Solid Waste Management in the Pacific
Kiribati Country Snapshot

BACKGROUND

Kiribati consists of 33 islands scattered over an area of more than 3.5 million square kilometers in the central Pacific Ocean. Most of the population lives on the Gilbert Islands, one of three groups that make up Kiribati. South Tarawa, the capital, is part of the Gilbert Islands and is the focus of this study. It is home to roughly half of Kiribati's population of about 107,600. South Tarawa has two municipal councils—Betio Town Council (BTC) and TeInainano Urban Council (TUC). Per capita gross domestic product is estimated to be A$1,595 (around $1,465).[1]

TECHNICAL ASPECTS

Characteristics of Solid Waste

There is a lack of reliable data on solid waste management in South Tarawa. BTC and TUC, respectively, have been reported to handle about 2.5 and 3.6 tons of general rubbish daily which enters the landfill.[2] There is also separate collection for cans and bulky waste. There are other studies that estimate waste generation to be around 6,900 tons a year or 19 tons per day, of which around 75% is organic, comprising mainly garden waste and some hard fibrous materials, such as palm/pandanus fronds. Only about 38% of generated waste is collected by council authorities, with the remaining waste either disposed of on-site (26%), by illegal dumping into the sea/lagoon (35%), and recycled (1%). The major biodegradable wastes are food scraps and garden wastes. Much food waste is fed to household pigs and pets. In recent years, some of wastes, including aluminum cans and polyethylene terephthalate (PET) bottles, have been almost entirely eliminated from the waste stream due to the introduction of successful recycling initiatives; but other wastes, such as diapers and electronic waste, are becoming a growing problem.

Waste Collection

BTC and TUC provide waste collection services within their council areas. Wastes are normally stored in 167-litre drums or rice bags at the sides of roads and tracks from where BTC or TUC garbage tractors and trailers collect waste for disposal once a week. However, weekly waste collection schedules are reported to be unreliable. Wastes are also deposited along narrow tracks, which are inaccessible to garbage collection tractors and trailors. Heaps or bags of wastes are piled up along the road. Another problem is that garbage collectors find it difficult to lift overfilled 167-litre containers. To address this issue, half-containers have been placed at some locations.

Waste collection services are also provided under a pilot project started in January 2012 through New Zealand's Urban Development Program. The system uses a garbage collection bag, known as the 'green bag', which has part of the cost of collection built into its purchase price. This has been promoted as a low cost, low tech, simple initiative. Under this scheme, households buy green bags for A$0.20 (around $0.18)per bag from shops around South Tarawa to dispose of their nonorganic waste. The current schedule provides for a visit by a compacting collection truck operated by a private contractor to all accessible households in South Tarawa weekly. The truck only picks up household wastes placed in green bags.

One issue, however, is that the town councils still collect other waste alongside the private contractor, which results in duplication, and does not appear to be very efficient. For larger waste producers who pay service charges, TUC generally provides waste collection services twice a week.

1 Asian Development Bank. 2013. *Key Indicators for Asia and the Pacific 2013*. Manila.
2 2011 data provided by New Zealand High Commission in Tarawa.

ADB

Photo by M. Iyer

Solid waste collection vehicle

Both BTC and TUC face significant constraints with aging fleets of tractors and trailers, poor vehicle maintenance, and low performance by collection workers. The road length covered by waste collection services in BTC is about 20 km; in TUC, it is about 128 km. While BTC has a vehicle maintenance workshop, maintenance of vehicles is more of an issue at TUC due to a lack of workshop facilities. New compactor trucks to support the "green bag" initiative are provided by New Zealand.

Waste Disposal

All wastes collected by the councils and private operators are directly disposed at landfill sites. TUC operates the landfills at Nanikai and Bikenibeu, while BTC operates the Betio landfill. In 2004, the Sanitation and Public Health and Environment Improvement Project, supported by the Asian Development Bank, financed the construction of landfills at Nanikai and Bikenibeu, and repaired an existing landfill in Betio. The landfills have subsequently been rehabilitated and upgraded under the Urban Development Program. Other smaller dumpsites also exist, but these are illegal under the Environment Act. The Betio landfill is reported to have a remaining capacity of 8,500 cubic meters, while at Bikenibeu and Nanikai, remaining capacity is 32,500 cubic meters and 17,800 cubic meters respectively.[3] All three have a gatehouse and fencing. The Bikenibeu and Nanikai landfills have inoperable leachate pumping systems. Because of the high water table, Bikenibeu landfill also has a water height of 1.2 meters. Because of the lack of locally-available aggregate and proper equipment, none of the landfills use temporary cover. Betio and Nanikai landfills are also periodically compacted.

Recycling

Kiribati's most successful recycling initiative has been the Kaoki Maange (Keep Kiribati Beautiful) Program. The recycling system based on the Kaoki Mange Container Deposit Legislation, operated under contract by a private sector business, functions as a recycling system for aluminum cans, PET bottles, and lead-acid batteries. The Special Fund (Waste Materials Recovery) Act 2004 allows for a deposit of A$0.05 to be levied on each beverage container at the point of import, with consumers being able to redeem A$0.04 when returning containers for recycling. The remaining A$0.01 covers handling fees to support recycling operations. The operator makes claims to Ministry of Finance and Economic Development (MFED) on a monthly basis. Generally one container (20 or 40 feet, depending on cans received) containing cans, brass, and copper is exported to Australia every month and one 20-foot container containing PET bottles and lead-acid batteries is exported to Hong Kong, China every 7 weeks.

3 Way. B. 2013. *Kiribati Solid Waste Management.* Report prepared under Local Government New Zealand Technical Assistance Facility. New Zealand Foreign Affairs and Trade Aid Programme. Wellington.

A pilot project on collecting non-organic waste in green bags is managed by the Foundation for the Peoples of the South Pacific, Kiribati (FSPK), a nongovernment organization that oversees truck scheduling, public engagement work, and bag distribution. In the early 2000s, the concept of composting organic green waste in banana circles or compost heaps in households was promoted. However, discussions with some stakeholders indicated that the program cannot be expanded due to the lack of space in households. The Project for Promotion of Regional Initiative on Solid Waste Management in Pacific Island Countries (J-PRISM), financed by the Japan International Cooperation Agency (JICA), focuses on the composting of organic waste on South Tarawa. It promoted home composting and the establishment of a centralized composting facility at the Betio landfill. A trial compost facility has been set up at the BTC office; and a platform has been prepared for a centralized plant at the Betio landfill, with a shredder provided by JICA.

Kiribati, like other small Pacific island countries, has a significant waste problem with end-of-life vehicles, white goods (refrigerators, freezers, and washing machines), and electronic equipment. A scrap vehicle collection scheme was last implemented in 2007 under the South Pacific Regional Environment Programme (SPREP) Bulky Waste Pilot Project. A barge containing scrap metal from Kiritimati carried over 1,400 metric tons of scrap metal and 200 tons of bottle gas cylinders to Singapore for recycling. Most of the scrap metal came from the remains of British nuclear testing activities in the 1970s.

Since then, old junk vehicles are being stockpiled for export in the Materials Recovery Facility at Betio port, which is shared with the Kaoki Mange recycling system. There is potential to add vehicles to the existing deposit and refund legislation under the Special Fund (Waste Materials Recovery) Act 2004, requiring cars to pay a deposit on arrival to cover vehicle scrapping costs.

Medical Waste

Medical waste is partially incinerated at Tungaru Hospital, the main medical facility on South Tarawa. Medical waste is not segregated, and around 80% of waste which is piled behind the hospital adjacent to the ocean for disposal is non-hazardous. However, needles and used hospital equipment in waste piles are not contained, and pose a serious hazard to public health. Hazardous incinerator waste is also stockpiled at Tungaru Hospital.

INSTITUTIONAL ASPECTS

Overall legal, policy, and planning for solid waste management is a national government responsibility. The Ministry of Environment, Lands and Agriculture Development (MELAD), and its Environment and Conservation Division (ECD), is responsible for enforcing Environment Act 1999 (amended in 2007). The ministry had also formulated the National Solid Waste Management Strategy in 2007, with the assistance of SPREP and prepared the Kiribati Integrated Environment Policy in 2012.

Backyard dumping

Photo by M. Iyer

The responsibility for managing waste collection and disposal in landfills lies with the local government councils within their respective areas of authority. TUC is responsible for the part of South Tarawa from Tanaea town in the east to Bairiki; and BTC is responsible for waste collection on Betio islet, which is linked to Bairiki by a causeway. Settlement areas and other premises, such as shops along the rest of the TUC area manage their own wastes. They dispose of wastes at sea or on the beach, turn them into compost used in gardening, bury them, or burn them. The Ministry of Internal and Social Affairs is the conduit through which the central government provides funding to local governments.

The Plant and Vehicle Unit (PVU), part of the Ministry of Public Works and Utilities, is responsible for maintaining government vehicles. The urban councils, MELAD, and the New Zealand Aid Programme which manages the Urban Development Program formed Partnership for Solid Waste Management to ensure effective communication among stakeholders to deal with implementation issues. The Healthcare Waste Management Committee is responsible for the management of hospital waste.

FINANCIAL ASPECTS

Under the Local Government Act, a council is empowered to charge fees to the public, only if a relevant by-law is in place.

BTC levies service charges for solid wastes, from A$29 (around $27) per year for private permanent houses to as high as A$650 (around $596) for large commercial establishments. Recovery of these charges is very low—only about 25% of the billed properties pay the charges. The proportion of charges recovered from ministries and commercial establishments are much higher, but their payment is often delayed.

BTC's annual expenses amount to about A$90,000 (around $82,620), but its budgeted revenues are substantially higher at A$120,000 (around $110,160). TUC, which covers a vast area, incurs much higher expenses at A$210,000 (around $192,780), while its budgeted revenue is A$190,000 (around $174,420). If recovered fully, it can cover 80% of total expenses.

The "green bag" initiative is a well-run "user pays" system, which directly links the size of collection fees to the volume of waste that is generated by households. Fees collected from the sale of garbage bags are used to offset some of the costs of operating collection services. However, the system is still reliant on subsidies provided under the Urban Development Program. It is hoped that the scheme will eventually become self-sustaining through gradual increases in the green bag purchase price.

The councils which operate the landfills in South Tarawa do not charge tipping fees for solid waste that enters the landfill.

PUBLIC AWARENESS

ECD plays a key role in public awareness related activities, and some donor-funded programs support awareness campaigns. Local initiatives have provided incentives for cleaner villagers, such as through annual "tidy village" competitions. There is a need for more systematic, well-planned longer-term public campaigns, in particular to raise awareness about segregating and recycling waste products.

CONCLUSIONS AND RECOMMENDATIONS

There has been significant progress in strengthening overall management of solid waste in South Tarawa since 2011, as a result of support provided by New Zealand under the Urban Development Program. Comprehensive assistance has been provided for a range of activities including public awareness, and waste collection, disposal, and recycling infrastructure and services.

While many issues related to solid waste management are being streamlined, some issues remain that need immediate attention, and have been identified as priorities by stakeholders. These include improved management of hospital waste, greater efficiency in waste collection services, and ensuring that South Tarawa's landfill facilities are properly operated and maintained in line with management plans which have been developed with development partner assistance. ■

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