

Financial Arrangements for Waste Management

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Officials of Pacific Islands Countries (PICs) working in the waste management sector

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Financial Arrangements in Pacific Island Countries (PICs), New Zealand and Japan

1. Introduction

It is well known how important and how difficult it is to secure funding source for waste management. Waste management consists of simple processes, in principle, collecting, transporting, and disposing of waste, but it involves large amount of cost and requires appropriate technology. Despite that, as waste management is not a public service that is always necessary for citizens, such as water or energy, so the willingness to pay for waste management service is not always high, making it difficult to commercialize.

In a typical local government, general accounts are used for roads, education, health and welfare, and civil engineering, while public utility accounts are used for health care, water and sewage, and gas (normally electricity is addressed as a public utility of the nation rather than of the local government). Sanitation costs, such as waste management, tend to be less prioritized among expenditure from general accounts, and waste management is not a service that can be profitable, so it is not addressed as financially independent public utility.

In PICs, where the population size is small and the economic level is low, local governments are often in a difficult financial situation. Under such circumstances, not all expenditure on proper waste management is approved, and in many cases, waste management is carried out within a budget that is within their capacity.

The PICs are often dependent on tourism for a high proportion of their GDP. In Fiji, sugarcane exports used to be the number one share of GDP, but this has been replaced by tourism. Currently, the rapid urbanization is observed in the PICs, and the fragile natural

environment of these countries is at risk of adverse impact. Waste management tremendously contribute to the environmental conservation in the sense of reducing environmental burden by appropriately treating various and increasing amount of waste generated by urbanized society. Therefore, securing appropriate funding for waste management in the PICs could be an investment for sustainability of tourism that supports national economy.

2. Current Status and Issues

2.1 Local Governance System and Waste Management

In general, local governments (equivalent to municipalities in Japan) are responsible for waste management within their own administrative areas. However, in the case of the PICs, how waste management is operated differs from countries, due to the variety of national and local governance systems. For example, in Tonga and Samoa, where there are no local governments, the national government or public enterprises are responsible for waste management operation in accordance with the waste management act. Meanwhile in PNG and Solomon, although there are local governments (there is only one municipality in Solomon), these local governments customarily carry out waste management operations in the absence of waste management act that usually shapes legal framework of waste management.

On the other hand, if you look at the capitals of each country, in most cases, local governments take the responsibility of waste management within their own administrative areas and are supervised by central governments, such as ministries for environment.

In these cases, the main fund allocated for waste

management is basically allocated from the general accounts of each local government. However, as mentioned above, local governments in the PICs cannot always afford to allocate sufficient budget for waste management. For example, in Japan, local tax and property tax are two main revenue of general accounts for local government. On the other hand, most of local governments in the PICs are mainly funded by property taxes, which have low rates and low collection rates.

Therefore, some local governments such as Port Moresby and Suva collect waste management fee from residents in addition to property taxes. Port Vila has a pay-as-you-go prepaid bag system for waste disposal, and in Tonga, the Waste Authority, rather than the local government, is working with the Tonga Power Limited, which provides electricity to collect the waste management fee. Even in New Zealand and Japan, there are cases that waste management fee is collected in addition to abovementioned taxes; in most of the cases, waste management fee is introduced as financial incentive for waste reduction and recycling promotion, but securing fund for waste management with waste management fee is not always the primary purpose.

It is ideal to secure sufficient funding for waste management cost only from general funds of local governments, but in reality, most of the PICs compensate the shortage by introducing waste management fees.

There are two major issues: 1) the general fund itself is unstable and has room for improvement and 2) there are different methods of collecting waste management fees, but not many of them are successful examples. Since the former is beyond the scope of this paper, because it is not in the field of waste management but in the field of local governance, therefore, this paper focuses on the second point.

In addition, since waste management involves large amount of money, establishing appropriate waste management system (such as operational method and treatment method) in order to reduce waste management cost is also an important issue.

Therefore, from the perspective of securing funding sources and establishing appropriate waste management system, the following section provides an overview of the characteristics of waste management in the PICs and their gains and losses, as well as introduction of some good practices in the PICs, including Japan and New Zealand.

Recommendations by ADB

ADB's "Solid Waste Management in the Pacific, Financial Arrangements" describes the financial status of waste management in the PICs. This paper also refers to the above document, and it particularly focuses on the part mentioning "full cost accounting methods to assess the costs of solid waste management activities including collection, transportation, disposal, and recycling" as an issue. Also, "WEIGHING THE COSTS OF IN ACTION" discusses the cost-effectiveness of environmental management expenditures. As noted in the documents, until now there has been no research on the value for money of waste management in the PICs.

The relationship between disposal amount and waste management costs needs to be looked at with interest. As the population grows, the cost of waste management increases accordingly, but many PICs do not have a system in place to increase tax revenues in proportion to the cost of waste management. Prepaid bag system is often not a funding source that can fully cover the cost, but at least, it provides an incentive for residents to reduce waste amount. Even though it is hard to grasp the effect in figure, the system certainly contributes the reduction of the burden on local governments and

the environment.

2.2 Collection and transportation

There are two major methods of waste collection and transportation expenditure: one is local governments to directly operate their own waste collection services and the other is to outsource the collection service. In the PICs, the ratio of outsourced collection service to direct collection service is roughly 1:1. Each system has its own advantages and disadvantages, and although outsourcing is generally cheaper than direct operation, if the contractor is not properly selected, supervised, and managed, insufficient services may be provided for the price. On the other hand, direct operation requires hiring of collection workers and drivers, as well as the procurement and maintenance of vehicles, which is costly and time-consuming.

It is said that outsourcing is cheaper, but this is mostly when the cost of procuring vehicles is taken into account, and in the case that vehicles are provided by the central government or donor, and only running cost is managed by the local government, direct operation may be cheaper. In any case, the suitable method for each local government depends on the amount of waste to be collected, population density and distribution of the target area, distance to the disposal site, and capacity of the local government (budget, number of owned equipment, mechanics, human resources, etc.), and therefore, the best method should be selected based on the analysis on waste management operation.

It appears that many local governments that are directly operating waste management are trying to shift to outsourcing, but some of those that have already introduced the outsourced system are experiencing unexpected increases in costs and difficulties in supervision. It is recommended to

consider these issues before proceeding with the outsourcing.

2.3 Intermediate treatment

In the context of the PICs, intermediate treatment has been considered, but there is little experience of its introduction. The first thing that comes to mind when linking intermediate treatment and finance is the reduction of transportation costs by improving transportation efficiency through the use of transfer stations. In cases where it is not possible to set up a final disposal site in the suburbs of a city and the distance of transportation is more than 30 km, it may be possible to reduce the cost of transporting the waste by introducing transfer stations. In Fiji, four municipalities deliver waste to the same landfill site, and two municipalities, in particular, are located far from the landfill site, and the necessity of a transfer station has been frequently discussed.

In addition, incineration is like an investment in the reduction of the final disposal amount and is only useful in situations where it is extremely difficult to secure land for disposal for the volume of waste to be disposed. There are some cases in which sales of electricity generated by waste to energy will be the revenue, but considering the amount of waste, this is not very feasible in the PICs.

2.4 Final disposal

There are two ways of operating a final disposal site, one is direct operation by local government (or the central government) and the other is outsourcing. In most cases, collection and transportation is the responsibility of the local government, but in some cases, the central government is responsible for final disposal, and neighboring local governments pay for the use of the landfill. As far as J-PRISM II has confirmed, the Naboro landfill in Fiji and the M-Dock landfill in Palau are under the management of the central government.

In terms of finance, tipping fee is collected at the final disposal site. In the case that a final disposal site is managed by the central government while local government used the landfill, the local government, as user, pays tipping fee to the central government (or to the operating company). In a general final disposal site managed by the local government, tipping fee is charged for all incoming vehicles, which transport commercial, industrial, and individual waste, except for vehicles that transport municipal waste collected through waste collection service provided by the local government, in most cases. Some local governments have not introduced tipping fee, for example, Honiara in Solomon and Ebeye in Marshal Islands and Micronesia currently do not charge tipping fee. The charging method and unit costs differ by local governments, so it is not possible to mention all cases in detail, but it is key point that whether or not tipping fee is based on weight. The final disposal sites with weighbridge usually charge tipping fee based on the weight of waste, while in the final disposal sites without weighbridge, tipping fee is determined based on the size and type of the vehicle. Since pay-as-you-go is simple and transparent, it is desirable to equip weighbridge as much as possible when introducing a tipping fee.

The operation of disposal site is one of the two major and costly expenditures of waste management, as well as collection and transportation. Tipping fee alone usually cannot cover the costs of the final disposal site, so it is necessary to carefully consider how to secure the funding source. When collecting waste management fee from residents, collection and transportation of waste are tending to be focused, but it is also necessary to consider the costs of operating the disposal site.

It is a typical case that many local governments, except in the capital, use open dumping because

they cannot secure funding for the final disposal site.

2.5 Recycling

Unlike fundamental waste management operation such as waste collection, transportation, and final disposal, recycling is not so often imposed on local governments with the responsibility for its operations. The reality is that in the PICs, recycling has been led by the central government together with private sector rather than local government. When we look at private sector's recycling activities, they are severely limited by smallness (small economy), remoteness, and isolation (high shipping costs). As for scrap plastics, there was global demand for them at one time, but now it is getting tougher due to the low oil price. Scrap metals are relatively well traded, but again the aforementioned problems put the Pacific Island recyclers at a disadvantage. Generally speaking, it must be said that recycling on a market economy basis is a difficult situation in the PICs.

Some countries, including Palau, have introduced a Container Deposit Legislation (CDL). Consumers are incentivized to recycle their used containers by returning them to the redemption center instead of throwing them away. While the CDL generally imposes only deposit, Palau imposes an additional tax on the import of beverage containers that functions like a recycling tax, similar to an environmental tax or a plastic tax. This will be the revenue not for local government but for the central government for expenditure on waste management at national level.

2.6 Environmental tax

Environmental taxes are another means of funding waste management. This paper has mainly discussed the relationship between waste management under the local governments and its financial mechanism, but taxes such as environmental tax do not directly fund waste

management operation at local government, but are often introduced by the initiative of central government and will fund the general accounts of the central government. Therefore, it is difficult to track whether those taxes have actually been used to protect the environment.

Environmental taxes are called green taxes, tourism taxes, climate change taxes, plastic taxes, and so on and are operated in a variety of ways. All of them essentially go into the country's general accounts, but only Tonga's plastic tax (a 10% levy on imports of plastic products) is allocated for the Waste Authority's waste management operations because there is no local government in the country.

These taxes do not directly support the current operations of waste management under local governments, with some exceptions, but it is desirable that the revenue is transferred to national institutions, such as the Ministry of the Environment, for the purpose of establishing policies, such as the Waste Management Strategy and CDL, and expanding capital investments (such as disposal facilities and equipment) that local governments cannot afford.

2.7 Subsidies

The role of central government and local government

The central government eases the burden of current waste management operations under local governments by allocating funds to them through environmental taxes and reducing the amount of waste, which local governments is responsible for, through the introduction of CDLs, plastic taxes, recycling taxes, and other measures. In addition, the central government supports capital investment in final disposal facilities and collection equipment either directly or indirectly by encouraging donors.

Although it may be difficult for local governments in

the PICs to make capital investments by themselves, they should at least secure fund to allocate sufficient personnel and materials to adequately carry out their current waste management operations. In case that general account is insufficient, appropriate waste management fee should be set in order to make up the shortage.

3. Good practices

3.1 Prepaid bag in Vanuatu

Vanuatu has six Provincial Councils to govern the Rural Community and three Municipal Councils to govern urban areas.

In the capital city of Port Vila, the main funding source for the government is property tax as a local government tax. In the past, there were reported attempts to collect waste management fee in addition to the property tax at 1,250 vatu/month, but this was a challenge because it was difficult to distinguish between those who paid for the waste when it was collected and those who did not.

Subsequently, a prepaid bag system was introduced as a solution to this problem, and it is now operating successfully.

In Port Vila, it's called the Yellow Bag, and a 70-liter bag retails for 100 vatu. Residents have to buy a bag for discharging waste. For the first couple of years after its introduction, waste was discharged with both designated and non-designated bags and both were collected in the same manner, which was a challenge for a while, but due to continuous effort of the council, most residents now discharge their waste according to the system.

In 2017, there were 47 million vatu sales, and the actual money that came into the city was 19 million vatu. The council's expenditure on waste management was 36 million vatu (waste collection

and transportation, 12 million vatu; final disposal site operations, 12 million vatu), with revenue from paid bag sales accounting for 53% of the revenue.

In fact, there are few cases where the revenue from the sales of prepaid bags alone can cover the entire cost of waste management, but even so, it is recognized that it has the following effects: 1) it reduces the financial burden on the city and 2) it provides an incentive to reduce the amount of waste. While the prepaid bag system has its challenges, as it encourages the discharge of plastic bags, at least these plastics are landfilled in a final disposal facility, so there is little risk of them becoming a source of marine pollution.

Red Bag has already been successfully introduced in Luganville, the second largest city in the country, and there is a steady horizontal extension of prepaid bag system in the country. Currently, the introduction of a new prepaid bag systems in Malampa province (White Bag) and Shefa province near Port Vila is under consideration.

The prepaid bag system has also been adopted in Japan and was implemented in all cities in Auckland until 2019 (the urban areas have now been converted to a prepaid tag system). In Samoa, the introduction of a prepaid bag system is also being considered, and officials of Ministry of Natural Resources and Environment and others visited Port Vila Municipal Council in 2019.

3.2 Waste management fee collection system in Tonga

Tonga is one of the few PICs that do not have a local government. Tonga consists of four main archipelagos. The main island of Tonga is Tongatapu with population about 70,000. According to the Waste Management Act, the Waste Authority Limited (WAL) is responsible for waste management services in the designated areas, while the Ministry of Health is responsible for the other areas. At

present, WAL provides waste management services in the main islands of Tongatapu and Vava'u Islands. Expansion of the remaining Ha'apai and Eua Islands is also planned.

WAL started providing waste management services in Tongatapu back in 2005, the year the Waste Management Act was enacted, and although the collection of waste management fee was promoted with the expectation that it would be self-sufficient from the beginning, there was a long period of dependence on government subsidies for waste management costs. Efforts continued to be made to collect waste management fee, and WAL worked with Tonga Water Board to collect the fee, but the turning point came around 2015. With a strong initiative from the Prime Minister, the organizational system was revamped with a commitment to reduce the size and efficiency of public enterprises. As part of this, the four public enterprises responsible for public services (Tonga Power Limited, Tonga Water Board, Tonga Gas Limited & Home Gas Limited, and the Waste Authority) had the same board of directors and strengthened their horizontal ties. Thus, finally, from around 2016, electricity fee and waste management fee were collected under the same system, and in 2017, WAL succeeded in current operation in Tongatapu with management revenue, including waste management fee.

The unit rate of waste management fee was 10 paanga/month/household at that time, which was increased to 15 paanga in 2019. In the 2017–2018 fiscal year, approximately ¥82 million (1,700,000 paanga) were collected from households and businesses as waste management fees. Meanwhile, the direct expenditure on waste management was almost the same amount to that amount.

In 2018, WAL expanded its services to the second largest city, Vava'u Island, where it has been providing services on a stable basis to date.

The case of Tonga is unique among the PICs in the points that 1) WAL operates a nationwide (up to the second island for now, but in the future, nationwide) waste management service because there is no local government; 2) the collection of waste management fee is funded on a self-sufficient basis, excluding capital investment, and 3) the collection of waste management fee is done in collaboration with Tonga Power Limited. It could serve as a reference case for countries that are establishing a Waste Authority or are considering collecting waste management fee in conjunction with electricity bill.

3.3 Prepaid bag system in Japan

Japan has about 1,700 municipalities that collect waste, but according to the Ministry of the Environment, the number of municipalities that charge for combustible waste generated from households was about 900 in 2013, which means that about half of them have adopted prepaid bag system (or equivalent system).

In Japan, the 2005 revision of the basic policy for waste management in Japan placed the onus on municipalities to reduce the amount of general waste generated and to promote fairness in the burden of waste generation through economic incentives.

In 2007, a guideline for collecting waste management fee for municipal waste management was established, and collecting waste management fee was promoted nationwide.

The guideline describes on setting indicators and the rate of waste management fee as criteria for judging the introduction of the fee, as well as the effect in waste reduction. The rate of waste management fee varies from municipality to municipality, but the unit price is apparently set with a target of a profit equivalent to 10–30% of the municipal waste management cost. There are also reports that the introduction of the fee has reduced general

household waste by about 20% on average.

The situation in PICs is different from that in Japan, but it could be great help for them to understand the case of waste management fee system in Japan; how the rates are set and how effective is introduction of waste management fee for waste reduction.

3.4 Prepaid tag and wheel bins system in Auckland, New Zealand

Here, the waste management fee collection method in Auckland, the capital of New Zealand, will be introduced. According to “Auckland’s Waste Assessment 2017,” as of 2016, the population of Auckland Region was estimated as 1.56 million while waste transported to landfill was estimated as 1.64 million tons annually, which means more than a ton per person. Financial arrangements on waste management in Auckland is detailed in “Auckland Waste Management and Minimisation Plan 2018.” According to the plan, waste management and recycling service of the Auckland Council costed NZD 113.4 million in 2016. The source of funding consists of 1) Commercial Revenue, which includes sales of prepaid bags and gate fees collected at landfills, 2) Target Rates, which is part of property rates bill used for specific services, 3) General Rates, which is part of property rates bill used for range of services, and 4) Waste Levy, which is administrated by the Ministry for the Environment. Of these, the main source in 2016 was the Target Rates accounting for 65% of the total, followed by the Commercial Revenue accounting for 22% of the total, respectively.

In terms of the collection service provided by the council, waste is mainly categorized into 3 types: rubbish, recycling, and inorganics. Apart from these categories, food scraps are separately collected in limited area. Concept of “Pay-as-you-throw refuse” is applied for collecting “rubbish,” which mainly includes plastic items (wraps, cutlery, containers)

and broken glass. So household pays the amount of fees based on the amount of “refuse” they discharge. As means of collecting the fee, prepaid bag has been used for a long time. The council, which aspires to be zero-waste by 2040, has started shifting from prepaid bag system toward prepaid tag and wheel bins system since 2019. The tag system is expected to contribute to the reduction of more than 3 million plastic bags only from west Auckland alone from being transported to landfill. Prepaid tag is available at local supermarkets and selected convenience stores, libraries, and service centers. There are two different types of tags, one costs NZD 3.95 for a 140-liter bin and the other NZD 5.70 for a 240-liter bin; these prices are cheaper than the prepaid bags (NZD 2.3 for a 60-liter bag). When discharging waste, the users have to stick the tag on the lid of the wheel bins so that collection workers can identify the tag and collect waste from the bin.

The tag system is quite a simple fee collection system similar to the bag system. On the other hand, there is challenge as well. For instance, there are cases that the tag was stolen by strangers and the waste was not collected, which resulted in complaints from the users. In order to prevent the tag being stolen and used by someone else, the tag’s design include security cutouts and a space to write the address. This means that someone who takes a tag off someone else’s bin will not be able to use it for themselves. The system might be applicable in a country where wheel bins are widely used as waste discharge container.

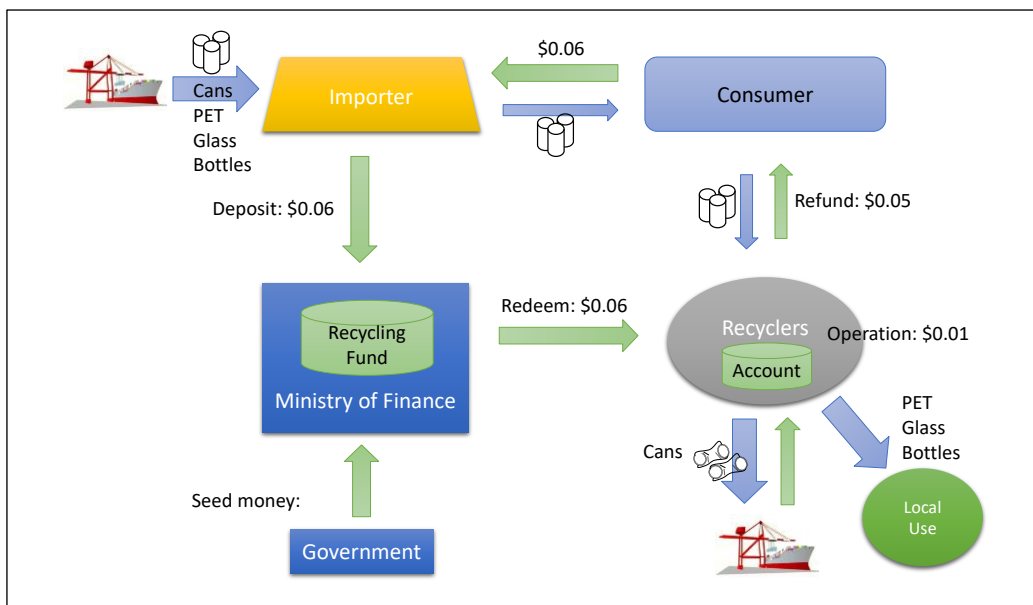
3.5 Introduction of the CDL in Republic of Marshall Islands

In Republic of Marshall Islands (RMI), the then administration, which considered environmental challenges as an important political issue, had been keen to introduce CDL. The Styrofoam Cups and Plates and Plastic Products Prohibition and Container Deposit Act enacted in 2016 was

amended at the Nitijela, the parliament of RMI, in the early 2018, and EPA prepared the CDL Regulations in line with the amendment. The Regulations came into effect at the start of July 2018 and at that time RMI Customs started collecting 6¢ deposits on the specified beverage cans and bottles, whilst the Majuro Atoll Waste Company (MAWC), a designated operator of a redemption center, started collecting cans and bottles for recycling and paying out 5¢ refunds to the public a month later.

Small Pacific Islands like RMI have struggled with litter problems, improving recycling. Collecting deposits on drink cans & bottles at import, or on local production, and paying out refunds when the items are returned for recycling has made a very significant improvement to recycling rates. This approach does two things: first, it generates a financial incentive for the public to collect their cans & bottles for recycling, as they get money for each one returned; second, with the difference between the deposit and refund comprising a “Handling Fee,” the cost of running the system can be built in, generating a financially sustainable approach that is entirely self-funded. How the system functions is shown in the following diagram:

For the FY 2019 (Oct. 2018 to Sept. 2019), 15.7 million items, 58.5% aluminum cans, 40.5% PET bottles, and 1% glass bottles, were handled. Some of these were “legacy” items that were on island before the system started. The number of deposits paid for the same period was for 14.4 million cans and bottles, which indicates the levels of consumption in the RMI.



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Relevant Websites/Resources

Solid Waste Management in the Pacific: Financial Arrangements

<https://www.adb.org/publications/solid-waste-management-pacific-financial-arrangements>

Auckland's Waste Assessment 2017

<https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/topic-based-plans-strategies/environmental-plans-strategies/docswastemanagementplan/waste-assessment-2017.pdf>

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