



Village Sanitation Program Nepal



**Project Partners:**

Healthabitat Pty Ltd  
Rotary Club of Dee Why Warringah  
Community Health Development Society Nepal (CHDS)  
Village Development Support Committees

For regular updates on the program visit  
[www.healthabitat.com](http://www.healthabitat.com)

# Village *Sanitation* Program Nepal



Healthabitat Pty Ltd, Program Coordination

Rotary Club of Dee Why Warringah, Program Coordination

Community Health Development Society Nepal, Project Management

Village Development Support Committees

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**Acknowledgments**

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Damber Bahadur Tamang

Budhi Man Tamang





Water is life, sanitation is dignity.



# Improving the health of a village

## *The Village Sanitation Program*

The program aims to provide village families in Nepal with the ability to dispose of human waste safely by:

- the construction and installation of toilets to collect and remove waste
- using septic or biogas systems, as appropriate, to treat and dispose of waste
- providing local rainwater storage for dip flushing and hand-washing
- using local expertise, labour and materials in every stage of the project
- providing education on sanitation and hygiene
- ensuring ongoing assessment and maintenance of the waste systems.



*Population* 22.6 million

*Gross annual income per capita (\$AUD)* \$38,110

*Improved sanitation facilities, rural  
(% of rural population with access)* 100%

*Improved sanitation facilities, urban  
(% of urban population with access)* 100%



*Population* 30.5 million

*Gross annual income per capita (\$AUD)* \$1,260

*Improved sanitation facilities, rural  
(% of rural population with access)* 27%

*Improved sanitation facilities, urban  
(% of urban population with access)* 48%



## Introduction to village life

*“The country is rich but the people are poor”.*

- An observation about Nepal by highly respected Nepalese surgeon Dr Ram Shrestha.

And so it is for the people of the villages perched on the steep hillsides of Kavre district in the upper Kathmandu valley with spectacular uninterrupted views of the majestic Himalayas.

The villages, with populations of around 400 – 1000 people, are of the Tamang ethnic group, practising Buddhism in a principally Hindu country. Whilst they are not far from a major administrative centre, they are marginalised, as an “Indigenous” ethnic group, and are often overlooked by local development programs. Their daily lives are taken up with farming for a largely subsistence existence. Women do much of the hard farm labour. Some of the younger men join the swelling ranks of workforce sent to countries such as Qatar, Dubai, and Iraq where they are used as cheap labour, but they somehow manage to send small amounts of money home to their families.

Village children attend local schools and education of the children is strongly supported by the local communities, so that future generations can move beyond the high levels of illiteracy in their parents, and have a chance to create better opportunities for themselves. The lifestyle is communal with recognised family connections and responsibilities. Houses do not have the luxury of bathrooms or taps, water is often accessed at communal tap points, and water shortages are common. Villagers are forced to go to the fields to use a “toilet”: a hole in the ground with plastic sheeting providing makeshift shelter and limited privacy. Old people and young children often can’t make it to the fields.

Cooking is mostly done indoors on open and smoky fires in unventilated rooms. The diet is largely rice and vegetable based, with occasional supplementation of meat usually at festival times, or when families raise some money.

However the villagers demonstrate an incredible generosity of spirit and welcome, touching the hearts and minds of those who visit them and who take the time to experience some of their village life.

Namaste and Lhaso!!



# Project History

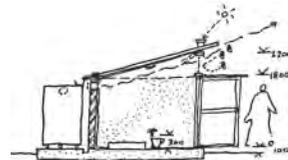
## *November 2006*



Community Health Development Society (CHDS) and Rotary are invited to Bhattedande village, Kavre District, to discuss issues affecting the daily lives of the villagers. Water supply, lack of toilets, education, and income generation are identified as key priorities.

The Sree Tamang Village Environment Development Committee (STVEDC) is formed in Bhattedande, to work with CHDS, Rotary Club of Dee Why Warringah and Healthabitat to develop a toilet sanitation project.

## *April 2007*



Healthabitat works with the villagers to plan the first stage of the sanitation project. Discussions occur about:

- the design of the toilet buildings
- using a biogas digester or septic tank for waste management
- the need for water and collecting water from the toilet roof and storing the water in a tank for dip flushing and hand washing
- making an agreement about how the partners will work together.

Villagers access water at 10 tap points located throughout the village. The villagers gather water from these 10 taps twice a day when water is released from a header tank. They fill buckets and metal vessels and carry them back to their homes.

The local plumber and construction coordinator work with Healthabitat to set up water quality testing. Water quality testing commences and the local villagers are trained to complete the testing regularly over 12 months.

Water meters are also installed to measure average daily use from 3 of the 10 tap points located throughout the village. Plumbing repairs and modifications commence on the first day of the project.

Since then, a piped water network supplies Bhattedande village.



The project partners agree to start Stage 1 of the toilet building project by constructing only two toilets, one with a biogas and one with a septic waste disposal system. The project will be managed by CHDS Nepal, and will use local labour and materials. This “trial” will allow for all partners to gauge their ability to effectively work together, plus the villagers will have a chance to observe the process of construction, view the results, assess their appropriateness and apply any modifications if necessary for the continuation of the project.

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### *July 2007*

The project achieves accreditation with Rotary Australia World Community Services. Project number 66/2007-08.

There is satisfaction with the two trial toilets and the project begins in earnest.

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### *July 2007 - November 2010*

A total of 58 toilets with either septic tank (38) or biogas (20) waste systems have been built in Bhattedande. Villagers have been instructed in toilet maintenance and regular hygiene including hand washing with soap. Two local women have been trained to inspect and report any faults with the toilets as part of the ongoing maintenance.

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### *April 2011*



The project moves into two more Tamang villages, Arubot and Dandagaun. A skilled team was developed from the Bhattedande project, and this team, in coordination with the management of the CHDS team, leads the project in the next two villages. Each village develops a local management committee whose members are encouraged to participate in the activities of the project, and some of them have gained employment in the project.

The same methodology applies, and two trial toilets are built first in each village. Once approved, and with any design modifications, the project is rolled out in two stages each year, one before and one after the monsoon time. The target for these two villages combined is 100 toilets.

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### *2012 onwards*

Works continue.

# Removing waste safely

## *The Toilet building*

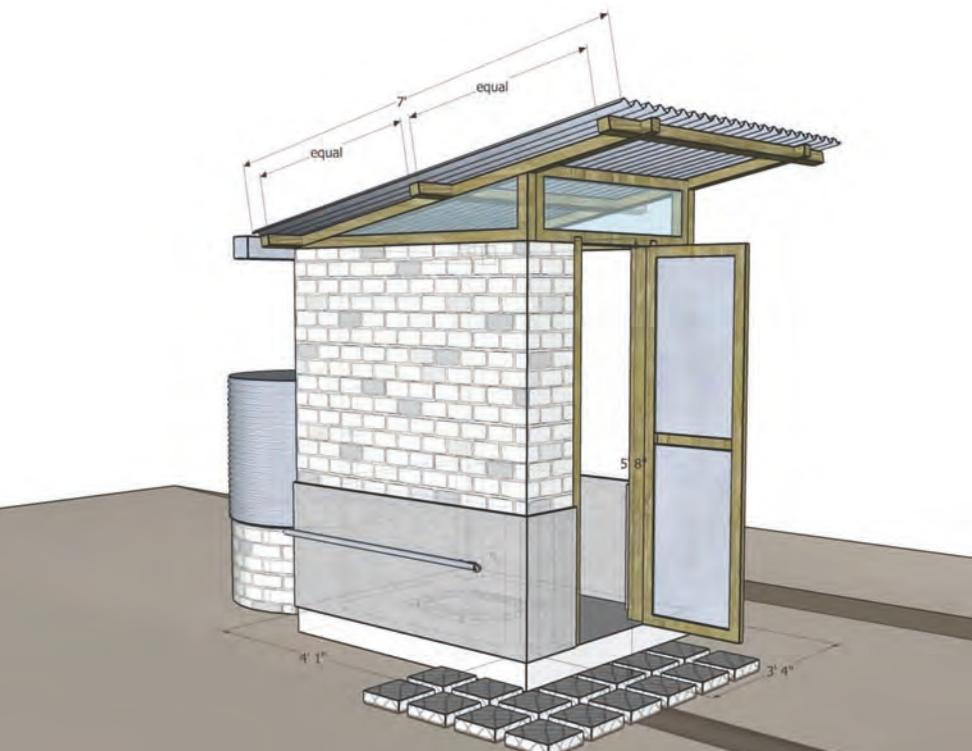
The toilet buildings are all external to the houses.

Design considerations included easy access, privacy, security, rainwater collection, available land and ease of maintenance.

The toilet building design was developed in consultation with village families and CHDS. Healthabitat developed drawings to communicate the design, and the construction process uses building techniques and materials that are regularly available and familiar to the Nepali team, including the biogas technology.

Features of the toilet include:

- locally made and sourced building materials, fixings, fittings and products
- secure roof fixing: in villages, roofs are often held down by the weight of rocks, as they are cheap and available. The toilet building design uses screws for more effective fixing of the roof and less likelihood of polluting the rainwater collected off the roof
- generous roof overhangs to keep the entry dry during the wet season and maximise rainwater collection
- an Asian style pan with dip flush toilet: dip flushing is a manual flushing technique using water from the internal tap provided to flush away the human waste
- the toilet pan is installed level with the concrete slab surface to make cleaning easier
- a locally sourced polyethylene rainwater tank which stores 500 litres of water. This tank supplements the often inadequate village water supply, provides water for dip flushing the toilet pan, cleaning the floor, and for hand washing using the external tap
- locally sourced timber roof structure in-filled with mosquito mesh above the brick walls and door frame to provide light, cross-flow ventilation and protection from insects, whilst maintaining privacy and cooling the space
- an external lock on the door to keep the toilet secure and enable it to be well maintained by the owners
- locally made concrete pavers laid on the ground to prevent mud being carried into the toilet by the user, particularly in the wet season
- a clothes hook to enable the toilet to be used for changing clothes and hanging towels
- a brush for cleaning the toilet.





## Removing waste safely

### *Collecting rainwater for dip flushing and handwashing*

*“Basic knowledge and understanding about the connection between hygiene and disease can save lives. The simple act of washing hands with soap (or ash, or earth) and water after going to the toilet is estimated to reduce diarrhoeal disease by a third.”*

- WHO/UNICEF 2000 Human Waste Report. 2002



Even though some villages might have a reticulated water supply, water is at a premium. Using a metered water supply means potentially increasing monthly usage costs, and those householders with no access to a reticulated supply have to cart water for long distances from communal supply points. The toilet building design therefore includes a rainwater tank to collect rainwater from the toilet building roof. The water from the tank was originally intended for dip flushing, hand washing and cleaning the inside of the toilet building. Residents now consider the tank as their household supply where clean water is stored for other household and personal use. Since the project started, residents with a toilet building have commented on the lower incidence of gut infections and diarrhoea in the children, because they now have the ability to wash their hands regularly.

CHDS and the village committees run formal hygiene and hand washing sessions with villagers, particularly with women and families. Regular monitoring and inspections by trained local teams provide ongoing reinforcement of correct usage of the toilets, and appropriate hygiene practices.



## Removing waste safely

### *Human waste to crops: The Septic Tank System*

The septic tank system is used when families have small areas of land and no large animals, such as a buffalo.

The nutrient rich effluent produced through a septic tank treatment system is used on the fields to enhance the crops, and also provides some financial relief from having to buy expensive fertilisers.

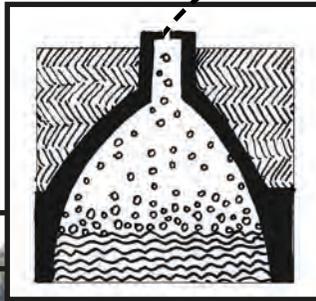
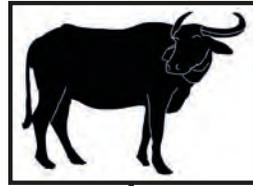
The septic tank system is constructed on site from concrete and bricks and the internal surface is hard rendered.



The septic tank works by:

- collecting human waste through the toilet pan which is dip flushed using less than one litre of water
- the waste water passes into the first chamber of the septic tank where solid waste is treated by natural bacteria
- the treated waste water passes through to the second chamber where further settlement and treatment of any remaining solids occurs
- finally, nutrient rich effluent is piped underground from the second chamber to the surrounding crops and is a valuable fertiliser.

Approximately every ten years the accumulated sludge from the first chamber needs to be removed, which also provides additional valuable fertiliser.



## Removing waste safely

### *Human and buffalo waste to cooking gas: The Biogas System*

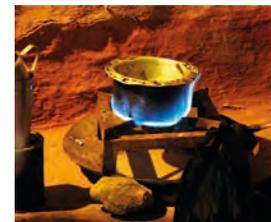
The families receiving a biogas system must have land near their house that is large enough for all the components of the system, and they must also have a large animal, such as a buffalo, to generate enough waste for the biogas system to function effectively.

The key element in this system is the generation of methane gas through the breakdown of the waste, which is then used for cooking inside the house.

Replacing wood fires with gas in indoor kitchens is a healthy and cheap alternative to traditional cooking methods using smoky indoor fires which, combined with poor ventilation, cause ongoing respiratory and eye infections.

Cutting trees for firewood destabilises the steep terraced hillsides characteristic of Nepal's valleys. Landslides are an ever present threat particularly in the wet season. Tree roots are also useful to help filter and improve groundwater.

The biogas process works by:



- collecting buffalo waste which is mixed with a small volume of water
- combining this with human toilet waste in the biogas digester
- producing methane gas from waste breakdown
- collecting the gas in the biogas digester dome
- extracting the gas from the top of the dome shaped digester using the gas pressure
- connecting pipes from the digester directly to the house to provide gas to a single burner in the kitchen
- and finally, the solid waste exits the digester to be used as a high value fertilizer on crops.



## Staging the development

Important to the success of the Village Sanitation Program has been the structure and management of each project.

Every project starts small, building only two toilets, to give local people the chance to see the toilet, waste systems and the full building process. It also tests the village's financial, in-kind and organisational contribution to the project.

Each project then builds 10-15 toilets per stage and completes 2 stages a year; building before and after the monsoon rains occurring in mid year, when site conditions preclude building works.

The capacity of the local teams determines the number of toilets that could be built per stage. Each stage involves the following planning and management by CHDS:

- liaison with the village committee
- family selection
- septic tank or biogas system selection
- family contracts completed
- collection of the cash contribution from each family
- site selection and planning
- engineer approval of the works, site drawing and family approval
- project budget preparation
- budget approval.

CHDS then coordinates the construction work that involves the following:

- purchase of materials
- transport of materials to each building site
- construction works
- payment of all staff and materials suppliers
- quality control.

At the end of every stage the village hosts a 'key handover ceremony' with participation in the official handing over of the keys to the newly finished toilets by committee members, families, CHDS representatives, and donors occasionally travelling to Nepal.

Some of the lessons learned and the benefits of the staging are:

- residents understanding the benefits of biogas in a working kitchen after the two trial toilets are built, which in turn alleviates the possible concerns about poor smell and hygiene
- avoiding construction during the wet season





- continuing improvement in construction and management standards through careful inspection of completed works at every stage
- overcoming local misunderstandings about how a septic system functions: that is, the tank is not a big “bucket” that requires emptying when full, but that the constant outflow of treated effluent is a necessary part of the ongoing process of waste breakdown in the septic system.

Most importantly, villagers realise the project team is delivering on the initial “promise” of improving sanitation. The villagers have spent many years living with broken promises of improved sanitation.

## Labour intensive work



Building in the steep landscape of these Nepali villages comes with many challenges including restrictions in transport, and difficult access to sites and lack of appropriate tools. Heavy machinery is expensive and cannot reach most of the sites.



One of the major challenges is getting the building materials to the sites. Materials include brick, rock and cement, all of which have to be carried into each village. There are no roads through the villages, therefore materials are delivered to the nearest access road and are carried into the village in baskets on the backs of labourers, often women.



When construction of the toilet building and its waste system is complete, the most labour intensive parts of the building are hidden underground: the biogas digesters and septic tanks involve a lot of excavation, earth moving and construction work which is all done by hand.





# Measures of success

Date: 03 July 2008

Bhattedanda village is located at 30km east from the capital city Kathmandu of Nepal. In the month of Chait, 2043 BS (Feb 1987 AD), Bhattedanda village was establish as Dhulikhel Municipality ward No. #1.

Since than the people from the village has being requesting for the toilet program to the municipality as well as different national and international non government organisations (NGO's). The people have only received the promises but the program never came. The people were living with the hope that one day or other; the toilet program will come for the benefit of this community.

In the month of Fagun 10, 2063 BS (April, 2007) Australian citizens Mr. Paul and Sandra together with Bishnu Shrestha chairperson of CHDS Nepal had come to our village and met with people of this village.

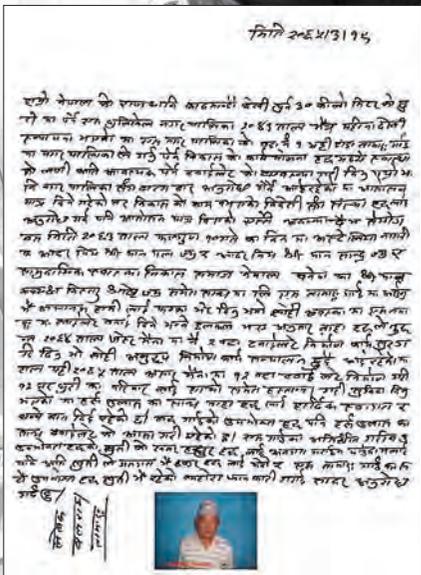
The both the team discussed on the need of village and promised to build the toilets for the villagers. According to the meeting with the villagers, immediately in the month of Jestha, 2064 (May, 2007), the construction of two toilet was started and as the construction work is continued, recently in the month of Asar 2065 BS (June, 2008 AD), the twelve toilet including first two construction and modification was completed and Mr. Paul and the team has hand over the toilet key to house holder families.

I am very happy and delighted with this development work happening for the people of this village, like wise all the village people are also very happy to see the development in the village. The villagers are welcoming and giving thanks from the bottom of heart to Paul, Sandra and Bishnu Shrestha.

The villagers who have not received the toilet are also hoping to have the toilet for them as well. I am feeling very happy for being able to inform you all about the joy and happiness that the villagers are having and sharing.

On behalf of villagers, I am very please to inform you all that all the village people are very happy and delighted to see their dream come true. So, I thank you all.

Bala Ram Tamang



\*Note: Mr Bala Ram was a resident in the first village where the sanitation program commenced work. At the time of writing the letter his family had not received a toilet but he was highly supportive of the program. Mr Bala Ram Tamang's letter was translated from Nepali to English by Bishnu Shrestha.



## Measures of success

### *A marriage between Ashish and Sarjana*

Having a toilet at his house heightened the attraction of Ashish Lama for Sarjana, a young girl visiting from a nearby village, who was captivated by Ashish as he danced for the audience at a Tihar festival concert in the village. She started to spend time with his family and realised their toilet was one of the very few in the village - Ashish's family had one of the two trial toilets constructed right at the beginning of the sanitation project, a septic system. This time of the year was the prelude to wedding season, so Sarjana's emotions started to stir. One day while the family was working in the fields, the sanitation team installed a solar light in the toilet. When the family returned home in the dark, the light shone brightly. This was almost too much for Sarjana - a good looking guy who danced exquisitely, a clean and working toilet at his family house, and now a light, which is a symbol of good luck. The deal was done between the two families and the wedding took place after three months. Twelve months later the beaming couple had a beautiful baby boy named Kritam.

Since then Ashish has taken on increasing responsibilities in the program.

Starting by providing voluntary support he then became a paid member of the toilet construction team. He is now working on other project sites, supervising the construction works and the attendance hours of the day labourers.





## Measures of success

### *Villagers gain skills through this program*

The sanitation project is often the largest coordinated project ever conducted in a village. This has given the villagers experience in working with “foreigners”, awareness of the complexities associated with the management of this scale of work, as well as a realisation of the benefits in their lives through improved sanitation and biogas.

Team members often start working voluntarily (as each family’s in-kind contribution) and then use their newly found skills to become paid members of the construction team. One villager was invaluable in recording and monitoring the delivery and distribution of materials for the project, which resulted in less wastage of precious and increasingly expensive supplies. Another helped in many activities in the project by supporting the construction and plumbing teams.

Other villagers, through working in the projects, have developed skills in areas such as bricklaying and cement rendering and have subsequently been employed in skilled jobs outside of their village.

The work is not exclusively a male domain with young women trained in assessing and monitoring the condition of the toilet systems, septic tanks and biogas units, to assist maintenance. They also provide information to the villagers about hygiene.



before biogas



after biogas



## Measures of success

Without available health data, we offer some comments from residents on the improvements in health and the village environment as a result of their sanitation program.

### *The toilet building*

*“Now there is not so much shit on the paths”.*

*“No need run looking for a place to pass the shit every morning”.*

*“I have my privacy”.*

An unexpected benefit of the toilet building was the privacy it offered, particularly for women to change clothing.

### *The treatment of human waste*

*“The children are not so sick with diarrhoea in the rainy season”.*

### *The biogas systems*

*“No smoke and no tears”.*

*“Before my biogas I couldn’t walk to the top of the village without stopping and coughing many times. Now I can easily walk there”.*

*“Less consumption of fire wood”.*

*“Tree in my farm have all its branches”.*

*“Less expenses in chemical fertilizer and more organic fertilizer in the farm”.*

One resident has recounted the detailed story of trebling his production of spinach by using the ‘super’ fertiliser that comes from the biogas digester.

# Community Health Development Society, Nepal (CHDS)

## *Village Sanitation Program Management*

The CHDS team provides project management guidance, as well as ongoing liaison with the Australian partners.

The CHDS team also has skills in dentistry, accounting and family planning.

The team members have embraced the challenges of the Sanitation Program and provide some comments on the work.

*"It was great and different expedition in my work. Professionally I am dental assistant and was managing and performing preventive dentistry. The first Village Sanitation Project was totally out of my work experience. This was a great experience in different field of community development work and now I am working for teeth and toilets!" Bishnu Shrestha CHDS Nepal*

CHDS hopes this project will achieve improved health and hygiene for all the villagers in each project to decrease the incidence of preventable disease and infection, particularly in children.

CHDS also hopes that through improved environmental conditions and health, each family will have a better chance of developing their economic status, and assist in providing access to better education for upcoming generations.



From left: Jaya Mangal Baidya (administration and logistics), Bishnu Shrestha (Program Management)



From left: Punam Kayastha (accounting), Renu Thapa (dental nurse), Sábita Shrestha (assistant), Gita Shrestha (educator)



CHDS, construction team and village committee members



## Village Construction Team



Skilled local trades people and villagers trained in new skills and how to construct the toilets and wastewater systems are the backbone of the program.

There are far too many to list in this booklet and the team is constantly growing and changing as the program provides training and more extensive work opportunities (outside the program) for team members.



Some of the team members involved over the last few years are noted here and their skills include – carpentry, biogas construction, masonry construction, plumbing works, site and material management, supervision of works, maintenance inspections and evaluation.



Some of the many people who have participated in the Sanitation Program construction work:

Surya Lama Tamang – plumbing and construction manager

Asish Lama Tamang – field supervisor

Tri Ratna Manandhar – carpentry

All Nepal Biogas Company – construction of the biogas systems,

Representatives from the village committees are on site during construction liaising between families and work teams and supporting each project.



# Donors

The Village Sanitation Program relies on the generosity of donors to make this work possible.

The investment by donor families, student groups, organisations and individuals directly benefits the families who receive a toilet.

Donors are matched with recipient families and each donor receives a report at the completion of each stage with a photograph of the family and the official key handover (see below).

All donated monies go directly to the program with any on costs for supplementary program management, design development and promotion paid for by Healthabitat.

Donations are tax deductible for Australians as the program is accredited by Rotary Australia World Community Service (RAWCS).

**For details visit the Healthabitat website**

<http://www.healthabitat.com/healthy-living-projects/nepal/donate-to-nepal--2>



**House 25** Shova Rani  
4 people. Septic

*Rotary Club of Dee Why Warringah.  
Healthabitat Pty Ltd.  
Community Health Development Society Nepal.  
Sree Tamang Village Environment  
Development Committee, Bhattedande Village.*



**Donor Family**  
Michael and Kerry O'Brien



## Making a long term investment in health not building poverty

### *The not so 'cheap' toilet*

In Nepal, Healthabitat and CHDS are constantly finding examples of sanitation solutions that favour the very low initial capital cost “cheap” toilet.

The Village Sanitation Program aims at investing in the long term health of communities by removing waste safely. To achieve this, the program emphasises:

- building local partnerships and employing local people in all aspects of the program and in each village project
- increasing knowledge and practices regarding sanitary hygiene and safe waste removal
- providing waste removal systems and toilet buildings that have an anticipated lifespan of a minimum 25 years
- the use of local material and skills
- training and employment for previously unskilled people
- high quality technical solutions, regularly assessed and improved
- quality assurance and evaluation
- budget setting and control for each stage of a project
- a family contribution both in cash and in kind
- the ongoing maintenance of the toilet systems.

The Village Sanitation Program looks at investing for the long term in health hardware, people and their health.



## Other impacts of the Village Sanitation Program

The connection between CHDS's Dental Program and the Village Sanitation Program highlighted the lack of water and functioning toilets in the school attended by 400 children from Arubot and Dandagaun villages. Funds and school support, combined with the skilled Nepali team, resulted in the school having 5 upgraded toilets, a water supply, and new taps and hand basins for teeth cleaning and hand washing.

The Village Sanitation Program and the contribution to it by CHDS and the local teams was an important part of Healthabitat winning the 2011 World Habitat Award. This has allowed the work to be recognised internationally.

Some of the donors who have contributed generously to the program have now visited the family they supported in getting a sanitation system. They return to their homes to spread the word about the Program.

Through the Sanitation Studio, established in 2013, there has been generous support from a range of professional plumbing organisations and university students both of whom have added valuable design improvements to the future Program.

International and internal Nepali visitors have come to the projects to learn about the details of the Program and have been hosted by CHDS and the participating villages. They spread the word about the principles of removing waste safely and apply these principles in their own programs.



For more information and updates on the progress of this program please visit:

[www.healthabitat.com](http://www.healthabitat.com)

