

Evaluation of a rural sanitation program in Vanuatu with management recommendations

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Abstract

In 1988, a rural sanitation program was initiated on Vanuatu with funds from UNICEF Pacific. The Ministry of Health aimed to increase the use of Ventilated Improved Pit (VIP) latrines from 12% to 65% by providing materials to construct nearly 20,000 VIP latrines. When foreign funds ceased in 2001, the Ministry of Health (MOH) surveyed the communities and found that approximately 60% of the constructed latrines were in poor condition or not in use. Between 28 Nov and 9 Dec 2003, I conducted community focus groups and latrine surveys with 19 villages in three geographic regions on Tanna Island, in Tafea Province, Vanuatu, and interviewed the regional health nurses in these regions. My findings indicate that VIP toilets are not widely used on Tanna, as a result of inadequate knowledge on latrine construction and maintenance, and the ventilation pipe, meant to reduce flies and odor, is used improperly. The sanitation program on Tanna needs to be reinstated, but should target a small number of communities at a time to ensure that community education and capacity building are specific to the needs of each village. The MOH will need to trial innovative ways to train and pay for community-level sanitation officers; suggestions are provided in this report.

Keywords: rural sanitation program, Vanuatu, evaluation, recommendations

Introduction: Vanuatu Rural Sanitation

The UN member states in attendance at the United Nations Habitat Conference in Vancouver in 1976 and the United Nations Water Conference in Mar del Plata in 1977 agreed that by 1990 all the world's population would have access to safe drinking water and hygienic excreta disposal (Feachem 1980). Thus commenced the International Drinking Water Supply and Sanitation Decade (1981-90), where many countries were encouraged and assisted to increase their annual investment in environmental health infrastructure. A rural sanitation project (RSP), funded by UNICEF Pacific, commenced in 1988 on the South Pacific nation of Vanuatu. Goals were set to provide the population of Vanuatu with Ventilated Improved Pit (VIP) and/or Water Seal Latrines, to strengthen local management capacity by integrating sanitation and water supplies, and to improve communications support through education activities and publicity drives (Vanuatu Health 2001).

It was estimated in 1988 that 12% of the Vanuatu rural population had access to a VIP, 60% used a basic pit latrine and 27.4% of the population did not use latrines. The goal to construct nearly 20,000 VIP latrines was developed in an attempt to increase the population usage of VIP latrines to 65% and to reduce the diarrheal associated morbidity and mortality in children less than 5 years of age through improved sanitation practices, knowledge and infrastructure at the village level (Vanuatu Health 2001). The Ministry of Health (MOH) reported a high project achievement for 1991 and 1992 as a result of political enthusiasm, good organization, a full compliment of staff, active and successful mass media and public education campaigns, and the full support of the communities. Unfortunately, a year-long Vanuatu National Strike in 1993 and subsequent restructuring of the 11 local government councils into 6 provincial councils resulted in termination of employment for many of trained sanitarians (Vanuatu Health 2001). This severely affected the enthusiasm present in the early 1990's. UNICEF terminated their financial assistance to the Vanuatu RSP program in 2001 (P Rarua 2003, pers. comm., 25 Nov.), and available in-country financial resources for sanitation dissipated. A survey conducted by the MOH at this time found that approximately 60% of the toilets constructed since 1988 were badly functioning or not functioning at all (Vanuatu Health 2001). Community capacity needs to be fostered if villages and individuals are to maintain and manage their own latrines. Pakoa (2003, pers. comm., 25 Nov.) stated that households were responsible for the maintenance of the family latrines, and that the MOH would supply materials and education until resources ran out. A request by many villagers was that the MOH continue to be involved in the supply of materials and education. Unfortunately, the MOH has redirected available resources elsewhere since 2001 and the sanitation program and infrastructure in rural villages has not been adequately sustained. With this report, I aim to develop a rural sanitation program for the Vanuatu Ministry of Health for trial on the island of Tanna, in Tafea Province. Current financial, human resource and community infrastructure needs will be considered to improve sanitation on Tanna with minimal impact on the available resources. It is hoped that successful elements of this management strategy will be implemented on the other islands.

Current sanitation issues in Vanuatu

Vanuatu Health and UNICEF aimed to improve both sanitation (the physical infrastructure needed to reduce or eliminate contact with disease agents) and hygiene (the human behaviors that bring people into contact with the disease agent) in remote rural villages (Vanuatu Health 2001). Although it was originally assumed that the provision of latrines would be sufficient to improve public health, the RSP was re-adapted in the 1990's to facilitate continued education, knowledge promotion, and technical training on maintenance and upgrading (Vanuatu Health 2001). Behavior modification of the individual and community can be challenging, but is as necessary as the improvement and provision of better sanitation facilities (Abel 2001). Feachem (1980) stated that a community development project will work if there is a precisely designed and sustained relationship that leads to a continuous partnership between government and community. On paper, the MOH devised the foundation for such a partnership and the provincial health manager and public health directors were to support and direct these relationships (Vanuatu Health 2001). Area nurses and village health workers were to be increasingly involved in public education. Village sanitarians were to promote technical matters, maintain quality control, provide inspection training to village chiefs and village volunteers, and were to encourage active participation by community women. These networks were unfortunately not evident during my stay on Tanna and public health programs emphasized HIV/AIDS and family planning (I Taka 2003, pers. comm., 12 Dec; I Pusin 2003, pers. comm., 26 Nov) rather than sanitation and hygiene. I encountered former village sanitarians, but they were no longer employed by the MOH. Many villagers, especially the village chiefs, were aware of the RSP program and articulated the benefits of it, but this did not necessarily equate to properly constructed and maintained VIP latrines. Adequate maintenance, construction abilities and comprehension ranged considerably. For example, the village of Isiai in South Tanna had constructed immaculate pit latrines although they did not have the necessary PVC pipes to make true VIP toilets, whereas the adjacent village of Itapua believed that it was the responsibility of the MOH to build and maintain the toilets for the community. As one area nurse stated, the RSP program collapsed when the funds supporting the VIP project ended, and whatever progress had been made will be lost unless more is done (T Wilson 2003, pers. comm., 02 Dec.). What follows is an analysis of the Vanuatu RSP program and the sanitation situation, as I observed it on Tanna, in lieu of the sanitation strategy proposal.

The Ventilated Improved Pit (VIP) latrine is the cheapest and easiest to build of the sanitary latrines. It consists of a hole in the ground over which a shelter and appropriate toilet pedestal is placed. A ventilation pipe traps flies and draws away odors (Martin 2003). With a slightly offset pit, the contents can be removed without the need to relocate the toilet house (McGarry 1980) enabling the latrine to theoretically continue to function indefinitely. The Vanuatu MOH, however, recommended that the cement floor slab and ventilation pipe be relocated to a freshly dug pit before the old pit reached capacity (Abel 2001). Relocating the latrine encourages the construction of a new toilet house, to replace the older structure of decomposing palm fronds. In addition, the VIP toilet does not use flushing water and any compostable anal cleaning material, such as coconut husks or leaves, can be used (Abel 2001). Del Porto (2000) advocates the use of composting toilets that use aerobic composting processes to convert waste into soil. Unlike the VIP latrine, which can result in environmental contamination, the composting toilet will not pollute ground water and conserves water and resources (Del Porto 2000). In the double-pit compost toilet design, one pit will be in use while the contents of the second pit decompose; an adaptation of this type of latrine was reported to be widely accepted in Vietnam (McGarry 1980). Composting toilets are used in Samoa and Fiji in homes, parks and public use areas (Del Porto 2000), and the isolated Australian Indigenous community of Buru recently implemented compost toilets instead of VIP latrines (Levers 2003). However, compost toilets require frequent checks and maintenance, and the eventual removal of decomposed wastes (Martin 2003). Many of the people targeted for the Vanuatu RSP program would, in 1988, have had limited public health and sanitation knowledge. Village access is often difficult, with boats predominately used to service the 83 islands and many of the existing roads in poor condition or not extensive enough. The VIP latrine is ideally suited for distribution in these conditions where local materials and manpower are relied upon and low cost alternatives are essential. It can be assumed that composting toilets cannot currently be implemented because they require an advanced understanding of latrine maintenance and high personal finances (for material transport) not yet held by the majority of the rural population of Vanuatu. This should not be used as an excuse to ignore possible future application of this technology.

The Vanuatu RSP project aimed to reduce child associated mortality in children under 5 by 50% (48% death rate in 1986) and to reduce the incidence of diarrheal disease by 25% in children under 5 in villages served by the project (3.8/1000 in 1986) (Vanuatu Health 2001). Although a comparison between these national figures and recent data provided by the Vanuatu Provincial Health Information

System is not possible, it is evident that between 1999 and 2003 there was a decrease in reported cases of intestinal worms on Tanna (Fig 1). The number of reported cases of gastroenteritis (Fig 1), mild and moderate diarrhea, and dysentery (Fig 2) changed very little, but a decline is apparent in severe diarrhea. Tick Wilson, area nurse for North Tanna, stated on 02 Dec 2003 that the intestinal worm and diarrheal burden of disease is lower in villages serviced by the RSP program than in villages not serviced, but unfortunately could not substantiate these observations with case reports. Jaques Namri, the area nurse for South Tanna, attributed decrease in intestinal worms to an annual mass drug campaign that has occurred for 4 years and furthermore, claimed that the incidence of diarrheal cases has not changed (2003, pers. comm., 09 Dec.).

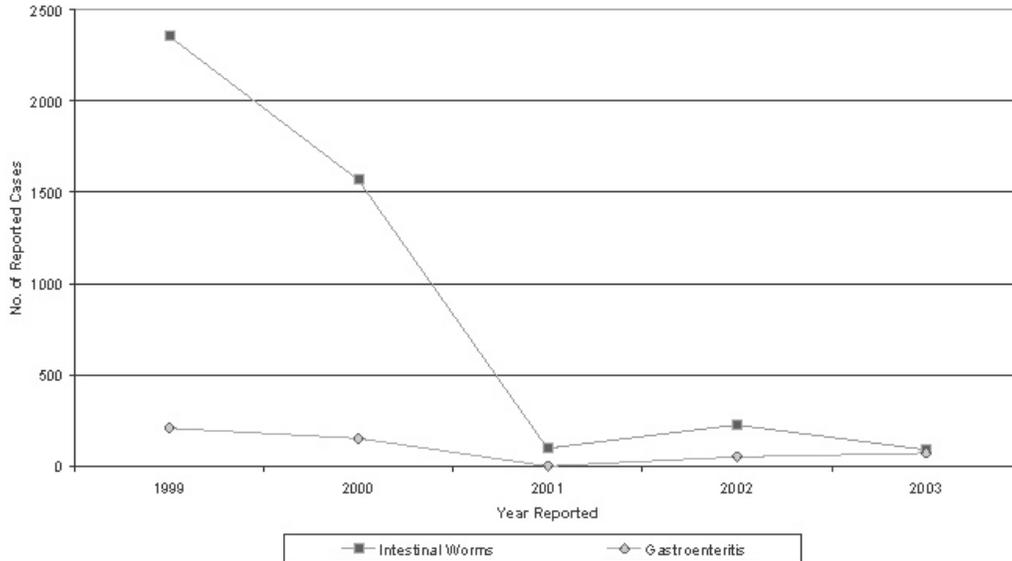


Figure 1: On Tanna Island, Vanuatu, reported cases of intestinal worms declined during the years 1999 to 2003, but levels of gastrointestinal illness remained the same.

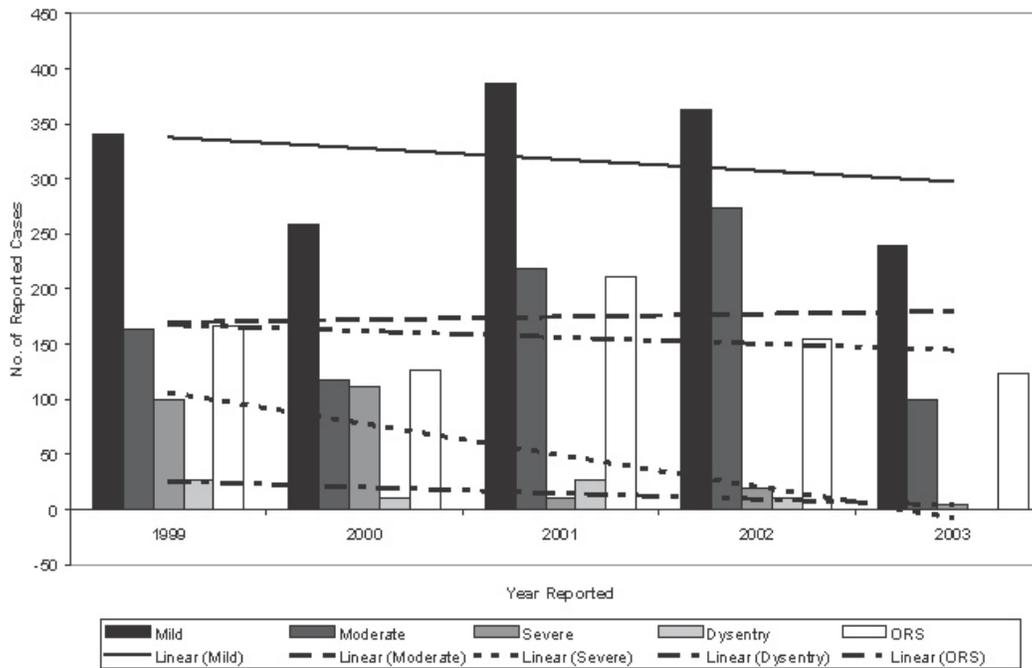


Figure 2: Only reported cases of severe diarrhea in children <5 yrs declined between 1999 and 2000. There was little or no change reported for dysentery, mild and moderate diarrhea, and ORS.

The Vanuatu RSP program depended largely upon international aid and ceased when aid ended. Feachem (1980) argued that although countries might be encouraged to increase their annual investment in water supply and sanitation, these increases will be overlaid upon a weak existing program. Long-term solutions and a successful program is dependant upon an efficient local government rather than on hurriedly implemented “complex community participation procedures” (Feachem 1980). Inefficiencies are present in Vanuatu, and are most evident in the condition of existing services. For example, the Tafea Provincial Ministry of Health has two vehicles to serve approximately 30,000 people on an island no larger than 700 km². One of these vehicles has not been in use for some time since the funds or mechanics to repair it are not available. The second vehicle is technically reserved for UNICEF, but is not in a suitable condition for the drive to South Tanna (the road was badly damaged by a cyclone in December 2002). RSP supplies purchased by the MOH for distribution on Tanna lay in unused piles behind the provincial hospital, mainly because there were no finances or personnel to distribute these supplies. Only three people are employed as Provincial Public Health Officers on Tanna and their time is devoted to HIV/AIDS awareness, family planning and vector borne disease control (I Pusin 2003, pers. comm., 26 Nov). Current thought is that sustainable development projects cannot be conducted in an isolated and fragmented manner since they require coordinated interdisciplinary efforts from health, education, economics and public works sectors, among others (NSA 1998; WELL 1998). It appeared as though development projects on Tanna were implemented independently of each other and tended to focus on a limited number of issues at a time. For example, water catchments were recently implemented in some villages, but sanitation was not revisited. This supports the notion that water is often given priority over sanitation by the general public (WELL 1998).

An excreta disposal system developed by Médecins Sans Frontières for use in emergency situations is applicable for long term sanitation programs. The problem must be identified, community participation initiated and organized, culturally and environmentally specific information collected, alternatives proposed on the basis of costs and technical considerations, and the system implemented with consideration given to social suitability, resources and geography etc (Arbelot 1994). Finally, the system requires maintenance and evaluation through continued education, inspection and monitoring (Arbelot 1994). National guidelines for the RSP project recommended that toilet house entrances face south or north to reduce incoming direct sunlight (Abel 2001). Nevertheless, the villagers in south east Tanna positioned the entrance to the east where prevailing westward winds unfortunately carried odors into other villages built uphill from the latrines. A village located on the coral beach on west Tanna was never educated to construct raised pits, which are advocated for in the Handbook for Rural Sanitation and Hygiene Promotion (Abel 2001). New pits were excavated every few months. These issues could have been addressed at any time from the initial survey stage to the evaluation stages. A sanitation program is meant to evolve, with defecation facilities being improved or replaced by more suitable structures as time and resources permit (Arbelot 1994; WHO 2003; WELL 1998). I saw no evidence that the RSP program had the opportunity or resources to progress to this stage.

The most common issues raised by Tanna villagers could have been prevented through a continuous partnership with the Ministry of Health. The most important issue was that of population growth and financial stability of new families. The Tannese people recognize that newly-weds have limited finances and resources and since new families as of 2001 are not covered by the RSP program, these families will not be provided with materials to build their own VIP latrines. Of the latrines I inspected, only one was in excellent condition (Fig 3), and the owner proudly informed me that she had purchased the materials herself. The remainder of the inspected latrines (some examples are provided in Fig 4) let in too much light, did not have a door to ensure privacy, did not have nets fixed to the PVC pipe (hence ineffective as a flycatcher), or had a poor seal between the slab and the ground. Additionally, rapid decomposition of local materials means that toilet houses are in a constant need of repair. It was a commonly held belief that continued education and regular visits by the Ministry of Health would help to alleviate these problems, but in general the communities expected the MOH to provide them with better materials to build VIP latrines.



Figure 3: This VIP latrine is one of the better examples of latrine construction and maintenance on Tanna Island.

The Vanuatu Rural Sanitation Program and VIP latrine project has increased the population's knowledge and acceptance of personal hygiene and sanitation (I Pusin 2003, pers. comm., 26 Nov.), but unfortunately the provision of infrastructure relied on foreign investment and emphasized community handouts. A new sanitation program will need to foster greater community independence and rely on available national and local resources.



Figure 4: Examples of poorly constructed and maintained VIP latrines on Tanna Island.

Management strategies

An effective evaluation of any developmental program requires consultation, action and reflection, a process that can occur in a simple manner at the village level, or with greater sophistication by national agencies and institutions (NSA 1998). At the village level, it may be sufficient to speak to the community, inspect their latrines and suggest modifications, a common request made by many of the villages I visited. In the Tannese culture, however, this task can be challenging, since an appointment needs to be made with the village chief in advance to ensure that the villagers will be present and not attending to their gardens. Dependence on agriculture for survival can be expected to affect community participation, especially where people prioritize their gardens over latrines (a variation on the water vs. sanitation theme mentioned by WELL 1998). The MOH originally targeted the village health workers, traditional community leaders and village chiefs (Vanuatu Health 2001), but hygiene promotion programs will need to selectively target men, women and children if the demand for and use of sanitation facilities are to occur (WELL 1998). Although community participation is regarded by many as the key method to build a successful and sustainable sanitation project (Hoque et al 1994), it should be kept in mind that community participation is a vague concept open to interpretation, and is easier to design than to implement (Feachem 1980). Regardless of how community participation is structured and implemented, it is essential that the approach to education fosters participation and is carried out with a humble attitude towards learning (NSA 1998). Otherwise, it may lead to an unsuccessful or unsatisfactory experience that may hinder acceptance by the community to new proposals or offers (Feachem 1980). The following proposal and summarized recommendations (Table 1) assume that the majority of the villagers are still accepting of the Ministry of Health and the Rural Sanitation Program.

Feachem (1980) asks an interesting question: "how many villages in the U.S.A., Canada or Europe run and maintain their own water or sanitation facilities? How many could without substantial and continuing support from local or central government?" The reality is that many communities in developed nations rely upon government involvement in sanitation issues. A water supply project in West New Britain, PNG (provides an interesting working example of government participation Findlayson 1997). Select villages, targeted on the basis of certain criteria relevant to the project, were required to sign an agreement with the funding agency and the Ministry of Health before the project started. Such an agreement ensures accountability from involved parties and establishes long term responsibilities by both the community and the MOH. A contract to be signed by the villages and the Vanuatu MOH should be integrated into the Vanuatu sanitation program.

Catch phrases such as ‘capacity building’ and ‘community participation’ need to be used with care. What do these phrases actually imply? That a village has received simple services in primary health and sanitation does not mean capacity has been built (NSA 1998). The growth in an individual’s capacity refers to their increased capability to make choices that are accessible, affordable and appropriate to them (Fisher 2002). Community participation is an education process that develops capacity by encouraging the villagers to make informed choices about their health and hygiene, rather than simply training them to use and maintain VIP latrines (WELL 1998). This process will be more effective on a community-by-community sanitation program, rather than on a standardized national program which, although it improves or addresses managerial administrative or financial problems, encourages an inflexible approach to participation by individual communities (Feachem 1980). A small number of pilot communities that already have components of, or understand the process of, VIP latrines and sanitation should be chosen for intensive training, since these communities will then become examples for other communities. The provincial ministry would be better situated to assist the villagers to procure materials for VIP latrines if it understood the problems of the villagers (I Taka 2003, pers. comm., 17 Dec.). Training will start with an evaluation of the community’s current understanding and expectations of the role of the MOH and of their own role in the sanitation program. Villagers will be encouraged to use and reuse materials already distributed to them by the MOH, and any additional materials that are needed should be provided at cost. This could be done in one of two ways. The village could demonstrate capacity in maintaining pit latrines for predetermined period, after which the latrines are upgraded to VIP latrines by the MOH. During this period, the MOH would be expected to continue to visit and educate. Alternatively, the MOH could sell VIP latrine building materials at a subsidized rate to the community. Although latrines were heavily subsidized in a Bangladesh sanitation project, households were charged a fee based on financial ability (Hoque et al 1994). It is preferable to educate the people and let them choose and acquire their own materials than allow them to depend on handouts (T Wilson 2003, pers. comm., 02 Dec.). By providing materials at cost, the community is encouraged to take responsibility for their own hygiene and sanitation.

Individual communities have different needs depending on local geography and social customs. Because a community-by-community approach to sanitation will require time, personnel and funds, ways to ensure job security for the people trained and employed as sanitation officer must be found. McGarry (1980) gives the example of a 3-week training course in Malawi for village-level barefoot engineers as an innovative way to “identify, evaluate, adapt and expand ‘unconventional’ levels of personnel” to aid in sanitation programs, but does not detail how this program worked. Taka mentioned (on 17 Dec 2003) that many Tannese people who are trained to make cement slabs do not have education in health. A health training course that covers basic health issues will need to be included in the training of the sanitation worker.

Sanitation officers should be paid employees of the Ministry of Health. In Bangladesh, a system was developed where contractors who built latrines were paid only after the funding agency received satisfactory completion reports from both project workers and community based supervisors (Hoque et al 1994). Village chiefs and regional nurses on Tanna could be designated to complete a checklist report on the sanitation officer after a project has been completed to maintain the honesty and integrity of the system and the efficient use of available financial resources. The sanitation worker may demand to be paid in cash, but other systems could be trialed. For example, Wilson (2003, pers. comm., 02 Dec.) suggested that local needs such as kava or chickens could be bartered in turn for time devoted to community sanitation. Another idea might be to approach the Ministry of Education and negotiate to levy the school education fees for the children of the sanitation officer.

Women, who traditionally manage water, sanitation, family health and child care issues (Hoque et al 1994) should be encouraged and empowered to take a leadership role in the sanitation program. In the Bangladesh water and sanitation project, women actively took part in the field planning and implementation stages of the project objectives, but only after consultation with the local leaders (predominately males in this patriarchal system) and an invitation to all the adult males, females and housewives in the community to participate (Hoque et al 1994). Women were often present and involved in my focus group sessions, but often did not voice their concerns or spoke through the men who were generally more vocal. Fakaia (2004) wrote that the positive contribution of women to development and change must be recognized and acknowledged if the Solomon Islands are to graduate from a welfare mentality to a mentality of empowerment and individual initiative. Education opportunities will promote the confidence women need to make demands for their own health and sanitation needs. Whereas men are responsible for the construction and maintenance of latrines (P Rarua 2003, pers. comm. 25 Dec.), women who are given the tools to plan and implement new latrines

will be in a better position to encourage their husbands to maintain the household sanitation infrastructure.

Many villagers complained that the palm-fronds used in the construction of the toilet houses decomposed too rapidly and allowed too much light in. I discovered an interesting innovation in South Tanna, though, in the form of a toilet house made of Bunyan tree lumber. The use of a more robust building material may facilitate the future implementation of a twin-pit composting toilet. Sufficiently decomposed fecal matter could either be used as garden fertilizer or dispersed into the jungle.

Projects dependant upon foreign funding run the risk of being unsustainable when aid ceases. The focus therefore must be placed on local resources and strengths. Continued education and regular visits by the Ministry of Health was a common request, to reaffirm the villager's growing knowledge and practice of sanitation and hygiene, and to discuss construction techniques. Although regular visits by the MOH would be sufficient, their role must be clearly defined and understood by the community. A written and signed contract could be considered, to help limit the variability I found in what the communities understood to be the role of the MOH. The MOH should target only a few villages at a time, and remain with those villages until all required latrines have been built. This facilitates a community-by-community approach and allows the program to be structured to the individual needs of each community. The role of women should be further defined and encouraged, to empower women's leadership with their family's sanitation and hygiene needs. If the cost to employ sanitation officers is prohibitive, the MOH could look to negotiate with the Department of Education to levy school fees for the sanitarian officer's children. Alternatively, a barter system could be implemented to assist or supplement the family with household or agricultural goods. Although some households will already possess the PVC pipes and cement floor-slabs, the MOH may want to consider ways to make this material available to villages and families who do not yet have these materials. These goods should be made available, either for a fee or as a requirement of proper village management of pit latrines. Endurable materials for the toilet houses should be explored since Bunyan tree lumber may be a viable alternative. Finally, the role of the MOH in sanitation must be continual if an impact on health is to be realized. The MOH is in no way bound to these recommendations (summarized in Table 1), and I encourage them to develop their own initiatives that may be more applicable to the current and local situation. This paper is intended as a framework and guide from which to develop and implement local sustainable objectives for village health, hygiene and sanitation.

Table 1: Summary of recommended management strategies for the implementation of a successful latrine sanitation program in Vanuatu.

Objectives	Strategies	Actions	Human Resources
Continue to build upon existing sanitation infrastructure	Find and use local resources and strengths - Health care workers, area nurses, NGO's - alternative longer lasting construction material	- Employ already-trained personnel - Find and use local building materials that will not decompose (e.g. Bunyan tree lumber)	Regional nurses and chiefs are valuable human resources
	Assess community sanitation infrastructure: 1) are there enough latrines per population? 2) are the latrines being used? 3) are the latrines functioning? 4) are the latrines properly maintained?	- Develop a simple checklist - Employ a Health Care Worker, Area Nurse, Sanitation Officer or village chief, or - MOH themselves assesses villages, or - NGO participation	A sanitation officer or engineer could be approached to design a simple checklist
	Make essential materials available - PVC Pipes - wire mesh for cement slabs	- Subsidy program: will a hardware company discount cement/wire/PVC pipe if the MOH encourages villagers to purchase from that company? - Use existing materials (e.g. behind Lenekal Hospital)	Industry
Continue to improve on sanitation education	Implement sanitation education campaigns in each village or cluster of villages	- Use/encourage local NGO participation - Educate children at schools about hygiene - Educate children's parents about hygiene -Target as many villages as is possible, but may need to target a few villages at a time if resources limited	A collaboration of health professionals and educators
	Empower the communities to take ownership and responsibility for their sanitation and hygiene	- Show villagers what other communities have done, what has worked, and why it is better - Provide different options for sanitation infrastructure - Education	Health professionals and sanitation officers
	Promote women's involvement	- Specialized training for women and children -Target women and children's hygiene needs - Hygiene education in school systems	Health professionals and educators
Enhance Community Government relations	Clearly define the roles and responsibilities of the government and of the community - must be understood and accepted by both parties	- Have both parties sign a contract before work is done in a community - the contract must clearly indicate responsibilities and expectations	Ministry of Health and village chiefs
	Government provides a strong leadership role - show active interest in community welfare	- Be involved in the community -Visit regularly - Ensure community accessibility to MOH personnel	Ministry of Health

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