



# Solid Waste Management in the Pacific

## Palau Country Snapshot

### BACKGROUND

Palau had a population of around 17,400 in 2012.<sup>1</sup> Approximately 70% of the population resides in Koror, the country's commercial and business center. Palau's per capita gross domestic product was \$13,093 in 2012 (footnote 1). The country's economy is heavily reliant on tourism receipts, which are estimated to account for 50% of GDP.<sup>2</sup> Since the pristine natural environment is one of the main reasons tourists visit Palau, effective management of solid wastes is critical to the country's continued prosperity.

### TECHNICAL ASPECTS

#### Waste Generation

A 2010 solid waste survey estimated that around 1,369 metric tons of solid waste is generated annually by households in Koror.<sup>3</sup> This equates to around 0.25 kilograms per person per day. According to the same survey, more than half of municipal solid waste consists of biodegradable kitchen waste (26%) and plastics (32%).

#### Waste Collection

In Palau, waste collection is a state responsibility. Recently, the Koror state government has started implementing a new system for collecting wastes from segregation stations. Households and institutions, such as schools, are required to segregate their wastes into different bins for nonrecyclable and nonbiodegradable wastes, metal/glass, paper, aluminum cans, biodegradable waste, and plastic bottles (polyethylene terephthalate). Eventually, once waste segregation stations are established throughout the state, garbage collectors will only pick up solid wastes from

these stations. Some residents and businesses transport their own rubbish to the landfill.

#### Waste Disposal

The national government through the Solid Waste Management Office of the Bureau of Public Works (SWM-BPW) is responsible for waste disposal. Koror's landfill, known as the "M-dock," is the country's largest waste disposal facility. The M-dock has been in operation for about 50 years; and is located in an area of shallow reef and mangrove wetland, and in close proximity to residential areas and tourism facilities. It covers an area of about 6 hectares.

Previously, the M-dock was operated as an open dumpsite, which polluted the surrounding marine environment as a result of leachate run-off. With support from the Japan International Cooperation Agency, under the Project for Promotion of Regional Initiative Solid Waste Management, in 2006–2007 the M-dock was rehabilitated into a semi-aerobic, "Fukoka-style" landfill. However, the landfill reached its full capacity in 2012; and as a temporary measure, until a new landfill is established, SWM-BPW has constructed a new dike to expand the existing capacity of the landfill. While after more than 8 years, a site for the new landfill has been identified on Babeldaob, the new sanitary landfill facility will need to be developed prior to closure of the M-dock.

#### Medical Waste

Another area of concern is medical waste disposal. Belau National Hospital has an incinerator. The staff handling hospital waste are not trained to collect, treat, and dispose of it; and do not always use protective gear. Some dispensaries

<sup>1</sup> ADB. 2013. *Key Indicators for Asia and the Pacific 2013*. Manila.

<sup>2</sup> International Monetary Fund (IMF). 2012. Republic of Palau 2012 Consultation. *IMF Country Report No. 12/54*. Washington, DC.

<sup>3</sup> M. W. Rechelulk, T. Fujiwara, and H. Nagare. 2012. *Partnership Project of Solid Waste Management in Palau*. Graduate School of Environmental and Life Sciences, Okayama University.



Photo by K. Serrona

Segregation station in Koror state

have also installed incinerators. The hospital has its own collection truck and uses a color-coded system to store wastes for collection. Syringes and needles are placed in dedicated plastic containers.

### Hazardous Waste

Hazardous waste includes waste oils, lead/acid batteries, cleaning agents, bleaches, solvents, paints, and pesticides generated in Palau. Waste oil is collected by the Palau Public Utility Corporation and kept in 750,000 gallon tanks at a facility with a storage capacity of one million gallons. More than 280,000 gallons are currently stored, with a plan to eventually ship the waste oil out for recycling outside the country. An inventory of other hazardous wastes in 2008 revealed an accumulation of contaminated transformer oil, bitumen, medical drugs from World War II, and asbestos pipes.

### Recycling

Palau successfully recycles aluminum cans, composts organic wastes, crushes glass for reuse, and compacts cardboard. In 2011, with the enactment of Beverage Container Recycling Regulation, Palau launched its container deposit fee program, where a \$0.10 deposit fee is charged on each imported plastic, glass, or metal container. Consumers are able to redeem \$0.05

when the container is returned to designated depots for recycling. The remaining \$0.05 portion of the deposit is used to cover the costs of this recycling program. Recycling and composting initiatives remove 98% of aluminum cans and 10% of organic materials from the waste stream, reducing pressure on the M-dock landfill.

## INSTITUTIONAL ARRANGEMENTS

Legislation governing solid wastes include the Environmental Quality Protection Act (1981), and associated solid waste management regulations under this act which became effective in 1996; and the Recycling Act (2006).

The Ministry of Public Infrastructure, Industry and Commerce, through the BPW, has the responsibility over SWM infrastructure planning, public awareness on SWM issues, and operations and management of the national landfill.

The Environmental Quality Protection Board (EQPB) is responsible for the enforcement of regulations on solid waste storage, collection, and disposal. The EQPB is also responsible for issuing licences to establish, modify, or operate solid waste disposal facilities.<sup>4</sup> In addition, the

<sup>4</sup> Republic of Palau, Office of the Public Auditor. 2010. *Performance Audit Report on Solid Waste Management of M-Dock Landfill from the Period 1 October 2007 to 30 September 2009*.

Division of Environmental Health deals with issues related to public health and safety.

The National Solid Waste Management Plan was completed in 2008, and serves as a strategic national framework for the management of solid wastes in Palau.

## FINANCIAL ASPECTS

With the exception of the beverage container recycling program, the budget for SWM in Palau is funded entirely through government budgetary transfers. There are no user charges imposed on residents and businesses for waste collection or disposal.

Under the Compact of Free Association, Palau receives financial assistance from the United States. Palau's Compact Trust Fund has a value of around \$150 million, which is used to finance a sizable proportion of the country's government budget of around \$60 million per year.

The required annual budget to support landfill operations and management of the M-dock is estimated at \$350,000. However, in the past, Congress has only

appropriated a small portion of the required budget for the M-dock, which has amounted to only around 15% of the total funds required (footnote 4). This has constrained effective SWM disposal operations in Koror, since there has been insufficient funding for required tools and heavy equipment.

Palau seeks to move toward self-sufficiency by reducing its reliance on the Compact funds in preparation for 2024, when Compact agreement expires. It is thus critical that the country moves toward improved cost recovery in the delivery of SWM services.

Littering, illegal dumping, and burning of solid wastes around Koror are rare, which contributes to a clean surrounding environment to support tourism.

## PUBLIC AWARENESS

The national government and the Koror state government both raise public awareness about issues related to SWM. Since a clean environment is vital to the tourism industry, the Palau Visitors Authority (PVA) supports these efforts. PVA, Palau Chamber of Commerce, and Belau Tourism Association jointly raise awareness against littering among



Aluminum cans collected for recycling

Photo by K. Serrona



Photo by K. Serrona

Oil drums used as garbage containers

tour operators and dive shop owners, encouraging them to use reusable food containers. These organizations also promote composting in large hotels in Palau.

However, further expansion of public awareness programs to promote greater waste reduction, reuse and recycling in line with the National Solid Waste Management Plan is also constrained by the lack of funds.

## CONCLUSION AND RECOMMENDATIONS

Effective management of solid wastes is vital to tourism, since it is Palau's pristine environment that attracts visitors to the country. The establishment of a new landfill facility, which will allow the M-dock to be closed, is critical for preventing further degradation of the surrounding marine environment. While a site for the new facility has been identified, there is a need to secure capital investment funds to support its development, and to fund the closure of the M-dock. A move toward greater cost recovery in the delivery of SWM services should be encouraged to reduce dependence on subsidies. ■

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