

CHALLENGES TO SUSTAINABLE WASTE MANAGEMENT IN TONGA

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1 Introduction

Improving solid waste management in any developing country is challenging, yet in the tiny monarchy of the Kingdom of Tonga there are many geographic, social, cultural, economic, and political hurdles encountered daily in the implementation of an international aid project. This paper explores some interesting challenges which are being faced by the Solid Waste Management Project, a joint project between the governments of Australia and Tonga, and outlines some of the responses the Project has made so far.

2 Project overview

The Solid Waste Management Project is a 4-year project to improve the environment and public health of Tongans by establishing a solid waste management system in Tongatapu, the largest and most populous island in the Kingdom of Tonga.

The Project involves:

- building a new sanitary engineered landfill to Australian and New Zealand standards,
- introducing a regular waste collection service in the capital Nuku'alofa and 68 rural villages around Tongatapu,
- improving community information and education about solid waste and recycling,
- setting up sustainable institutions to manage solid waste collection and disposal,
- systematising recycling, composting and other forms of waste minimisation.

Tongatapu, situated at the southern end of the 171 island group, is an important sea port and international air port, and seat of government and the monarchy. The population of Tongatapu is approximately 60,000 people, half of whom live in the urban capital Nuku'alofa.

This A\$9 million Project is funded by the Australian Government (through AusAID) and the Government of Tonga. The Project started in March 2004 and will be completed in early 2008.

3 Challenges

3.1 Geography

Perhaps the most obvious physical challenge is the geographical isolation of Tonga. Although Tonga has close economic and family ties to New Zealand, Australia and USA, these international ports are more than 2,500 kilometres away. This distance adds a significant freight cost to shipping goods into, *and* out of, Tonga. The cost of importing equipment and goods needed to build the landfill and establish the collection service is inflated by freight costs. If a spare part or material is needed urgently, necessary air freight may cost as much as the purchase price of the item. This physical distance also impacts on the economic viability of exporting any recyclable items as there are few opportunities for on-island recycling. The cost of shipping a container to Auckland or Sydney may erode any profits and make the

exercise of running a recycling business unattractive in Tonga. Even if a container is able to be fully loaded with scrap steel or aluminium cans, strict quarantine requirements at overseas ports have caused containers to be rejected and returned to Tonga at the shipper's expense. Because of the high cost of freight, this has been a major financial blow to small scale recycling operators.

Tongatapu's 68 villages range in size from 30 to 2,700 people. Geographically the island's villages are dispersed from one end of Tongatapu to the other. The geographical challenge of Tongatapu is compounded by the inclusion in the Project area of four coastal islands, which are either residential and/or resort islands. Travel by boat is time consuming, expensive and weather dependent, while communications to the islands are patchy at times.



3.2 Traditional waste practices and new waste

The Project must overcome long standing habits of waste disposal and change public perceptions about littering and dumping rubbish. Modern wastes such as plastic, foil, and disposable diapers have replaced traditional biodegradable or reusable products such as taro leaves, coconut baskets, banana leaves and even paper bags. It is a challenge to educate both consumers and retailers that modern packaging materials take decades to break down and can be harmful to the environment, compared to traditional decomposable wrapping materials.

For generations, Tongans have disposed of rubbish by burning it or dumping it on swampy or vacant areas. On Saturday afternoons most families cut grass and rake up leaves around their homes, which are then piled high and burnt. Adding rubbish to these burning piles is a logical way for villagers to eliminate waste. In fact, plastic bags are often used to start these fires as they burn so well. Lighting fires is entrenched in the Tongan way of life. For example, every Sunday family food is still cooked in an outside oven or *umu* (similar to the New Zealand *hangi*). During cultivation of land, previous crops and weeds are set alight to clear the land. The right to do what one likes on one's own land, including burning or dumping of rubbish, is fiercely defended.

Another new and growing waste problem is old abandoned motor vehicles. There are an estimated 3,000-5,000 vehicle bodies on Tongatapu. The harsh marine climate of Tonga, together with rough road conditions and lack of maintenance, contribute to vehicle breakdown, and subsequent abandonment. Some householders may keep a rusted vehicle in their yard "for spare parts" while most do not have the means or money to remove car bodies. Another challenge is where to remove them to? The cost of collecting these cars, and freighting them for recycling is beyond anyone's reach. There is no means to compact old cars in Tonga. This issue will become more challenging when the new landfill opens and car bodies will not be accepted. In the mean time, more second hand Japanese vehicles continue to arrive every week.

Agriculture (both subsistence and plantation) is the main activity of rural dwellers, yet waste characterisation surveys conducted by this and other projects, show a very high percentage of garden waste (50%) and organic food waste (13%) discarded in the waste stream. Because of the importance of agriculture in Tonga, there is enormous potential and considerable advantage in converting these organic wastes to compost. Hot composting is a new concept and one which is as yet practiced by only a few people “in the know”. A potential market for compost is the squash industry. Each year, for a few short months, farmers frantically chase the highly lucrative opportunity to export squash to Japan. Most squash farmers spend significant amounts of money on fertilisers to sustain this precious crop. The challenge is to convince these and other farmers to risk adopting the low cost and sustainable practice of using compost compared to a higher priced but familiar synthetic product.

Recycling waste has potential in Tonga, and there are four local companies who are exporting non ferrous and ferrous metals overseas. Aside from freight costs, the difficulties faced by these recyclers are the lack of capital equipment to cut and crush metal, lack of a formal collection system for recyclable materials, competition rather than cooperation between these small scale operators, and lack of public awareness about recycling benefits.

3.3 Institutions and Responsibility

At the national government level, responsibility for waste management is unclear and fragmented. The Project must work closely with three ministries: The Ministry of Health and Ministry of Works which are direct counterparts, and the Department of Environment. The Ministry of Health runs a limited user-pays collection service in Nuku’alofa and operates the official dump. This Ministry is understandably very keen to offload its waste management functions and concentrate on medical issues. The Ministry of Works is interested in participating on building the landfill and possibly operating it, but not interested in the collection of waste. The recently formed Department of Environment is largely a project-driven bureaucracy interested in policy making. It has a very limited function of environmental education and public awareness.

At times it can be difficult getting ownership from our government counterparts who can be quick to deny certain functions are theirs and have been known to accuse other departments of not doing their job properly. Waste issues are not yet seen as everyone’s responsibility and something which can be addressed better through coordination at all levels, and of course, adequate funding.

Compounding the problem of institutional responsibility, is the abundance of legislation on waste matters. Although the Project often hears people in Tonga comment on the need to have legislation as a stick to encourage Tongans to keep their country clean and beautiful, there are in fact currently 13 Acts which have relevance to solid waste management issues. To add to the confusion these laws are administered by many different authorities.

In dealing with urban waste matters in Nuku’alofa, such as the placement of public rubbish bins, street sweeping, and retail waste, there is no local council to guide and reinforce initiatives. In Tonga there is only the national government, or village representation through an elected Town Officer who is a key figurehead but has little accountability.

The 68 Town Officers, all men, are the leaders of their villages and have the power to call meetings and make decisions about village development. The Project is attempting to work with these potential change agents through regular monthly meetings and grant programs for village waste projects. However, fewer than half the town officers ever attend our scheduled monthly meetings. This is because some have business interests which are given higher priority, and some just are not interested or do not care. Many Town Officers do not feel accountable or believe they are sufficiently remunerated to serve the interests of their community. For example, the Project's small grants scheme for waste projects has been used in many villages to help remove car bodies and difficult waste. The participation of villagers in this event ranges from nearly 100% to perhaps 10-15%, and directly reflects the interest levels of the Town Officer. There are examples of Town Officers visiting every house prior to a village clean up to explain about the clean up and what types of waste will be collected and then being present during the entire clean up event. This is contrasted with other examples where a clean up was organised by the village women's committee and the Town Officer was nowhere to be seen. In one village, Tatakamatonga, although many people in this village were very interested in participating, they were not fully informed about the event and subsequently angry at the Town Officer. Only he has the power to call a village meeting (*fono*) while women's committee can only organise meetings of their own members. Engaging the interest and commitment of these key powerful individuals remains an ongoing challenge.

In all areas of the project, meetings with project partners are an essential activity, yet obtaining sufficient representation can often be a major challenge. Tongans must be some of the world's greatest travellers and it is impossible to hold a meeting without someone being away at a Conference, study tour, government meeting, or training course at virtually any destination in the world. These trips are seen as individual rewards and are often encouraged by regional or in-country aid donors.

3.4 Communication

Methods of communication must be carefully chosen and monitored. Much communication occurs verbally in Tongan culture, which means the project has to do a lot of talking to different groups. Although all the guidebooks say that most Tongans speak English, our experience is that English is not as widely understood as assumed. All communications must be translated in to Tongan, which is a language without direct translations for many of the words the Project uses daily like: recycle, modern landfill, geosynthetic liner, daily cover, and even waste. In printed publications we must allow 25% more space to accommodate the Tongan translation. There is also a significant European population (*palangi*) and Tongans who have been raised overseas with no Tongan language skills who must be catered for in communication.

Village meetings are a common way of the community keeping informed, yet they may be deferred for cultural reasons or put on at very short notice, guaranteeing low attendances. If the Town Officer has misunderstood messages and then passes on wrong information, this can be more damaging than no information at all, since he is listened to as an authority figure. Media is often used by the Project, and surprisingly in such a small population base there are many media outlets. There are four radio stations: three youth FM, and one AM radio station preferred by older people. With a viewing population of about 60,000, there are four TV stations presenting eight channels competing for viewer attention. Fortunately, the most popular channel is the government owned TV Tonga. Most remarkably, there are five different (weekly) newspapers as well as two major religious newspapers (Catholic and Free

Wesleyan). The challenge is getting your message heard widely, accurately in two languages, in a cost effective manner, as well as having to deal with all these different media outlets.

3.5 Financial

Tonga’s economic base is very narrow and relies heavily on remittances from relatives overseas to keep running. Wages are very low and many people especially young people are unemployed. The Government has little money to subsidise a waste management service and has stated it would like a full cost recovery service implemented. In other words, total user pays. This economic situation is extremely challenging for fee-based waste collection services. The absence of a local government together with the leasehold land tenure system means there is no rates system to levy money for sanitation services (as in Australia or New Zealand). Charging for waste management services can be a sensitive issue, particularly coming after the recent introduction of an unpopular 15% consumption tax. How do we get people to accept paying for a waste service when dumping rubbish in the bush or burning it has been the past free solution?

Achieving full cost charging for the service is one thing, but actually collecting the money is another challenge. Firstly, there is a physical problem in delivering bills to householders. No one has a street address and only some households have a mail box at the Central post office in Nuku’alofa. Other utilities like electricity and water rely on hand delivery of bills to every household. For the consumer, paying bills requires a personal visit to utility offices in Nuku’alofa only during office hours. It is perhaps not surprising when bills are so difficult to receive and pay, that bad debts for essential services of electricity and water run at 15% a month. While it is easy to disconnect these services for non-payment, it is very difficult and counterproductive to the goals of the Project, to discontinue waste collection services for non paying households.

3.6 Technical

The Project has a challenge on its hands to overcome negative images of the existing waste management services. The existing dump at Popua in Nuku’alofa is a serious environmental hazard for many reasons. The dump is not fenced or lined and is adjacent to a beach and housing settlement. During extended rainy periods, entry to the dump is impossible and the public must resort to dumping rubbish on the road outside. Pigs and people rummage through the rubbish without restriction. When the Project says it is building a “landfill”, to us this word is loaded with nuances of an engineered and environmentally protective facility. Yet there is no such equivalent word or expression in Tongan, nor any replacement visual image to conjure up. The existing Ministry of Health rubbish collection service is small, unreliable and irregular, relying on an ancient compactor truck which often breaks down. How can people imagine a new or improved service, when



Images of the existing dump at Popua are difficult to forget

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they have no frame of reference for this? It is a challenge to convey what a reliable and environmentally sound waste management system is like for those who have never experienced it.

3.7 Cultural

Funerals are a unique cultural event in Tonga which present several challenges to the Project. Death is a very sacred occurrence and a funeral usually involves the entire village in several days of mourning. The seriousness of funerals cannot be understated and is impossible to compare with practices in Australia or New Zealand. Close family members commit to wearing only black clothes for an entire year after the death. A death in a village directs all community attention and effort to cleaning up in readiness for the funeral, all night vigils and prayers, and preparation of feasts. Since death is unpredictable, the Project's schedule of community awareness theatre has frequently been disrupted by the need to cancel performances at the last minute. During a trial of waste collection in rural areas, the Project collected no rubbish from one village due to funerals. Meetings cannot be held and funeral participants may take several days to recover their attention as a result of all night vigils. The other consequence of funerals is the amount of green waste that is generated as gardens are trimmed, lawns mown and leaves swept. Funeral feasting also generates huge quantities of waste packaging including plastic fast food containers. The challenge is to sensitively deal with waste generation, disposal and management during these times.

Tonga is a very "top down" society with authority coming from the King down through nobles, and Town Officers. Teaching methods in many schools are still based on rote learning with students discouraged from questioning or challenging the authority of the teacher. In this kind of society, with strong traditional structures of leadership and authority and no encouragement for initiative, the consequence is that people act when they are told to do something. In the case of clean up events, these are not spontaneous community driven events born out of a shared desire to clean up a village, but because the Town Officer, Noble or Royal has requested it. Another motivation for action against waste is a perception that participants can get some reward eg. free gifts, financial reward (from selling recyclable materials), appearing on television, or recognition from others. This is a real challenge for sustained community participation and ownership.

A particular cultural challenge in Tonga, relating to enforcement of legislation and penalties, is that it is virtually impossible to impose punitive measures on one's own family members. This includes immediate and extended family. In such a small population, with family size typically six or more people, there are many family connections to be found. This is a dilemma for the Project as penalties for illegal dumping and littering are necessary to complete the waste management system, but actually enforcing penalties is far more difficult. This requires individuals to place their environment and shared community health above their paramount family ties.

3.8 Other challenges

When the Project began no one could have predicted the recent public servants' strike, particularly its extended duration of six weeks. The strike has had some direct impact on the project through the lack of access to government decision makers and government counterparts, however work has continued with private sector and non-government partners. The full impact of the strike on the people and economy of Tonga remains uncertain at this

stage, however it is inevitable that this major event will throw up new challenges for the Project. Only time will tell.

4 Solutions and Project Response

There is nothing the project can do to change the geographical remoteness of Tonga, but we can support opportunities for regional Pacific cooperation through organisations such as SPREP, to share information, develop policy, and to cost effectively handle waste. We have hosted study visits to our nearest neighbours such as Samoa, Cook Islands, Niue, Australia and New Zealand to improve the understanding of our counterparts in waste collection, disposal, minimisation, and management. There is nothing like seeing firsthand other landfills and waste collections services, recycling and composting ventures to conceptualise what is possible in Tonga. We are also working with an Australian cooperative to investigate crushing and removal of car bodies on a regional basis around the Pacific.

Changing traditional waste practices takes time and patience. We are utilising a number of different methods for communication and behaviour change, including: talks to schools, business and community groups; village, primary and secondary school dramas; anti-littering television advertising featuring a local Royal; grants for rubbish projects; song competitions; quizzes; animations and videos; field visits to recyclers and the landfill; newsletters; magazine and newspaper articles; and leaflets and fliers. It is critical that information on waste is tailored to the Tongan situation, and wherever possible, is delivered by Tongans themselves, in Tonga. Rather than telling people not to do something, the information produced by the Project aims to give people an understanding of *why* certain wastes such as plastic and disposal methods such as burning are harmful to health and the environment. This is information most of us in developed countries have long since taken for granted, but which is now taking root in the minds of Tongan school children and villagers.

A new Waste Management Bill is currently before Parliament which will bring solid waste under one piece of legislation and establish a new Waste Management Authority. The Authority will have responsibility for management of all solid waste including collecting Tongatapu's household and commercial waste, managing the new landfill, revenue collection, recycling, and education. Within the legislation, a compulsory charge for household waste collection and disposal underpins the requirement for a self financing service. Making household waste collection compulsory has strong support from community change champions who see this as a leap forward in cleaning up Tongatapu.

An innovative response to the challenge of fee collection is the possible use of village women's committees to issue bills and collect fees. There are many advantages to this approach. Women already have a special interest in waste through their gender roles and domestic responsibilities, and are motivated to improve conditions. They are familiar with their local area and which households have the ability (or not) to pay the solid waste fee. These women can exert social pressure to ensure that those who can pay do, and those who cannot are looked after by the wealthier members of their community. Consultation is currently being undertaken to further develop this model, and ensure full acceptability by everyone.

As work is progressing on the construction of the landfill, it is becoming easier for people to see that the new disposal service will be different to the current one. Changes to the waste



During trials, these locally designed recycling “cages” have proved effective at encouraging use

collection are not yet visible but it will not be long before the Project will increase the number of public rubbish bins, implement a recycling system and introduce a full scale household waste collection system.

Despite some of the institutional challenges, the Project has been very lucky to have a high level of support from both government and the community. There appears to be genuine concern by

some and a strong desire to improve the current waste situation. An example of this is the hard work that government workers and Ministers have put into advancing the Waste Management Bill despite the prolonged strike and the possibility the legislation would be delayed this year. This type of support buoys the Project along when it might otherwise be mired.

5 Summary

There are positive signs that things are improving in Tonga and the challenges outlined above can be overcome. A demonstration of this is the recent September 2005 *Clean Up the World* event in Tonga. Despite there being no formal waste collection system, a huge litter problem, and relatively low environmental awareness, more than 3,000 people (nearly 3% of the population) from 80 different groups across Tonga took part in picking up rubbish from beaches, roadways and public areas. This event was very positively and practically supported by the business sector, government, NGOs, schools, youth groups, women’s groups, church groups, and the diplomatic corps, demonstrating that coordination, altruism, innovation and enthusiasm are possible if we fully involve Tongans and build on their motivations and strengths.