product not only as "silver bullet" solution for poor households or to difficult locations. Different target groups will need different approaches as illustrated in Table 1.

### Recommendations

The following recommendations are drawn from site visits and conducted interviews and are not yet comprehensive: the study is still ongoing at the time of writing.

***Creation of demand***

The existing pilot studies in Sri Lanka do not include any strategy for the pilot project to go to scale. Not enough attention was paid on creating and also meeting a potential demand. Table 1 illustrates possible approaches to create demand in different target groups. Actual approaches have to be site specific and are normally a mixture of given approaches. Ecosan toilets will be always one option out of several others. Since the most commonly used technology in Sri Lanka is the pour flush toilet, it is used in Table 1 as the technology an ecosan toilet would have to compete with.

**Table 1. Approaches according to target group**

| Target group | Approach |
|---|---|
| Population with low income | Present compost toilets is at least as modern as the pour flush toilet and has all the same advantages and still, depending on design, is the most cost effective option with the additional potential of income generation through the use or selling of the compost. |
| Population in Water Scarce Areas | Present compost toilets as the technology which has the advantages of a pour flush toilet, but does not need water. |
| Population in areas with collapsing soil, rocky ground, high ground water table | Present compost toilets as the technology which has the advantages of a pour flush toilet, but does not require any underground pit. |
| Population involved in agricultural activities | Present compost toilets as the technology which has the advantages of a pour flush toilet, but does also produce valuable fertilizer. |
| Population of middle or upper class with none of the above mentioned issues | Present compost toilets as the fancy new arrival from Sweden. Upmarket versions have to be available. |

To market compost toilets as a modern facility some changes of the design should be considered which would facilitate the functioning and acceptance. Particularly the location of the urine/wash water pipes should be altered to prevent damage. Small changes like changing the height of the steps, attaching a handrail or closing the vaults with a door instead of bricks will make a big difference towards user friendliness.

Asking people if they know compost toilets, they often answer "Yes" and refer to an ancient technology used by their forefathers. After further discussions these "ancient technologies" are found to be pit latrines. To have ecosan perceived as a modern and desirable technology, it is very important to take existing perceptions as the one above into account and discuss appropriate approaches for the introduction of ecosan. An open hole with a cover, which looks like the cover for the pit latrine will not be very successful.

The users have to be informed that an in house option is available. According to interviews with a wide range of stakeholders, ecosan users and non-ecosan users, a seat riser, also called "commode", is the preferred option. However, it seems not to be known by any level of stakeholders that a commode is also possible with composting toilets. A seat riser should be developed locally and presented as an option to the users. To increase the

attractiveness of compost toilets the options to develop a ceramic squatting pan or/and commode have to be explored.

> Compost toilets should not be an option for the poor only!

The trainers have to be trained on different designs and options and should themselves not consider composting toilets as an inferior technology or merely as an option for "poor people".

***Implementation of pilot ecosan projects***

The selection of the target group and location is crucial for the success of the project. As mentioned before the target groups should be from different social backgrounds. Scattered demonstration sites with single toilets are normally not very successful. It is better to have a whole settlement equipped with an ecosan technology. As such the toilet is not perceived as "the odd toilet handed over to poor people".

In the aftermath of the Tsunami several housing schemes still have to be implemented. Already finished housing schemes very often lack basic infrastructure such as sanitation. The planning of resettlement areas offers a very good chance to implement ecosan technologies on a big scale and therefore avoid problems which arise on the small scale. Management and storage options as well as reuse of the material can be organized in an easier way on a large scale than a small scale

It appears that there is no knowledge about the use of urine as fertilizer. Implementing bodies assume a reuse is not possible in Sri Lanka. However, the interviews carried out so far, show that at grass root level people would be willing to experiment. The future users of composting toilets should be at least informed about this possibility.

Ecosan is at a cross road of different sectors and should be therefore interlinked with other projects, such as solid waste management, livelihood, home gardening, agriculture trainings, nutrition, HIV/AIDS, woman empowerment and more.

Monitoring has to be taken seriously and should be an integral part of any pilot project. It should not happen that the location of pilot projects is not known. Well thought and consistent follow up actions are crucial for the successful introduction of a new technology.

***Policy***

At this stage it can be said, that there is a strong political commitment. The ecosan toilet (dry compost latrines) is recognized by the Ministry of Urban Development and Water Supply as a safe sanitation option in the revised National Policy for Rural Sanitation. However, the relevant regulations and guidelines also have to include ecosan toilets as an option and the information has to be passed down to the staff in the field. Every Ministry has to be informed, including the Ministry of Agriculture and the Ministry of Education. The Public Health Inspector (PHI) attached to the Ministry of Health (MoH) approves toilet construction. Without the PHIs approval no compost toilets can be built legally. Therefore a circular issued by the MoH should be distributed stating compost toilets as an authorized option.

## Summary

Compost toilets can be an appropriate technology for Sri Lanka. There is a big interest in implementing ecosan by IOs and INGOs and there is political commitment. This commitment has to be followed by action. Compost toilets will only be a sustainable solution if the demand is created and met by Sri Lanka itself and not by IOs or INGOs.

## References

Calvert, P. (2001) Ecological Sanitation in India and Sri Lanka, *1st International Conference on Ecological Sanitation*, China

Calvert, P., Seneviratne, A., Premakumara, D.G.J. and Mendis, U. (2002) Ecological Sanitation a success in Sri Lanka, *Waterlines* Vol 21, No 1, pp.22–24

Calvert, P. (2003) Bringing ecosan to South Asia, *2nd International Symposium on Ecological Sanitation*, April 2003, GTZ and IWA, Germany

Huba-Mang, E.M. and Panzerbieter T. (2005) Water is Life, Sanitation is Dignity, WTO Sri Lanka Mission 2, World Toilet Organisation and Habitat for Humanity, Sri Lanka

Ministry of Urban Development & Water Supply (2006) *National Policy for Rural Sanitation*, Battaramulla, Sri Lanka

Wickremasinghe, N.I. and Ranatunga, N.U.K. (2003) *Report on Evaluation of Existing Dry Compost Toilets (Eco-Toilets) in Sri Lanka*, National Water Supply and Drainage Board, Sri Lanka

## Contact addresses

Constanze Windberg
Researcher
Institute of Wastewater Management 1-02
Hamburg University of Technology, TUHH
Eißendorfer Str. 42
21073 Hamburg-Harburg
Germany
c.windberg@tu-harburg.de

Philippe Barragne-Bigot
Head of WASH Section
United Nations Children's Fund
5, Githanjali Place, Galle Road
Colombo 3,
Sri Lanka
pbarragnebigot@unicef.org

UNICEF- Colombo : TERMS OF REFERENCE (TOR) for individual or institutional consultant

Project/Program Title and Work plan Code:
Water, Sanitation and Hygiene Project. National Annual Work Plan. Activity 05 : Monitoring and Evaluation

1. BACKGROUND (attach documents if necessary):

UNICEF WASH programme in Sri Lanka is providing essential support to line ministries, relevant district government agencies, NGOs and CBOs to meet the water, sanitation and hygiene needs for the Tsunami affected population. The assistance is also extended to include war affected and needy communities in non Tsunami affected areas. Currently, more than 50 sector partners are providing Water, sanitation and hygiene services to the Tsunami affected population in camps and transitional shelters

Over the last 12 months UNICEF has provided and distributed important quantities of supplies, equipment and cash for construction of water, sanitation and hygiene facilities in many locations in response to the disaster.

Currently, the strategy is gradually shifting from relief to address construction and development perspectives. UNICEF has already outlined the water supply, sanitation and hygiene Plan of Action for the period 2005-2008 in consultation with government line ministries and other agencies. The plan involves construction of water supply schemes, environmental friendly and child friendly sustainable sanitation systems and sector capacity building.

Ecological toilets have already been promoted at pilot scale in Sri Lanka over the past decade as a way to save water, provide sanitation where other alternatives prove infeasible, protect the environment from faecal contamination and provide households with fertilizer and soil conditioner. Ecological toilets, also known as “Ecosan”, essentially isolate faeces from urine in a chamber, and through a process of composting or desiccation, destroy pathogens, which reduces the volume of the faecal pile while leaving the nutrients found in faeces that are beneficial to plant health. This type of sanitation thus allows its users to return the nutrients and organic matter to the larger environment without the pathogen load human waste would otherwise contain. Ecosan has an added-value compared to other sanitation methods in that the urine captured can be used as a fertilizer, while the treated faecal matter can be used as a soil conditioner. Nonetheless, no in depth thorough assessment and systematization of the pilot projects implemented in Sri Lanka has been so far carried out and some of key questions remain unanswered.

Based on the above, UNICEF and Government counterparts (MoH), partner NGOs (world Vision, Action Contre la Faim, OXFAM, ITDG) and other organizations would like to hire an international consultant for a period of three months to evaluate the appropriateness of ecological sanitation in relation to the social, cultural and economic and financial context of Sri Lanka. The consultant will work in close cooperation with Sri Lanka’s “Sanitation task Force” under the umbrella of the Water, Sanitation and Hygiene Coordination group.

2. PURPOSE OF ASSIGNMENT:

To evaluate the appropriateness of ecological sanitation in relation to the social, cultural and economic and financial context of Sri Lanka.

3. DUTY STATION:

Colombo and extensive field visits to project sites

4. SUPERVISOR (must be a staff member): Philippe Barragne Bigot

The consultant will undertake his tasks under the supervision of the head of the Water, Sanitation and Hygiene section, UNICEF-Colombo.

5. DESCRIPTION OF ASSIGNMENT: (provide detail and in quantitative terms, add pages if required)

| Tasks | End product/ deliverable | Time-frame | Deadline |
|---|---|---|---|
| 1. Take stock of recent experiences on Ecological sanitation and of pilot projects carried out in Sri Lanka during the past 5 years. | Progress Report No1: List of past project related to ecological dry composting toilets | First month | End of first month |
| 2. Visit potential sites of permanent resettlements with the assistance of UNICEF Zonal offices and Ministry of Health and assess technical, social and institutional feasibility of Ecological sanitation options and approaches in Sri Lanka. The following key questions will need to be studied:<br>a. Is the dry composting toilet with separation of urine and | Progress Report No2 | Second month | End of second month |

| | | | |
|---|---|---|---|
| water from solid excreta appropriate for any age group: children, adolescent, adult and old people?<br><br>b. Is the dry composting toilet appropriate for pregnant women ?<br><br>c. Does dry composting toilet require special user's instructions for menstruating women?<br><br>d. Does the content, texture and humidity of excreta influence the performance of composting toilet? (For instance would frequent liquid stools hamper proper performance)<br><br>e. Does the nature, composition and pH of the additive (ash, sawdust, soil…) influence the performance of dry composting toilet?<br><br>f. Do air humidity and temperature in the composting chamber influence performance? What are the optimum ranges of humidity and temperature and are they compatible with local conditions?<br><br>g. Is the compost obtained sanitized and totally free of harmful pathogens?<br><br>h. What is the capital cost of a 5 members' family dry composting toilet, compared to a standard pour-flush toiled connected to a septic tank?<br><br>i. What are the running costs (operation and maintenance) of a 5 members' family dry composting toilet compared to potential cash benefits (taking into account current market value of produced compost and of bananas/pineapple grown with urine/water)<br><br>j. What are the key marketing ingredients to generate demand for dry composting toilets from middle income and well off families in the Sri Lanka socio economic and cultural contexts?<br><br>k. What are the main institutional obstacles that would prevent ecological sanitation to go to scale?<br><br>l. Is it possible to design a mechanism (similar to flushing the toilet) to cover the solid excreta with ash or any other decomposing material instead of the existing method of manually covering with ash after using of the toilet?<br><br>m. Is it possible to have a flushing system for the urinal and washing area? Is it possible to design a bidet for urine and washing, where this system would also become a similar system to use of water closet and bidet?<br><br>n. What are the different options for the disposal of water and urine?<br><br>o. What is the possibility for this toilet to be included into a bathroom, together with the wash basin and the shower or any other modern facility? if it is possible what is the | | | |

| | | | |
|---|---|---|---|
| space requirements?<br><br>p. Can we use this toilet for multi-storied buildings? (flats & Apartment buildings) | | | |
| 3. Meet with members of national coordination group of water and Sanitation (OXFAM ,Helvetas, World Vision, AICF, TRO, ITDG, Malteser, UN-Habtitat, UNHCR, OMS, JBIC, ADB, Government Institutions) to identify potential partnerships and alliances. | Mission report | Third month | End of third month |
| 4. Carry out a stackeholders analysis with participation of selected members of the Coordination Group and Universities. | Stakeholder analysis incorporated into the mission report | Third month | End of third month |
| 5. Make a presentation to the members of the Water and Sanitation Coordination group and other participants (Universities, Professional Associations, private entrepreneurs) on Ecological Sanitation and its principles to illustrate how ecological sanitation is applied in developing countries to respond to the rights of the poorest, and to explain the general principles of ecological engineering. | Power Point presentation | Third month | End of third month |
| **6.** Organize a strategic planning workshop with the National Coordination Group to lay down the foundation of an Ecosan nation-wide programme. | 1 day planning workshop on Ecological sanitation | Third month | End of third month |

6. QUALIFICATIONS OR SPECIALIZED KNOWLEDGE/EXPERIENCE REQUIRED FOR THE ASSIGNMENT:

QUALIFICATIONS
University degree in Environmental Sanitation, Environmental Engineering, Cultural Geography, Ecology, Agronomy, or fields related to sustainable sanitation.

DESIRABLE SKILLS:

- Excellent knowledge of English. Knowledge of national languages,Tamil and/or Sinhala, will be an asset
- Be committed to child rights and gender issues.
- Excellent knowledge of computer management and application.
- Ability to work in a multi-cultural environment and under pressure

EXPERIENCE
A minimum of five years of relevant professional experience, preferably in the field of ecological sanitation or related societal planning activities

7. PREPARED BY:

| SECTION | NAME AND TITLE | SIGNATURE | DATE |
|---|---|---|---|
| WaSH Section | Philippe Barragne Bigot, Chief of WaSH section | | 4 February 2006 |

8. APPROVED BY:

| | |
|---|---|
| SECTION CHIEF/OIC | REPRESENTATIVE / SNR. PROGRAM COORDINATOR |
| DATE: | DATE: |

**SECTIONS MUST OBTAIN THE REPRESENTATIVE'S OR SPC'S APPROVAL PRIOR TO SUBMISSION TO HR SECTION.**