Creating a Sound Material-cycle Society in Small Islands

Japan’s cooperation in the field of solid waste management in the Pacific region

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Pacific island countries are in need of a “Return” System

Dr. Kunitoshi Sakurai
Professor Emeritus, Okinawa University

As agreed upon at Rio+20, the world community after 2015 will make every effort to achieve sustainable development goals. The central pillar of that effort is the conversion of our society into a recycling-oriented society. That conversion in SIDSs is an extremely challenging task because of their small size and remoteness from the international recycling market. In close collaboration with SPREP Japan has been helping Pacific island countries (PICs) to tackle solid waste problems since PALM 2. In the period of 2011-2016 under the umbrella of J-PRISM, Japan collaborated with 11 PICs to promote 3R, identify and develop good practices (GPs) in the region, and boost the exchange of GPs among PICs.

With full confidence based on successful experiences, PICs are now trying to use momentum to strengthen their effort for the conversion of their societies into sustainable ones. As such, Japan is requested to continue her support towards PICs in cooperation with SPREP. It is also necessary for PICs to establish a system to return the waste that cannot be recycled within the region to producing countries based on the extended producer responsibility (EPR). Japan is requested to play a leading role in the establishment of the “Return” system.

Mr. Kunihiro Yamauchi
Director General, Global Environment Department, Japan International Cooperation Agency (JICA)

Since its dispatch of experts to the Secretariat of the Pacific Regional Environment Programme (SPREP) in 2000, JICA has continued to provide support for improving solid waste management in the Pacific region. Such support includes training for administrative officers responsible for solid waste management in the countries in the Pacific region, improvement of the landfill site in Samoa, and support for formulating a regional strategy for solid waste management and implementation of technical cooperation projects in Palau, Vanuatu and Fiji.

The Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management (J-PRISM), the five-year region-wide technical cooperation project, has committed to solving the issues of solid waste management unique to island countries and provided support for the 11 countries in the Pacific region, since its inception in 2011. Specifically, J-PRISM supports any concerted efforts in the entire region to address a number of issues, such as geographical problems, influx of materials from other countries and proper management of solid waste in a limited national land. SPREP’s support for implementing a strategy for solid waste management in the Pacific region is also one of those examples.

We hope that we will help develop resources with high-level expertise and experiences through these support programs, as well as minimize the impact on the natural environment through our active efforts in support and cooperation in each one of our partner countries and within the Pacific region. We will continue our support in a way that will protect the healthy lives of the residents.
### Solid waste problems in the Pacific region

- Increasing and diversifying solid waste due to changing lifestyle and concentration of the population in urban areas
- Difficulties in securing the land for final disposal sites because of very limited space
- Solid waste accumulated on the islands because of their geographical remoteness, special economic structure and uneconomical recycling operations
- Impact on the natural environment including coral reefs and mangrove forests due to poor management of hazardous waste and improper control of final disposal sites

### Response to disaster waste generated by natural disasters

The Pacific region is in an environment that is likely to be exposed to recurring natural disasters including cyclones, tsunamis and floods and to rising sea levels and extreme weather which are both suspected to be caused by climate change.

As any of the countries in the region also consists of many islands, their transportation/information and communications systems, which are supposed to connect not only urban and rural areas in these islands, but also their main and remote islands, have not been fully developed. This hampers prompt and precise communication of disaster information and prevents the residents from receiving emergency assistance. Therefore, it has become crucial that each community come up with disaster countermeasures.

In efforts to recover from these disasters, it will become a major challenge whether solid waste generated by them is managed as swiftly as possible. Therefore, it is critical to clean up post disaster waste on site taking into account of 3R (Reduce, Reuse, Recycle), in order to respond to various solid waste in a time of disaster. Ensuring prompt and proper management of solid waste is also effective in preventing infectious diseases, etc.

### What JICA is looking for in solid waste management in the Pacific region

1. **Developing the capacity of human resources**
   - JICA has placed an emphasis on developing capacity of human resources who can lead solid waste management in their own countries, not relying on support from overseas, as well as developing leaders who help each other in the efforts to address solid waste management issues within the Pacific region.

2. **Improving solid waste management**
   - Proper collection, transportation and disposal of waste play an integral part in solid waste management. JICA’s support has helped an increasing number of countries in the Pacific region initiate and improve waste collection service and introduce a semi-aerobic landfill system, also known as the “Fukuoka Method” (see Page 10).

3. **Creating a recycling-oriented society**
   - In order to respond to rapidly increasing solid waste, JICA has supported efforts to create a recycling-oriented society with the slogan of 3R+Return (see Page 11) that considers not only 3R (Reduce, Reuse, Recycle), but also circumstances unique to island countries.

4. **Cooperation at the grassroots level**
   - Urban solid waste is generated through everyday life. Raising the people’s awareness is critical in solid waste management. Experiences and technologies of the people and municipal governments in Japan have crossed the ocean and been developed in the Pacific region.

5. **South-south cooperation & intraregional cooperation**
   - Japan’s cooperation over the years is producing human resources who are committed to cross-border activities within the Pacific region. Not only will JICA share Japan’s experiences, but also continue to support mutual learning within the Pacific region.

### Support for solid waste management in the Pacific region

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<tbody>
<tr>
<td>Building the SPREP Education/Training Center (2002)</td>
<td>Launching a region-wide training program (2001), which was co-hosted by Okinawa and Samoa by 2007</td>
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<tr>
<td>Waste Minimization and Recycling Promotion Project, Fiji (2008-2012)</td>
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</table>
Mr. Satoshi Kozuka  
JOCV (dispatched in 2011)  
Environmental education/Solomon Islands

I worked as an environmental education volunteer in Honiara, the capital of the Solomon Islands. Like other tropical countries, time passed more slowly in this county than in Japan, and I used to be bewildered every day by the gap in the feeling toward time. Littering the streets has become a serious issue in today's world flooded with imported goods in terms of environmental education. For this reason, I kept picking up litter for two years.

I was able to get to know many new people and develop patience, adaptability and aggressiveness through my activities. These friends and abilities have become my precious treasures.

Ms. Ayaka Kondo  
JOCV (dispatched in 2013)  
Environmental education/Marshall Islands

While looking at piles of trash that are becoming higher and higher day by day, I have been working on promoting 3R+Return (see Page 11) and offering environmental education at school, in order to prevent trash unreturnable to the soil from being generated. Although it is very difficult to encourage the people in the Marshall Islands to understand the concept and motivate them, I would like to continue to make tireless efforts with the help of relevant organizations, JICA and J-PRISM.
1. Developing the Capacity of Human Resources

Ms. Christina Fillmed
Executive Director,
Yap Environmental Protection Agency, FSM

There have been a number of capacity development activities in the FSM by J-PRISM and JICA in Japan in which representatives of the FSM States have participated for improvement of overall solid waste management and 3R awareness. In-country trainings in the FSM have also been held looking at improved maintenance and management of Fukuoka sanitary landfill, which began in Yap in February 2013 and subsequently held in other States. And also very important is the capacity development of all SWM personnel and staff through direct assistance and guidance of JOCV Senior Volunteers and JICA experts (coaches).

Mr. Shiro Amano
Chief Advisor
Japaneese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management in Pacific Island Countries (J-PRISM)

The objective of technical cooperation for solid waste management is not to make quick changes by forces from outside but to gradually and sustainably improve it through the increased capacity of the people based on the belief of “Building a nation starts with developing the capacity of people.” The role of JICA experts as a coach is to inspire the people to awaken and to provide them with opportunities for development. It is therefore not the experts but the people who will bring about changes in solid waste management. It is required for us to further provide opportunities for those who have significantly increased their capacities through the past cooperation to assist others through South-South and Triangular cooperation.

Ms. Vivianne Morofa
Waste Management Officer,
National Capital District Commission, PNG

The Comprehensive Solid Waste Management and 3R training in Yokohama, conducted from the 13th-3rd July has broadened my knowledge in the waste management discipline and increased my confidence as a waste professional.

Project counterparts have also acquired research skills in waste management by undertaking Time and Motion Studies and Waste Characterizations since 2011. These studies allowed counterparts to establish baseline conditions that can be used to set targets for improvement.

Ms. Faafetai Sagapolutele
Assistant Chief Adviser, J-PRISM

J-PRISM’s primary focus on developing the capacity and capability of waste staff in the Pacific Islands is on the right track thanks to JICA. As a former government employee, I see the impact of the J-PRISM project on the islands not only on the improvements to some facilities, but also the skills developed and management of Fukuoka sanitary landfill, which began in Yap in February 2013 and subsequently held in other States. And also very important is the capacity development of all SWM personnel and staff through direct assistance and guidance of JOCV Senior Volunteers and JICA experts (coaches).

2. Improvements on the ground – Waste collection services

Chuuk State in the Federated States of Micronesia did not provide any collection service of household waste. The Division of Public Works has offered a waste collection service, since collection vehicles were provided through the Japaneese government’s Grant Assistance for Grassroots Projects in 2012. To make this service workable, not only the Chuuk State Division of Public Works, but also the Environmental Protection Agency and Japaneese Overseas Cooperation Volunteers working in the state played a significant role.

Mr. Jack Sham
Manager of Solid Waste Management,
Chuuk, Environmental Protection Agency, FSM

The Weno Solid Waste Management Project is a project funded by the Chuuk Environmental Protection Agency and implemented by the Chuuk State Division of Public Works. With technical assistance from J-PRISM, and the collaboration of the Chuuk State Division of Public Works, we have rehabilitated the dumpsite, improved an access road to the dumpsite and set up a garbage collection system on the island of Weno, the commercial and government center of Chuuk State. Prior to the implementation of this project, the collection of garbage was very limited; approximately 10% of the general and household waste was collected and illegal dumpsites were rampant. The number of illegal dumpsites has decreased by 50% and the collection of general and household waste has increased by 60%.

In 2013, the residents of the four communities started offering a waste collection service on their own in Vava’u, Tonga, which previously had provided no such service. Each community organized a solid waste management committee and came up with an action plan. Service fees have also been collected by these communities in their own right.

Ms. Wendy Beti
Environmental Officer
Ministry of Environment, Climate Change, Disaster Management, Solomon Islands

The Solid Waste Management Training in Kobe, Japan which is part of the recent 5th Regional 3R Forum for Asia and the Pacific held in Surabaya, Indonesia was an eye opener and worthwhile experience. The J-PRISM Project and the support from JICA as well as the SPREP have enabled the Solomon Islands Government through the relevant Waste Management agencies to come together and work collaboratively as a team to address the most urgent solid waste management issues. Our team work and leadership throughout the past two and a half years of the J-PRISM Project is the driving force to making things happen for the purpose of improving our final disposal system and addressing the waste management challenges in our country to the next level.

Ms. Feauini Veikoso Laumanu
Officer-in-Charge, Vava’u, Ministry of Environment, Energy, Climate Change, Disaster Management, Meteorological Information & Communications in Tonga

Started in Sep. 2013, the J-PRISM Tonga Team is working hard to monitor the community’s activities and provide technical advice when needed. After verifying the practicability, sustainability and expandability of the system, the Project selected four pilot communities for implementation before expansion to 5 communities this year 2014 and another 5 next year until we cover the whole area of Vava’u District. So far so good but we still need to establish more consistency among the households and collection team of each communities, and strengthen the “VEVE (= “Waste” in Tongan language) Committee”.

Can this method work out in remote islands like Vava’u? Keep your eyes on us!
2. Improvements on the ground – Final disposal sites

The existing disposal site has been improved by counterparts at their own initiative in Pohnpei State, the Federated States of Micronesia. This experience has helped the counterparts gain huge confidence in conducting physical improvement of solid waste management on their own.

Mr. Charles Lohn
Pohnpei Environmental Protection Authority, FSM

The Dekehtik dumpsite was an open dumpsite with little control. Thanks to the support of JICA and the J-PRISM project with SPREP the dumpsite was rehabilitated into a Fukuoka type sanitary landfill in the month of June 2013 by way of a pilot project. The project was limited to a 70 x 30 meter cell due to it being a pilot project but now Pohnpei State is looking to extend the project and add in new cells that will transform the entire landfill into a semi-aerobic Fukuoka type landfill with more leachate treatment ponds. With the newly rehabilitated cell Pohnpei’s Solid waste managers and care takers are learning every day better and possible ways of handling our waste especially at the final disposal site.

Ms. Faatamaliamio Meredith
Senior Waste Policy and Planning Officer, Ministry of Natural Resources and Environment, Samoa

It’s a pleasure for me as a Samoan Citizen and a public servant to the government of Samoa, to acknowledge and appreciate the respected valued assistance from the government of Japan through projects, trainings and workshops that I was invited to and participate in. These have enabled me to observe, study, learn and obtain what needs to be acquired from their knowledge and experiences to help Samoa improve solid waste management for a better living environment.

Mr. Teiliphen Neamon
Majuro Atoll Waste Company, Marshall Islands

Thank God! Being a JICA trainee and member of J-PRISM, I am really thankful because I can achieve a lot. I want to share the knowledge I have learned with my colleagues and make progress in the solid waste management in RMI.

Prof. Yasushi Matsufuji
Professor, Fukuoka University

Unlike the other regions, we have to find a clue to the solution of solid waste problems with limited resources, in terms of goods, human resources and money in the Pacific region. At the same time, as the region is surrounded by natural beauty, we also have to be responsible for protecting it.

The “Fukuoka Method,” Japan’s own landfill technology, is simple to use and applicable to small and medium-sized landfill sites. I hope that the Pacific “Fukuoka Method” suited to local conditions will be materialized as early as possible through JICA’s cooperation.

Mr. Manase Malua
Health Inspector, Vava’u, Ministry of Health, Tonga

After the successful rehabilitation work of the existing disposal site, it was technically appropriate to label Kalaka Landfill. Kalaka landfill has two cells, one cell remains in reserve while the other one is filled by the users. At the same time the landfill provides a recycling station beside the gate and inside the landfill area we allocate places for green waste to decompose in order to prevent rapid filing of the Kalaka landfill.

Making full use of Japan’s technology, the Fukuoka Method (semi-aerobic landfill system)

What is the “Fukuoka Method”?

The “Fukuoka Method” is a sanitary landfill system that was developed by Fukuoka University and Fukuoka City. It is characterized by its low-cost and simple landfill improvement technology with which leachate collecting pipes, gas venting pipes, etc. can be installed, using materials and techniques available in developing countries, with the purpose of expanding an aerobic area inside the landfill layer of solid waste. Not only can this method reduce the impact on an environment around a final disposal site, while accelerating the breakdown of landfilled solid waste, stabilizing the landfill site easier and removing leachate more quickly, but it can also contribute to preventing global warming through the reduction of methane gas emissions from the landfill site.

Countries in the Pacific region whose final disposal sites have been improved by the partial application of the Fukuoka Method

- Samoa
- Palau
- Vanuatu
- Federated States of Micronesia
- Fiji
- Papua New Guinea
- Tonga

Open dumping had been employed at the Kalaka disposal site on Vava’u island, before counterparts at the Ministry of Health in Tonga made improvements including readjustment of the landfill and rebuilding of enclosing bunds, which have drastically changed the situation of the disposal site.

Before improvement

After improvement
3. Creating a recycling – oriented society

3R + Return

3R (Reduce, Reuse, Recycle), a concept essential to creating a recycling-oriented society, was originally advocated by (the then) Japane Minister Koizumi, and the “3R Action Plan” was adopted at the G8 Sea Summit held in June 2004. It goes without saying that this concept is also important in island countries. However, they have not had a fully-developed industry that ensures recycling. Thus, JICA has added the word “Return” to it to promote “3R+Return” consisting of two “Returns”: exporting to overseas recyclable resources and materials that are difficult to treat on island, and reducing organic waste to nature.

Fiji

Laotoka City Council (LCC) located in the west of Fiji has been working on compost making at home, educational programs at school and compost making with vegetable waste generated from the market with the slogan of “Ever green, Ever Clean, Laotoka City”. LCC has started the separate collection of recyclable materials and tried to reduce the amounts of solid waste to be landfill at the disposal site.

“Waste Minimization and Recycling Promotion Project”

Period: 2008-2012
Counterpart organization: Nadi Town Council, Laotoka City Council

Papua New Guinea

3R/HEART* Initiative in Port Moresby has been implemented in Port Moresby, the capital of Papua New Guinea from 2005. The “3R Action Plan” was adopted in the Pacific region since 2011.

Promotion Project”

Period: 2011-2012
Responsible organization: Shibushi City

4. Cooperation at the grassroots level

Introducing the Shibushi model to Fiji, Samoa and Vanuatu

Shibushi City in Kagoshima Prefecture has had no incinerators and has reduced over 80% of landfilled waste each year since 2005 (compared with 1998). This “Shibushi model” has been implemented in the Pacific region since 2011.

*Project to promote Shibushi City’s waste sorting model in the Pacific region, focusing on Fiji*

Period: 2011-2013
Responsible organization: Shibushi City

*Project to promote Shibushi City’s model in the Pacific region, focusing on Samoa*

Period: 2013-2016
Responsible organization: Shibushi City

Vanuatu

Port-Vila Municipality, the capital of Vanuatu, has started making an attempt to collect organic materials including vegetables generated at the central market, and to compost and use them for agriculture.

4. Cooperation at the grassroots level

Promoting collaboration between citizens, the operator and the government in the Solomon Islands

Honiara City, the capital of the Solomon Islands, is now making efforts to properly manage solid waste, by building a system for proper control of solid waste through collaboration between citizens, the operator and the government.

“Project to build a system for collection and sorting of household waste based on the principle of New3R (Reduce, Reuse, Recycle + Return) through public-private collaboration”

Responsible organization: Learning and Ecological Activities Foundation for Children (LEAF)

Turning available resources into products

A JICA Partnership Program focuses on commercializing recyclable resources in Vava’u Island, one of the remote islands in Tonga. In a training program held in Okinawa, participants reconfirmed the significance of techniques to sell recyclable resources to overseas on more favorable conditions and cooperation between residents, the government and businesses.

“Great Vava’u and Okinawa Motainai Movement Project”

Period: 2011-2014
Responsible organization: Okinawa Citizens’ Recycle Movement

Mr. Roger Tary

Environmental Health Manager, Port-Vila Municipality, Vanuatu

The purpose and objectives of the Market Waste Compost Project are to reduce the amount of waste as much as possible ending up at the Landfill and, in return use the compost material for gardening. With the constraints situation there is a need to consider what activity we can carry out within our capacity (finance, human resources, tools and equipment and facilities). Some Pacific Countries have established Recycling Companies and others maybe deal mainly with one or two categories of waste, thus other waste is ending up at the Landfill. There is also a need to consider starting with a small scale activity and then improving and expanding it in the future. We will keep our environment clean and healthy.
5. South-South cooperation & intraregional cooperation

JICA has promoted improvement of solid waste management throughout the Pacific region, not only in countries, but also the region as a whole, while making full use of regional characteristics in the Pacific region. JICA has common in the countries in the region, in terms of geographical similarity (being an island country), productive structure and living foundation. These similarities facilitate joint efforts in human resource development, through enhancing knowledge about solid waste management and improving technologies. JICA has promoted development of regional foundations through various support including J-PRISM so that the whole region can strengthen its solid waste management in the future.

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Dispatched to another country as a training instructor
(From Fiji to Solomon Islands)

In October 2013 Ms. Nafiza and Ms. Premia from Nadi Town Council held a workshop for school teachers in the Solomon Islands and introduced the Clean School Program implemented in Fiji. The name of the program is change in Solomon Islands to “Clean School Program” and it aims to promote educational activities at school.

Promotion of South-South and Triangular cooperation

Ms. Nafiza Ali
Health Inspector, Nadi Town Council, Fiji

Mr. Amos Mathias
Landfill Supervisor, Port-Vila Municipality, Vanuatu

Nadi Town Council (NTC) has successfully sustained the Clean School Program in cooperation with the Ministry of Education. NTC has continued the training programs in schools and more schools have joined the CS program this year. The success stories of Nadi schools are now being disseminated to the other towns and cities in Fiji (Lautoka, Ba, Tavua, Rakiraki, Sigatoka) as well as to the Pacific Island countries of Kiribati, Solomon Islands, Tonga.

Commonly speaking, the basis and principle of the operation, management and improvement of the disposal site are the same in the Pacific Island Countries. We have to create what we can do by ourselves effectively and efficiently under our current situation of constraints. The disposal site is the “Miro” of the solid waste management status in the country. Let’s take action to improve the site to mirror the beautiful future in our region.

Giving tips for disaster waste management
(Support from Vanuatu to Solomon Islands)

In April 2014, the Solomon Islands was hit by a tropical cyclone, which also flooded the Ranadi disposal site in Honiara, the capital of the country. Floods also hindered the management of disaster waste. Honiara City Council staff learned a lot through the support provided by the expert of landfill management who came straight from Vanuatu.

Pacific Islands Database of Capacity Development Activities (PIDOC)

Database built within SPREP to register those who have participated or become instructors in JICA’s training programs related to solid waste management, etc. The database aims to build a network that helps develop human resources for leadership who will become responsible for solid waste management in the Pacific Region in the future, as well as allows people to learn from each other, by recording individual learning and teaching experiences.

Working with Various Actors

JICA has been working on improvement of waste management in the Pacific Islands Forum (PIF) countries in collaboration with various actors such as regional/international organizations, other donor agencies, NGOs, municipalities in Japan, etc. SPREP has been the partner agency of Japan’s cooperation in the field of solid waste management.

Passing on good practices to other members in the region

We have applied the drink container deposit system to products imported from overseas and used them as financial resources for solid waste management in Palau. We welcomed instructors from not only Palau, but also Fiji and Kiribati, and held a training program for counterparts in the Federated States of Micronesia, Marshall Islands and Samoa.

In November 2013, a Regional Training on Promotion of 3R was held in Palau. The purpose of this training was to share the progress and lessons learned regarding existing recycling systems in the region. Countries from Federated States of Micronesia, Samoa, Marshall Islands and Kiribati participated in this training. The participants were very supportive and keen to learn about each island’s experiences as well as achievements. I believe such kind of regional workshop is important and necessary for the region as it provides opportunities for us to understand and learn from each other’s experiences whether good or bad. We must cooperate and share information to achieve the best result of our solid waste management systems in small island countries.