

フィジー国廃棄物減量化・資源化促進プロジェクト

ナンディ町（NTC）活動報告書

## Contents

<b>ACTIVITY 1: DEVELOPMENT OF SWM PLAN FOCUSING ON 3R .....</b>	<b>1</b>
Activity 1-1 Survey the current status of SWM. ....	1
Activity 1-3 Trace the current waste flow from generation to final disposal and identify issues to be addressed. ....	4
Activity 1-4 Develop frameworks of SWM. ....	5
Activity 1-5 Build a consensus on the framework of SWM Plan.....	5
Activity 1-6 Develop the draft SWM master plan.....	6
Activity 1-7 Finalize SWM plans. ....	7
<b>ACTIVITY 2 CAPACITY DEVELOPMENT FOR SWM THROUGH PILOT</b>	<b>8</b>
Activity 2-1 Conduct a community survey.....	8
Activity 2-2 Select pilot areas on the basis of the community survey.....	9
Activity 2-3 Develop a pilot project plan on 3R.....	9
Activity 2-5 Conduct trainings, on the job trainings, etc. for the staff of Lautoka City Council and Nadi Town Council to implement pilot project. ....	11
Activity 2-7 Conduct the pilot project on 3R at pilot areas. ....	14
Activity 2-9 Review and evaluate the 3R pilot projects. ....	16
Activity 2-11 Preparation of 3R-PP separate collection for recyclables in commercial area. ....	18
Activity 2-12 Conduct Pilot Project on separate collection for recyclables in commercial area. ....	19
<b>ACTIVITY 3 OBTAINING THE CAPACITY FOR 3R PROMOTION</b>	
<b>ACTIVITIES AT WHOLE AREA OF LCC &amp; NTC.....</b>	<b>23</b>
Activity 3-1 Develop a 3R promotion action plan for the whole area of Lautoka City and Nadi Town. ....	23
Activity 3-2 Conduct trainings, OJT, etc for the staff of LCC and NTC to implement 3R promotion. ....	24
Activity 3-3 Implement 3R Promotion. ....	24
Activity 3-4 Review and Evaluate 3R Promotion .....	38
Activity 3-5: Monitor the progress of communities' perception, behavior change of the people by conducting the Public Opinion Survey. ....	42
<b>ACTIVITY4 AWARENESS RAISING OF RESIDENTS THROUGH ENVIRONMENTAL EDUCATION ACTIVITIES.....</b>	<b>46</b>
Activity 4-1 Review on environmental educational tools/programmes in Fiji, Japan and other countries. ....	46
Activity 4-2 Develop effective educational tools/programmes. ....	46

Activity 4-3	Conduct trainings, on the job trainings, etc. for the groups & personnel concerned on 3R promotion in Lautoka and Nadi Town. ....	47
Activity 4-4	Introduce the educational tools/programmes in the pilot project areas... .....	48
Activity 4-5	Evaluate the educational tools/programmes.....	48
Activity 4-6	Improve the educational tools/ programmes .....	49
Activity 4-7	Implement activities to raise awareness through using the educational tools/ programmes in NTC.....	49

**ACTIVITY 5    DEVELOP AND RECOMMEND A 3R MODEL FOR FIJI ... 54**

Activity 5-1	Review all the process & results of the activities for 3R promotion by the project and extract findings. ....	54
Activity 5-2	Develop draft guidelines, manuals on 3R model for Fiji, etc. for its promotion. ....	55
Activity 5-4	Conduct seminars to present to other municipalities the guidelines and manuals.....	56

## ACTIVITY 1: DEVELOPMENT OF SWM PLAN FOCUSING ON 3R

### Activity 1-1 Survey the current status of SWM.

#### Baseline Survey

Eight kinds of baseline surveys were conducted by contracting out to private sectors in Fiji. Some of the surveys were put together and contracted out as one package because they were considered better to be conducted by one contractor judging from the survey timing and methods.

Table 1: Table : List of Baseline Surveys and Contractors

Baseline Surveys	Contractors
Waste Amount and Composition Survey (WACS)	WesEng Consulting
Final Disposal Amount Survey (FDAS)	
Time and Motion Survey (T&M)	WesEng Consulting
Public Opinion Survey (POS)	Environment Consultants Fiji (ECF)
Compost Demand and Market Survey (CDMS)	
Recycling Activity Survey (RAS)	
Community Survey	WesEng Consulting
Topographic Survey in Lautoka Landfill	Cadastral Solutions Ltd.

Most of the surveys mentioned above were to be completed by the end of January 2009, and basic data for a waste flow chart was also to be collected.

#### **a. Waste Amount and Composition Survey (WACS)**

##### **a.1 Objective**

In order to prepare sustainable solid waste management plans for NTC it is necessary to properly grasp the current waste flows. WACS was conducted in order to grasp the amount of waste generation and its composition in NTC.

##### **a.2 Contents**

In WACS, 20 samples from 12 generation sources were taken from NTC with the waste amount survey being conducted over 7 days. This survey was to be conducted in both dry and rainy seasons, and waste generation rate was to be surveyed at 12 generation sources in NTC. Waste composition of the 12 generation sources was also surveyed. WACS was conducted for dry and wet seasons

#### **b. Final disposal Amount Survey (FDAS)**

##### **b.1 Objective**

To grasp how much waste generated in Nadi is disposed at the final disposal sites

**b.2 Content**

Number of collection trucks bringing in waste from Lautoka to the final disposal sites and their weights were surveyed using a truck scale hired from a private company over a week.

**b.3 Implementation of Survey**

FDAS was conducted over the term in November. A truck scale hired from South Pacific Fertilizer Ltd. in Lautoka was used for this survey.

**c. Time and Motion Survey**

**c.1 Objective**

To understand current conditions of waste discharge, collection and haulage to Lautoka.

**c.2 Content**

Follow-up survey of the collection trucks in Nadi interviews with the collection workers were conducted. This was conducted in the household area (two trucks) and in the commercial area (one truck), and details of the collection service were recorded. Route map was also prepared. In this follow-up survey, two people recorded the collection route and the work details.

**c.3 Implementation**

It was conducted over the term from 13 to 17 of February in Nadi.

**d. Public Opinion Survey (POS)**

**d.1 Objective**

To grasp to what extent the public and business establishments are satisfied with the current solid waste management, and their needs, manners during storage and discharge, and opinions on waste collection fee

**d.2 Content**

Inquiry items for questionnaire survey were defined and interviews to 300 samples taken from households and business establishments in Lautoka and Nadi were conducted. Analysis of survey results, as well as preparation of a database was conducted.

**d.3 Implementation**

In the household survey, interviews were undertaken in the commercial, residential, and

Border (or Peri-unban) areas in Lautoka and Nadi. In the business establishment survey, the business establishments within each council were categorized into six types to select a survey sample, and interviews were held with 56 businesses in Lautoka and 47 in Nadi.

Table 2: Number of Samples for Household Survey

	Lautoka	Nadi	Total
Business area	10	30	40
Residential area	90	50	140
Border area	10	10	20
Total	110	90	200

Table 3: Table: Number of Samples for Business Establishment Survey

Types of business surveyed	Lautoka	Nadi
Shop	14	9
Restaurant	10	10
Office	16	10
Hotel	5	10
Market	1	1
Other (Supermarket)	10	7
Total	56	47

#### e. **Compost Demand and Market Survey (CDMS)**

##### e.1 **Objective**

In order to promote waste reduction and recycling, it is effective to compost organic waste, which accounts for about 70 percent of total amount of waste discharged in Nadi. However, in order to establish a system in which composting is sustainable, it is necessary to learn how the compost produced would be used. This survey was conducted in order to grasp demand of compost and its marketability in Western division.

##### e.2 **Content**

A survey was conducted using the latest statistics in the Western Division of the type and amount of agricultural good being produced and the location of farms. Moreover, interviews with 50 farmers around Lautoka and Nadi were conducted and prices of the products, cost and amount of fertilizer used, and opinions on compost were summarized. Then, compost demand and marketability were studied.

##### e.3 **Implementation**

Interviews with 50 farmers in and around Lautoka and Nadi were conducted. This survey started in February, as its progress was affected by the flooding following a cyclone in January. The data collected are currently being processed.

**f. Recycling Activity Survey (RAS)**

**f.1 Objective**

To collect data on recyclable waste and its amount in Lautoka and Nadi, to draw waste flow based on the data, and then to use it for establishing an appropriate solid waste management system for the Lautoka and Nadi sides

**f.2 Content**

Interviews with 60 stakeholders concerned in recycling activities in Lautoka, Nadi, Sigatoka, and Suva were conducted, and data processing was also conducted.

**f.3 Implementation**

Interviews were requested with 60 representatives of various groups, as shown below, but some did not accept. So interviews were held with 45 people.

**Activity 1-3 Trace the current waste flow from generation to final disposal and identify issues to be addressed.**

(1) Designing of Waste Flow Chart

Waste amount was estimated based on the WACS, and final disposal amount was estimated based on the FDAS. And the waste flow, including the items of self-disposal, recycling, illegal dumping, etc. was to be estimated based on the POS and RAS.

The cyclone hit the West Division in the beginning of January affected the progress of the POS and RAS interviews. Therefore the start of these interviews was delayed for half a month. It was in the middle of February when necessary data was obtained. The waste flow was designed based on the results of the POS and RAS.

(2) Identification of the Waste Issues

The waste issues of NTC were identified based on the results of the above-mentioned baseline surveys, waste flow, and other field surveys.

NTC	
1.	Characteristics of waste that can be seen in Fiji
2.	Scattered waste
3.	Green waste disposed by households.
4.	High cost for public area cleaning service
5.	Unfair fee collection system adopted at the landfill site
6.	Some waste disposed inappropriately
7.	Medical waste disposal

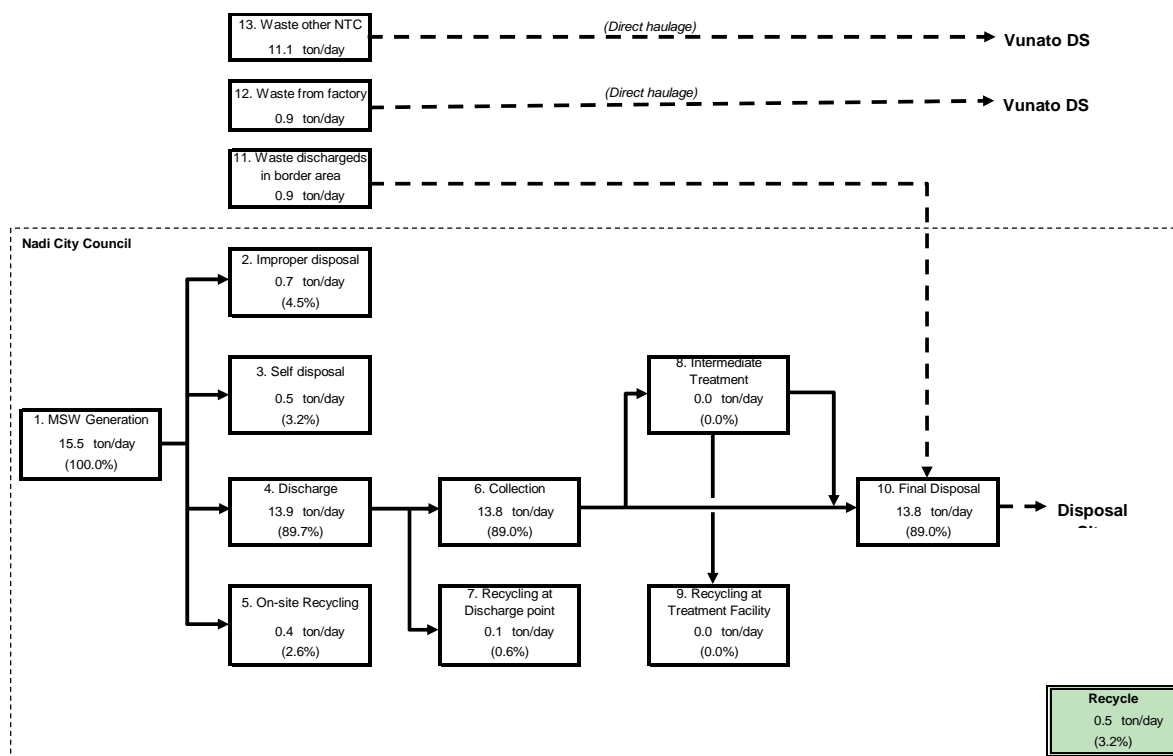


Figure 1: Waste Flow in Nadi (2008)

#### Activity 1-4 Develop frameworks of SWM.

JET in consultation with the C/Ps developed the frameworks of the SWM master plan including the fundamental goal and target year of the master plan, forecasted the future population and GDP growth rate as factors to estimate future waste amount and composition.

The numerical target of the master plan was set based on the waste flow which was finalized considering the results of baseline surveys and data forecasted by using the factors mentioned above.

Two workshops were held with the key stakeholders who are involved with solid waste management for the purpose of consensus building. These workshops were in addition to initial workshop that was held on June 2, 2009 in NTC chambers

#### Activity 1-5 Build a consensus on the framework of SWM Plan

In order for the Project to build a consensus among stakeholders on the draft framework of the SMW master plan, prepared in the first fiscal year, the Project held a workshop at a chamber in NTC on Tuesday, 2<sup>nd</sup> June 2009.

The workshop was conducted in line with Table 2. First the C/P reported the results of



baseline surveys, and they explained the current status in the NTC's waste management and the issues addressed. Second they presented the draft framework of the SWM master plan, target year of which is 2017. Following this, the Project proposed the draft plan for the 3R pilot project. This was proposed in order for the Project to examine possibility of the SWM master plan from the aspects of feasibility, continuity and expense.

Finally, the participants were divided into four groups. Each group was asked to discuss the current status in waste management, draft of the SMW master plan and draft of the 3R pilot project. Then, they were asked to make a presentation on their discussion results.

Participants

A total of 39 people participated in this workshop including: personnel from local governments (5 persons), religious organizations (4), community (4), citizen (1), cleaning company (3), Recycler (6), NTC (8: one of them is from JOCV), JICA Fiji Office (1), and JET (7).

Workshop Status

Mr. Aisea TUIDRAKI, the Special Administrator participated in all sessions. In sessions 6 and 7, the participants were divided into four groups and discussed the issues addressed in sessions 1 to 4. Most participants recognized that NTC did not have its own disposal site and they regarded this status as an issue. Almost all participants agreed on the framework of the SWM master plan focusing on waste minimization and recycling.



**Activity 1-6 Develop the draft SWM master plan**

JET and C/P discussed the results of the pilot project preparation and observation just after the pilot project implementation. Then, they discussed how the draft SWM master plan should be prepared in accordance with the framework that was agreed upon at the first workshop. They held three meetings to discuss these matters.

First meeting	Contents of the SWM master plan Identification of the issues addressed in the current waste management and how to solve the issues How to prepare a waste flow chart
Second meeting	Concept of the SWM master plan Goal of the SWM master plan Strategy for accomplishment of the goal from the technical aspect
Third meeting	Strategy for accomplishment of the goal from the institutional aspect

The issues encountered in the pilot projects for the promotion of the 3Rs, the main focus of the SWM master plan, were shared through these three meetings, and they were recognized to be significant issues. Then, the second workshop was held jointly by the two councils to discuss ways of cooperating on envisaged strategies for the expansion of the project. This was an opportunity for various stakeholders, including those from the pilot area, to exchange opinions on these matters.

#### **Activity 1-7 Finalize SWM plans.**

The Japanese Expert Team (JET) after mutual consultation with the Counterparts has reviewed the Solid Waste Master Plan (SWM M/P) which was adopted in March 2010. It shall be noted that the original SWM M/P was initially formulated based on the results of the baseline survey conducted by JET, planning framework confirmed among the stakeholder in the first workshop held on June 2009 and the 3R expansion plan agreed by the stakeholders in the 2<sup>nd</sup> workshop held on October 2009. The SWM M/Ps which was prepared by the JET had been finalized through series of mutual meetings with the counterparts and JET. The finalized SWM M/P was explained to the stakeholders in the seminar held on 24<sup>th</sup> and 26<sup>th</sup> February, 2010 in LCC and NTC respectively.

However, data retrieved from the computerized weighbridge highlight differing Final Disposal Amount (FDA) compared to the initial data which was estimated during the FDA Survey. Also, some lessons and challenges have been experienced during the 3R Expansion to whole of Namaka Ward since December, 2010. The Council was successful in changing the garbage collection days from 3 days/week to 2 days/week in residential areas and from 6 days/week to 5 days/week in commercial area. Furthermore, the expected number of composter sales was not achieved. Hence, there was need to review the SWM M/P by analyzing and incorporating these findings.

The reviewed SWM M/P now shows a slight decrease in MSW amount generation and target recycling rate.

## ACTIVITY 2 CAPACITY DEVELOPMENT FOR SWM THROUGH PILOT

### PROJECT

#### Activity 2-1 Conduct a community survey.

##### a. Objective

The objective of this survey was to collect the following materials:

- = Basic materials necessary for selecting 3R pilot project site.
- = Basic materials necessary for studying about how the 3R activities will be promoted and disseminated throughout the whole of Lautoka and Nadi

##### b. Content

Main works included community survey and preparation of maps of the areas.

##### (1) Community Survey

The 10 communities shown below were surveyed. The community names, location of the activities, the activities' areas, number of participants in the activities, and the community leaders were surveyed. These items surveyed were plotted on the area maps.

Table 4: Community Activities in LCC and NTC

Community	LCC	NTC
1. Primary school zone	16	9
2. Secondary school zone	16	2
3. Church	43	13
4. Temple	10	3
5. Mosque	4	4
6. Mothers' club	11	4
7. Mandali (Hindu)	57	7
8. Neighborhood watch zone	11	-
9. Mataquali	11	8
10. Sub-Division	133	63

##### (2) Preparation of Area Maps

Locations of the following wards were plotted on a topographical map, and population and number of households were surveyed by ward.

Ward	Area
Namaka Ward:	ATS I/II, Concave, Votualevu Low Cost, Deo Street, Matavolivoli, Savenawai, Tanoa Housing, Bountiful, Waqadra, Namaka Park, Beddoes Circle, Namaka Industrial and Waqadra Co-operative
Martintar Ward:	FASA Ave, Mt St Mary's, Cawa Rd, Ram Deo St, Martintar Rd, Anderson Rd, Martintar Line, Grey Rd, Ragg St, Goundar Rd, Northern Press Rd, Wailoaloa Rd, Wasawasa, New Town, Zahoor Rd, Kahlil St, Haji St, Saunaka Corperate and Kennedy Ave/Enamanu
Town Ward:	College Rd, Buasala Pl, Mukherji Rd, Naicker St, Kauvula Rd, Andrews Rd, Raniga St, Sukuna Rd, Richmond Cr, Narewa Rd, Rusiate Levula St, Dra St.

### Activity 2-2 Select pilot areas on the basis of the community survey.

The 3R pilot project sites were to be selected based on the results of community surveys, any information about the community, and on hearings with the community leaders.

In Nadi, there was a housing Committee which was initially approached then later during our community meeting in Matavolivoli, the community decided to establish a 3R committee in which some members of Matavolivoli housing Committee were selected.

As a result, the following sites were selected as 3R PP site.

Table 5: 3R Pilot Project Site

	Names of the Pilot Project Sites	Population	Number of Households
NTC	1. Matavolivoli	914	162
	2. Savenawai	820	164
	3. Waqadra Co-operative	375	75

### Activity 2-3 Develop a pilot project plan on 3R.

#### a. Target of 3R Pilot Project

- NTC gains further capacity to do solid waste management (SWM) appropriately through the 3R pilot project (hereinafter, PP). (PDM Output 2)
- NTC gains further capacity for promoting 3R activities in the whole area of Nadi Town through 3R PP. (PDM Output 3)

- Awareness of residents in Nadi Town is raised through environmental education activities on 3R promotion. (PDM Output 4)
- The 3R model adapted to the characteristics of Fiji is established and suggested. (PDM Output 5)

**b. Concept**

**b.1 Practicability**

- Stakeholders such as Residents, Community, NTC, Collection Companies, Recycling Companies, Garbage Contractor accept implementation of PP.
- A new system is developed based as much as possible on the experiences of existing and successful recycling systems.
- Get residents participating as much as possible by employing the support of existing community groups.

**b.2 Sustainability**

- The system needs to contribute to reduction of waste amount and preservation of the environment.
- Has little impact on current waste management in terms of financial and institutional aspects.
- There needs to be an incentive for the stakeholders

**b.3 Expandability**

- PP needs to be a model of 3R activities and to be expanded to the whole area of NTC.
- 3R activity is disseminated to the whole area of Fiji through this model.

**c. Current Status on 3R and Problems addressed**

In order to plan 3R Pilot Projects, particular consideration needs to be given to current status of recyclable materials and organic waste. The Project studied such matters, with the following results.

**c.1 c.1 Recycling of Recyclable materials**

1 Recyclable items and recycling activities are limited.

-The waste recycled at present include plastic (PET) and glass bottles, and metal. Total generated amount of these three items is estimated at 0.5t/d (2.5%). It is too small.

-Main recycling activity includes collection of recyclable materials by the Council Contractor

of recyclables discharged by the residents in residential areas and by shops in commercial area.

-A new collection system for recyclable materials has been established by Nadi Town Council in consultation with the current Garbage contractor, however, this will need to be reviewed for future collection and may lead to rise of current SWM cost.

-Capacity of the existing collection companies is not high.

### **c.2 Recycling of organic waste**

The main organic waste in Nadi includes kitchen waste generated from households, market, restaurants, hotels, etc., green waste, and grass and wood generated by road sweeping, park cleaning and drain and grass cuttings. Table 8 describes current status on disposal of these waste and possibility of recycling.

### **Activity 2-5 Conduct trainings, on the job trainings, etc. for the staff of Lautoka City Council and Nadi Town Council to implement pilot project.**

On the job training for C/Ps of NTC was conducted by JET to implement pilot projects in 3R PP area and starting the pilot market waste composting project. In order to carry out these pilot projects C/Ps had field visits to other sites to observe and gain the practical aspects of 3R activities. Regular sessions with JET especially in regards to pilot project preparations was also an integral aspect of on the job training for C/Ps. This ensured capacity building from 3R expansion point of view.

These aspects of OJT are discussed below:

#### **a. Preparation for the 3R pilot project**

**This included initial planning, basic concept and design, review of the plan and examination of the recyclables collection system (for both the LCC and NTC sides)**

JET discussed the recyclables collection system with both the LCC and NTC sides, and confirmed the following:

- ①. The LCC and NTC sides collect the recyclables in the pilot sites using a multi-purpose truck once a week for the first few months.
- ②. After having grasped the recyclable items and amount of the recyclables through the pilot project, the frequency and methods of collection are examined. Then, the best system for collecting recyclables will be established.
- ③. After the system has been well established, the recyclables collection would be contracted out to a recycling company (Recycler). The area of collection will be expanded in this way.

**b. Discussion with the community representatives**

JET and C/Ps discussed amongst themselves to select 3 sites namely Matavolivoli, Savenawai and Waqadra Co-operative for piloting the project, and met with the Housing committee of Matavolivoli which was selected as candidate pilot site jointly by the JET and C/P sides in the first fiscal year. They grasped the status in the communities in detail and obtained information for reviewing the pilot project plan.



Figure 2: Scenes of the committee meeting

**c. Discussion with recycling companies (for both the LCC and NTC sides)**

The Project had a meeting with recycling companies as they are essential organizations for establishing a recyclables collection system. They discussed the recyclable items, price, collection method, etc. The Project visited Waste Recyclers (Fiji) Ltd. and Smorgon Steel Recycling (Fiji) Ltd., both of which were operating in the Western Region, Coca Cola and Foster's Beer are collecting their own PET bottles and aluminum cans as part of their CSR activities.

As a result of discussion with the recycling companies, it was identified that Waste Recyclers (Fiji) Ltd. (hereinafter, WR) could accept the most recyclable items. The Project decided to request cooperation in the pilot project operation to WR.

The Project had repeated discussions with WR. Then, WR was to accept other plastics, paper, and cloths in addition to PET, metals and bottles. However, it was found they could not receive payment for PET and glass bottles and paper. Also, the Project confirmed that the collected items were picked by WR's from Pilot site. It also confirmed that the collected items were measured in the presence of the committee member and C/P.

**d. Preparation for the 3R pilot project**

NTC C/P and JET had repeated committee meetings with the community representatives from Matavolivoli, the site for the 3R pilot project. They discussed preparation for the 3R pilot project implementation.

**e. Examination of compost making**

(1) Observation of the existing facilities for composting

As both the LCC and NTC sides did not have experience in making compost, the C/P and JET visited sites making compost. They visited a composting facility operated by OISCA (an NGO in Japan) in Sigatoka on 13 July. They also visited such place in Ba on 17<sup>th</sup> July.

In Sigatoka composting of vegetable waste was being conducted. Bokashi was made by mixing the produced compost with mill-mud, foul dung, and sawdust. It was identified that they had enough skill for home composting to be expanded. The JET and C/P sides requested Mr. Yoshida, an expert in OISCA to do technical guidance, and the request was accepted.

In Ba, organic fertilizer was produced on a large-scale using mill-mud discharged from sugar mill. Useful information on usage (sale) of compost was collected.

**f. Collection and separation of market waste**

The Project assisted with the commencement of composting of vegetable waste generated at market in Nadi. This was conducted for the purpose of establishing an off-site recycling system for organic waste. In June, 2011 the work for collecting vegetable waste separately from other waste was initiated. Although the organic waste separated was of quality, some plastic bags and aluminum cans were mixed in the separated waste. The Project decided to continue awareness-raising activities.

The compost yard for vegetable waste was established at the Council depot and the Council utilized its shredded chips of green waste to use as base and cover material.

The Project decided to continue the work for collecting waste and separating into vegetable waste generated at markets, however in January 2012, it decided to suspend composting of market waste due to unavailability of space and continuous complaints been received from residents of foul smell during turning and rainy weather .



The NTC C/P, creating awareness to separate vegetable waste at Nadi market



Compost site preparation at the Council depot





Separated bins provided at the Nadi Market for green/other waste



Quality of market waste collected

**Activity 2-7 Conduct the pilot project on 3R at pilot areas.**

**a. Launch of the 3R pilot project**

Launch ceremonies of the 3R pilot projects were held in Field 40 of LCC at 15:00, 4<sup>th</sup> September and held in Matavolivoli of NTC at 10:00 5<sup>th</sup> September. The following campaigns were conducted to raise the awareness of citizens and stakeholders.

**a.1 Environment slogan and logo contest (planned by the JOCV staff, implemented by the C/P, and supported by JET)**

94 citizens participated in the environment slogan and logo contest, which were planned by the JOCV staff. The JOCV and C/P jointly selected the best slogan and the best logo. The Project adopted the selected works for designing T-shirts, signboards, leaflets, etc. They were to be used for promoting the Project. NTC awarded cash and prize to the winner at the launch ceremony.



Figure 3: Scene of selection of the best work, the selected slogan and logo (NTC)

**a.2 Installation of a signboard introducing the pilot site**

A signboard introducing the pilot site was installed on the way into Matavolivoli. Moreover, the NTC side hung the banner of its pilot project in the main street of NTC. NTC advertised

its pilot project actively.

### a.3 Distribution of T-shirt

JET prepared two types of T-shirts in order to campaign for the pilot project.

Table 6: Number of T-shirts (NTC)

Type	For	NTC
Polo shirt	Instructors	100
T-shirt	Residents	250



### b. Start of the recyclables collection

The collection timing for the recyclables in Matavolivoli was designated to be from 10:00 to 12:00 every Thursday. The first service was provided on 3<sup>rd</sup> September.

63 out of the 162 households (38.9 percent) in the pilot site discharged PET bottles, other plastics, metal, paper, and cloths using the special sack distributed by the C/P. The total amount of the collected recyclables was estimated to be 157 kg.



A committee member and a JET expert, monitoring the status of discharge



Scene of the recyclables collection



Recycler, measuring amount of the collected recyclables in the presence of C/P

**c. Launch ceremony for the 3R pilot project in Matavolivoli**

Launch ceremony of the 3R pilot project was held at Child Park in Matavolivoli from 10:00 on 5<sup>th</sup> September. The minister and DOE officials from the Ministry of Local Government and Urban Development & Housing and Environment, the Special Administrator from LCC, etc., were invited. The program of the ceremony is as shown in Appendix 5.

At the beginning of the ceremony people concerned marched with 3R banners in the streets of Matavolivoli, lead by the police band. After the opening addresses, personnel from the Department of Health in NTC explained the outline of the 3R pilot project as well as the result of the recyclables collection conducted on 3<sup>rd</sup> September. Following this, the grass cutting machines and composters, both of which were procured by JICA, were handed to the Minister of Local Government and Urban Development & Housing and Environment and the Special Administrator. The Resident Representative of JICA Fiji Office presented them.

Finally, a community representative declared “we will participate in the 3R promotion project.”

**Activity 2-9 Review and evaluate the 3R pilot projects.**

JET has conducted monitoring to confirm the status in discharge of the recyclables, amount of the collected recyclables, and recyclable items. They visited Matavolivoli every Thursday. Thursday is the recyclables collection date for Matavolivoli. The following indicates the data collected in September, the first month of the pilot project operation.

- Average rate of the households who participated in the recyclables collection to all the households: 31.2 %
- Average amount of the recyclables collected: 109.1kg
- Amount of the recyclables discharged: 55g/person/day

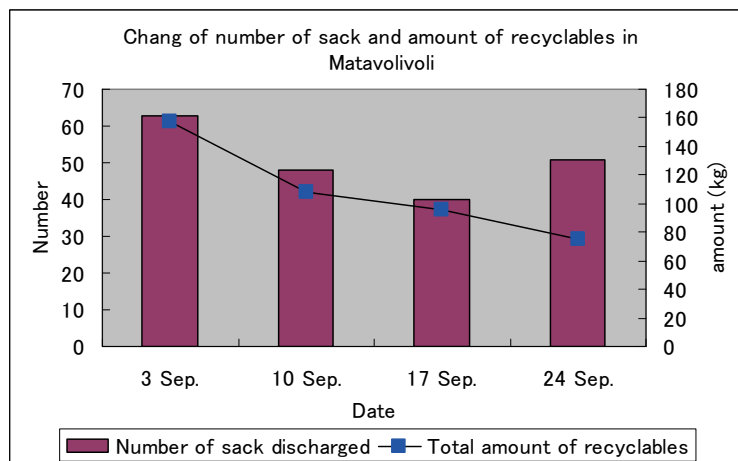


Figure 4: Change of number of the sacks discharged and total amount of recyclables (Matavolivoli)

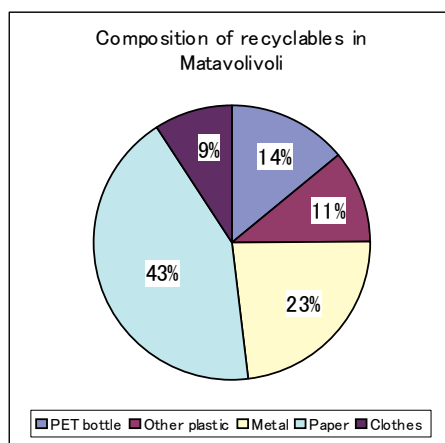


Figure 5: Breakdown of the recyclable items (Matavolivoli)

#### Assessment of the technical system

##### **a. Frequency of collection**

Target recyclables include PET bottles, other plastics, cardboard, etc. Most of them are bulky. The appropriate frequency of collection may be once a week for the households that discharge the recyclables regularly.

##### **b. Discharge container**

The nylon sack distributed to every household may be appropriate for the residents in terms of capacity and usage. This kind of sack may be easily blown away. The collection workers pay attention to that. They are instructed to return the sack to within the household premise.

##### **c. Efficiency of collection**

- Collection staff consists of one driver and two collection workers. The two workers do the work for collection and separation on the carrier of truck, and the driver

helps in their work.

- Doing both the collection and separation works at the same time is not efficient.
- Especially it takes much time to collect and separate paper scrap, plastic bag/sheet (wrapping for candy, food, plastic bags of supermarket). However, some households discharge the recyclables by item and in small amounts. Such discharge methods contributes to reducing the collection workers' workload. The Project will instruct the residents again about how to discharge paper and plastics.

### **Activity 2-11 Preparation of 3R-PP separate collection for recyclables in commercial area.**

The successful implementation of the 3R PP activities at the residential pilot area for the separate collection for recyclables was expanded to part of the commercial area in Namaka. The following preparatory activities were undertaken for introduction of separate collection services for recyclables in Namaka Commercial area.

1. Meeting with Recyclers
2. Selection of boundary of commercial area to implement separate recyclable collection pilot project activity.
3. Planning and Formulation of plan suitable concept and system of separate recyclable collection in CBD. This outlined the number of business establishments to target, target recyclables, discharge manner, container, timing, collection and transportation mechanism, monitoring etc.
4. Developing educational and awareness raising tools like leaflets, recyclable collection calendar, stickers, posters, circulars etc.
5. Meeting with Nadi Chamber of Commerce (NCC) and business stakeholders.
6. Training of 3R promoters for dissemination of information.



Meeting with NCC and business stakeholders



Training for the 3R Promoters

7. Conducting awareness raising activities which included:
  - a) 3R campaign at Commercial area
  - b) Shop to shop visits for distribution of nylon sacks, stickers, leaflets and circulars.
  - c) Development of 3R music with announcement.
  - d) Reminder circulars were also distributed a day prior to the commencement of the collection day.



3R campaign at Namaka market



Distribution at Namaka commercial

**Activity 2-12 Conduct Pilot Project on separate collection for recyclables in commercial area.**

Following the preparations for the 3R-PP, separate collection for recyclables started in the Namaka commercial area on 8<sup>th</sup> July, 2010 targeting **84** business establishments based on the following basic concept and systems.

**a. Plan and Basic Concept of Pilot Project**

The Pilot Project on separate collection for recyclables in commercial area was conducted based on the following basic concept and systems:

**a.1 Number of business establishment and recyclables collection day at part of Namaka Commercial area implemented PP for separate collection of recyclables**

Table 7: Condition PP area for commercial in part of Namaka

Area	No. of business establishment	Collection day
Part of Namaka Commercial area	84	Every Thursdays

**a.2 System for Recyclable collection Pilot Project for Namaka Commercial area**

Table 8: Basic System for Garbage and Recyclable collection at Namaka commercial

Target items	Regular garbage collection	Recyclables collection
Target items	Except recyclables	PET bottle (for beverage), Plastic shopping bag Hard plastic, Metal include tin cans, Paper (newspaper, magazines, office paper) Cardboard, Cloths
Collection Frequency/collection day of the week	5days per week collection Namaka Ward Martintar Ward Town Ward	Once a week  Every Thursday Every Wednesday Every Wednesday
Discharge container	Containers with lid	Any type of containers with sticker basically Nylon sack (with 3R logo) distribute only first time Plastic-made container and wheel bin are promoted for discharge of recyclables Bulky cardboards should be discharged by tying it with string
Discharge time	by 9:00 am	by 9:00 am
Collection time	9:00-10:00 am	9:00am -16:00 pm
Discharge place	Curb side	Curb side

**a.3 Collection Mechanism**

Items		Residential area	Commercial area
Collection	Implementation body	Contract out to private contractor	Contract out to private contractor  (A large discharger such as supermarket contracts out recycler/collector individually)
	Workers	One Driver At least two collectors	One Driver AT least two collectors
	Equipments	Collection truck belongs to contractor	Collection truck belongs to contractor
	Profits	All profits to be paid to the council.	All profits to be paid to the council.

**a.4 Sorting and Storage**

Items	Residential area	Commercial area
Sorting	- Place: Recycler's depot - Staffs: Recycler's staffs	Same as residential area

**a.5 Monitoring system for Separation and Collection.**

Items	Residential area	Commercial area
Monitoring	<ol style="list-style-type: none"> <li>1 Collection crew counts the household discharged recyclables.</li> <li>2 Collection crew refuses the mixed non recyclables and dirty recyclables.</li> <li>3 C/Ps monitor the discharge manner at initial stage.(at least 2 months)</li> <li>4 Recyclers submit monitoring sheet filled up recyclables amount and profits.</li> </ol>	(Same as residential area) <ul style="list-style-type: none"> <li>• Discharge container</li> <li>• Discharge day of the week</li> <li>• Discharge place</li> <li>• Other discharge manner</li> <li>• Amount of recyclables</li> </ul>

**b. Quantity of recyclables collected**

The PP for separate collection for recyclables at commercial area is continuing for three months at Namaka Lane. The Figure 1 shows the change of percentage of participant. An average percentage of participants to separate collection is 49% for three months.

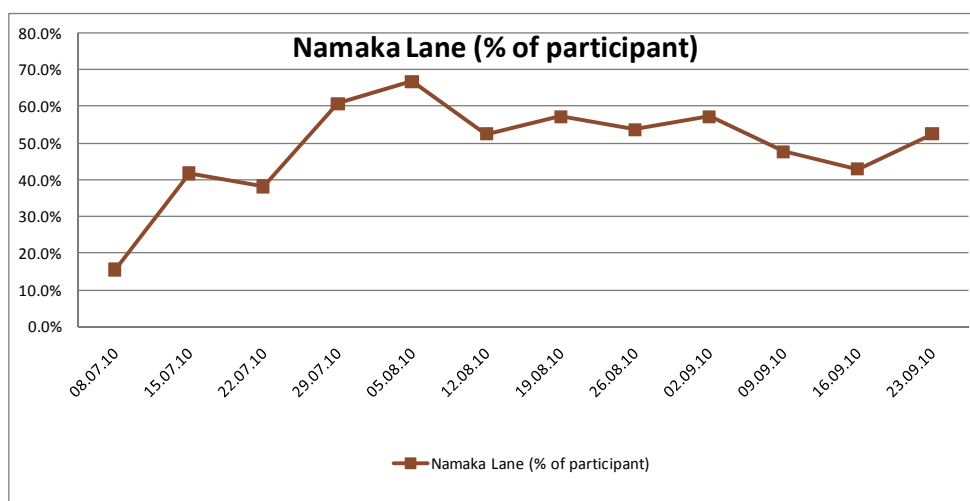


Figure 6: Percentage of participants to separate collection for recyclables

The average discharge and collection amount of recyclables is 194 g/day in business establishment according to data monitored three month from July to September 2010.



Table 9: Recyclables amount discharged and collected at commercial PP area

Collection date	2010						
	15.Jul.	29.Jul.	05.Aug.	19.Aug.	2.Sep.	16.Sep.	30.Sep.
Amount of recyclables collected (kg)	134	216	225	157	160	218	251

Average of recyclables amount per business establishment in CBD=

$$\text{Ave.} (134\text{kg} + 216\text{kg} + 225\text{kg} + 157\text{kg} + 160\text{kg} + 218\text{kg} + 251\text{kg}) / 7\text{days} / 84\text{BE} = 0.194\text{kg/day/BE}$$

**c. Quality of recyclables collected**

Composition of recyclables at commercial area (Namaka Lane) and at whole extension areas included residential area provided separate collection for recyclables for three months from July to September 2010 are shown at Figure 2 and 3 respectively.

Paper and cardboard shares 62% of composition of recyclables discharged at commercial area.

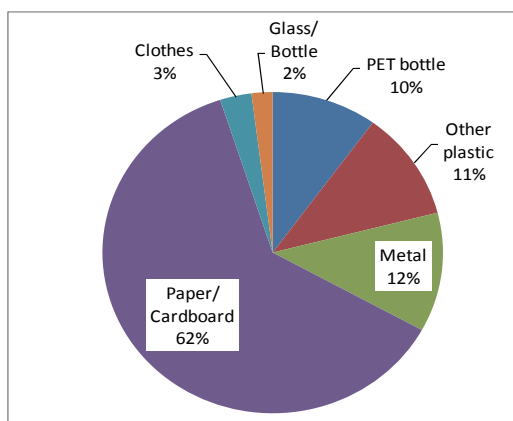


Figure 7: Composition of recyclables collected at commercial area (Namaka Lane)

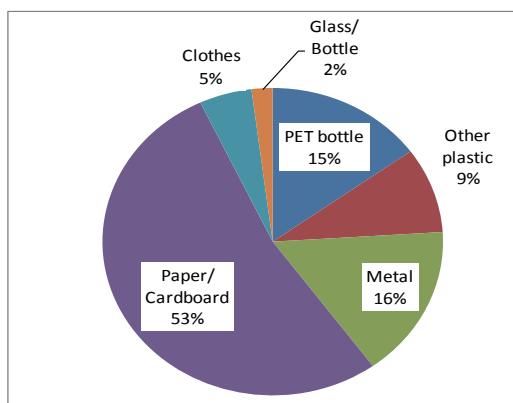


Figure 8: Composition of recyclables collected at whole areas provided separate collection for recyclables

**d. Matters to be improved**

**d.1 Commercial area**

- Participation of small shops in commercial area is low.
- Large scale of business establishments discharges a large volume of cardboard without discharge rule. Those establishments should follow the discharge rule, otherwise should contract directly to a private recycler.
- At beginning, the recyclables were collected by recycling company, however cause of collection cost, the council collects them instead of recycler and hauls to his depot at this moment.
- There are many small shops which discharge recyclables with black color plastic bag for garbage. According to the recyclables discharge rule instructed to business establishment, recyclables should be discharged with nylon sack distributed to each small shops or container with 3R promotion logo. If discharge recyclables volume is large, shops might be discharge with nylon sack and extra black color plastic bags and should be divided the discharge point clearly with garbage container.

### **ACTIVITY 3 OBTAINING THE CAPACITY FOR 3R PROMOTION ACTIVITIES AT WHOLE AREA OF LCC & NTC**

**Activity 3-1 Develop a 3R promotion action plan for the whole area of Lautoka City and Nadi Town.**

The 3R Action Plan was formulated and finalized following the two weeks Group Focused training in Japan on 3R Promotion for 10 C/P staffs from Fiji. This 3R action Plan is scheduled to be presented to the Stakeholders on 29<sup>th</sup> November, 2010. The 3R Action Plan stipulates specific policies for respective 3R activities.

3R Action Plan has been formulated targeting the expansion policy, implementation system, schedule and budget focusing primarily on the following four core components of 3R's:

- Separate Collection of Recyclables.
- Home composting.
- Market waste Composting
- Green waste collection and Chipping Service
- Nadi Clean Schools Programme

### **Activity 3-2 Conduct trainings, OJT, etc for the staff of LCC and NTC to implement 3R promotion.**

Total of 8 counterpart staffs from the council have so far attained knowledge on 3R promotion as a result of their exposure in Kitakyushu and Shibushi Cities during the 2 weeks group focused training. Other forms of OJT training opportunities have been gained from the JET consultants during the course of the project. The participation of the staffs during the Joint Fortnightly meetings also offered opportunity to share and gain knowledge from each other. C/P staffs have acquired necessary training during the last 2 years of the project and they are now equipped to implement the 3R Expansion Plan to the whole of the city area.

Some basic training gained includes:

- Conducting community meetings.
- Preparation of presentations and conducting presentations to members of public.
- Preparation of educational and awareness raising tools like leaflets, pamphlets, posters, circulars, notices, media awareness materials, tender documents etc.
- Interpretation of monitoring results of recyclable collection.
- Carry out all monitoring works including home composters, recyclable collection, green waste chipping etc.
- Conduct basic baseline surveys like Public Opinion Surveys, community surveys etc and interpret results.
- Organize, facilitate and coordinate seminars.
- Prepare manuals.
- Conduct awareness raising of target population especially by house to house visits and announcements.
- Implement Clean schools Programme focusing on 3R's concept.

### **Activity 3-3 Implement 3R Promotion.**

Since July, the expansion of 3R promotion has been implemented in terms of:

#### **a. Establishment of Home Compost Subsidy System**

It is crucial to decrease the amount of organic waste which accounts for 60% of household

waste generated. The Pilot Project proved that home composting using compost bin was very effective way in reducing 20% of household wastes. It is also expected that composting reduces costs for the municipality because it lessens the amount of garbage going into the waste stream. Therefore, council has positioned the promotion of home composting as a core activity in the Solid Waste Management Master Plan (SWM M/P).

Nadi Town Council has therefore, established a “Home compost subsidy programme” to encourage their ratepayers to use compost bins in July 2010. Council has provided a \$25 subsidy when Nadi ratepayers purchase a bin from Nadi Town Council. The other residents (non rate payers) of the town area are also eligible to buy the compost bins but at the normal cost of \$55.00.



The distribution of compost bins is done as follows:

- Ratepayers visit the council’s cashier desk, submit an application form with \$30.00 and receive a compost bin at the same time. (others pay \$55.00)
- Council develops a database of the basic information of residents who purchased a bin (e.g. name and home address).
- If residents request council to deliver bins to their houses, council will considers delivery arrangement.

The council has initially purchased 100 home composters and sold 26 composters until end of September, 2010. The register of sale of composters is kept with details of compost bin owners and the council conducts monitoring to ensure that the citizens make the optimum use of the composters.

Council also conducted advertising and awareness activity for the public using the following measures; to promote the home composter and the above subsidy programme:

- Display at the main office.
- House-to-house visit for separate recyclable collection when expanded
- Demonstration in the community meeting
- Demonstration during the council's event (Disaster Awareness week , Open day, etc)
- Demonstration for schools.
- Advertising through newspaper.



Up: House to House visit

Left: Display at the main office

#### **b. Nadi Clean Schools Programme**

The Nadi Clean Schools Programme has been successfully implemented in the 15 schools in Nadi in partnership with Ministry of Education and JICA. After the Teachers workshop in February each school presented their Action Plan and started with the implementation of the 3R activities namely composting, preparing separate bins for collection of recyclables at classroom levels, rubbish art for raising awareness and so on.

The first monitoring was carried out in April followed by the second monitoring in June by Health department and the final judgment in August with the judges from Ministry of Education, Department of Environment, Matavolivoli 3R committee, Namaka Police and JOCV Lautoka.

Another follow up teachers' workshop was held in October where all the winning schools presented their activities and all participants visited the best school for this program with the aim of sharing the experience for further improvement of their practices. Also the winning schools were awarded with the prizes and certificates given to the participating schools.

Students are seen as an agent of change and can grasp this concept of 3R to disseminate information to their parents and communities.

The key points for good practices from this program will be used to revise the current guidebook for future practices and sustainability.



3R committee members showing separate bins for recyclables



Monitoring by the NTC staffs and advise given to the teachers on any issues faced by schools



Composting practiced by the schools



Achieving zero burning by some schools

**c. Expansion of Recyclable collection to part of Namaka Commercial area, Savenawai, Waqadra Cooperative and all schools.**

Separate collection service for recyclables has been introduced in the part of Namaka area, which is covering the areas of Matavolivoli, Savenawai, Waqadra Cooperative, all schools and part of commercial area to begin with as per stage 2 of the 3R Expansion Plan. The detail of area of expansion is shown below.

Table 10: Expansion area of separate collection for recyclables

Area	No. of family/ business establishment	Recyclables collection day
Namaka Lane	84	Every Thursday
Matavolivoli	162	2nd and 4th Thursday
Savenawai	164	2nd and 4th Thursday
Waqadra	46	2nd and 4th Thursday

Table 11: Expand period, target area and population for each step

Step	Period		Target area	Target population	
	Preparation	Commencement		Population	Accumulation
Step 1	Apr. – Aug. 2009	Sep. 2009 -	3R PP Area (Matavolivoli)	914	914 (7%)
Step 2-1	Apr.-Jun. 2010	Jul. 2010 -	Matavolivoli, Savenawai, Waqadra Cooperative, Namaka Lane, All schools	2,000 (+110 BE)	2,914 (23%)

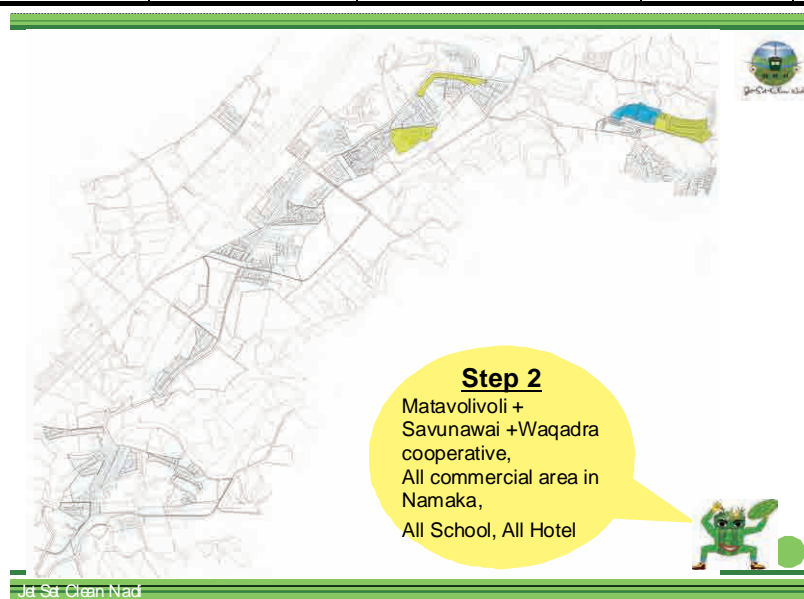


Table 12: Basic concept of Recyclable Collection Expansion in stage 2.

Target items	Recyclables collection
Target items	PET bottle (for beverage), Plastic shopping bag Hard plastic, Metal Paper (newspaper, magazines, office paper) Cardboard, Cloths
Collection Frequency/collection day of the week	Fortnightly collection for residential area ( Thursdays) Weekly for Commercial (Thursdays)
Discharge container	Nylon sack (with 3R logo) distribute only first time Bulky cardboards should be discharged by tying it with string
Discharge time	by 7:00 a.m. for Residential From 9.00a.m for commercial
Collection time	8.30 am to 12.30a.m
Discharge place	Curb side

Residents and business establishments were being provided specific nylon bags with “3R” logo and leaflet which guides how to respond to the system. People separate waste into recyclables and non-recyclable at source and keep them until the collection day, and discharge recyclables at curbside on specific time and day which are fixed by area as shown.

Council has received a new Multi Purpose Truck in September which is now used for the collection services of the recyclables. The collection truck visits the area making appealing music, and collects sack filling with recyclables which include metals, plastics, paper, cardboards, tins cans, aluminum cans, clothes, soft and hard plastics, all plastic bottles and all types of glasses. The recyclables must be clean and free from dirt and residues. It seems not collected include egg crates, liquid milk packets, gift wrappers and cloth of silk material. NTC staff accompanies the collection truck to check resident’s discharging manner. Non-recyclables and unclean recyclables are rejected, and NTC staffs provide a necessary guide for the discharger. Through the monitoring process, the quality of recyclables discharged by households has dramatically improved.



New MPT for NTC



Monitoring during the recyclables collection

Recyclable items collected are taken to the recycling company located in Lautoka, which names the Waste Recyclers (Fiji) Ltd. Recyclers resorts recyclables by category, compact and export to overseas for recycling.

#### **d. Monitoring result of separate collection for recyclables**

##### **d.1 Quantity of recyclables collected**

The separate collection for recyclables is continuing for three months in extension areas. The Figure 1 shows the change of percentage of participant. A percentages of participants to separate collection for three months are follows;

- Namaka Lane : 49%
- Matavolivoli : 23%
- Savenawai : 35%
- Waqadra cooperative : 67%
- Average: 43%



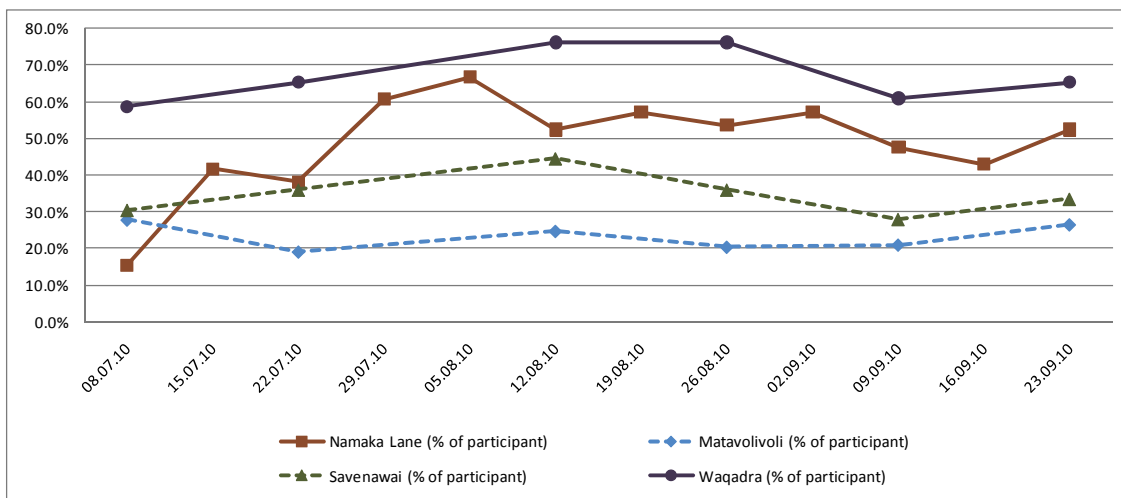


Figure 9: Percentage of participants to separate collection for recyclables

And, total amount of recyclables collected for three month is 3.1 ton. The average discharge and collection amount of recyclables is 315g/day in business establishment and 28 g / household / day (7g/person/day) in household respectively according to data monitored three month from July to September 2010.

#### d.2 Quality of recyclables collected

Paper and cardboard share half of composition of recyclables. Especially, business establishment discharge a lot of cardboard which has packed stock.

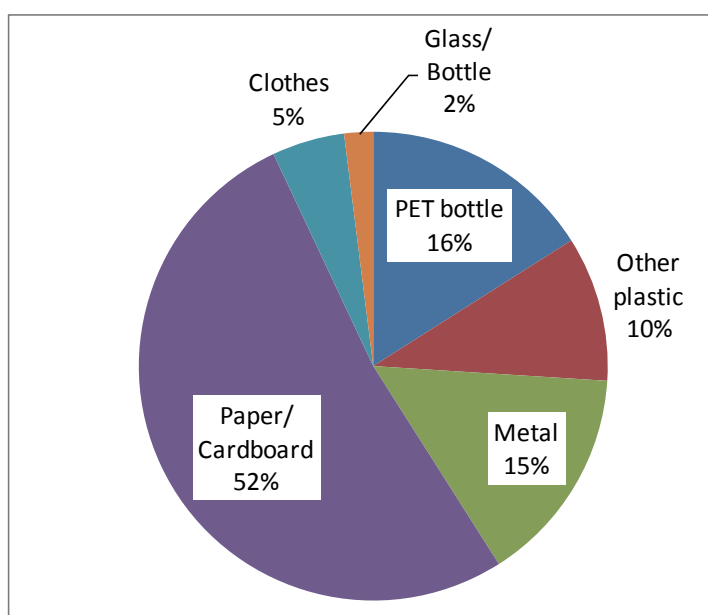


Figure 10: Composition of recyclables collected in NTC

**e. Market Waste Composting**

Council is currently negotiating with one of the private companies who is willing to accept the council's market waste for composting. Therefore necessary preparations is been made for awareness activities for the separation of market waste and placing separate bins in the market for separate waste, awareness materials, meeting with market vendors etc will be organized.

**f. Green Waste chipping Services**

Green waste chipping services could not be continued due to the breakdown of the existing shredder and unavailability of the storage yard. However with the procumbent of the shredder through aid by the Embassy of Japan, Council will prepare a plan of operation for green waste chipping services to be provided to the community. Furthermore the chipped materials would be stored in the Council Depot while we are arranging for the buyers. Chips could also be used for the Councils garden mulching and sold to the community on request basis. Council is planning to provide green waste collection and chipping service ward wise to make effective use of the shredder.



Signing of Contract Documents for supply of shredder at the Japanese Embassy

**g. Conduct Seminar to Promote Action Plan**

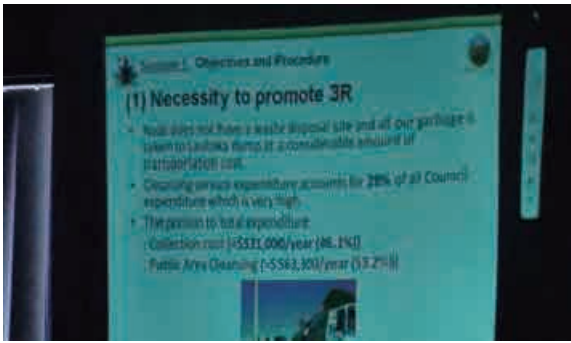
Council conducted a Seminar to promote the 3 R Action Plan at the same time disseminating information about the change in Garbage collection system. The seminar was attended by residents, business communities, Nadi Chamber of commerce, Hoteliers and members of church groups.

The objectives of the Seminar were:

- To inform the stakeholders regarding the 3R Action Plan of Nadi Town Council.
- To create awareness for the stakeholders on the progress of the 3R Pilot Project.
- To get the cooperation of the stakeholders in implementing the 3R Action Plan successfully.

This was to create awareness on the necessity to promote 3 R to:

- reduce the disposal amount,
- preserve and protect the environment, and
- reduce the Solid Waste Management (SWM) cost.



Presentation Material of Seminar



Special Administrator & Chief Advisor during opening Address



Participant of the Seminar



Participants Active involvement

#### **h. Handing over Ceremony of Shredder and Multi Purpose Truck**

Since the existing shredder of the council had frequent breakdowns and repair was not consistent due to unavailability of parts the Nadi Town Council had applied for a shredder under the Grants Root Scheme of the Embassy of Japan which was granted to the Council.

The shredder was officially handed over by the Ambassador of Japan His Excellency Mr Yukata Yoshizawa on the 29<sup>th</sup> of October, 2010 after the conclusion of the Seminar.

The Multi-Purpose Truck was also officially handed over to the Council as a follow-up scheme of counter-part training in Japan. The Multipose Truck was handed over by the Resident representative of JICA Mr Juichiro Sasaki.

The two machineries have great backup for the project to progress as per schedule.



H.EMr Yoshizawa & JICA Rep Mr Sasaki



Onlooking the handing over ceremony



Demonstration during Handing over Ceremony



Training of Personnel by Niranjans

**i. Sustained Home Compost Subsidy System**

Nadi Town Council has successfully implemented and sustained the “Home compost subsidy programme” to encourage their ratepayers to use compost bins from July 2010. Council continued with the promotion of this subsidy of \$25 when Nadi ratepayers purchase a bin from Nadi Town Council. The other residents (non rate payers) of the town area are also eligible to buy the compost bins but at the normal cost of \$55.00.

The Council has initially purchased 100 compost bins and has sold 60 bins till now. The record for the composters sold and the details of the owners is kept together with the location plotted on the map which ensures easier monitoring. Regular monitoring is therefore, conducted by the counterparts to ensure that people make optimum use of the composters.

Table 13: Record of compost bins

1. Number of bins sold (from July 2010, till now 2011 )	60 bins
2. Number of bins to be sold (by July 2011)	100 bins
3. Number of bins monitored	27 bins
4. Result of monitoring	All the bins were kept in a satisfactorily condition.



Monitoring of Composter by counterpart and recording details      Discharge manner in the compost bin

**j.            Expand Recyclable Activities to whole of Namaka ward.**

Council conducted a flat survey of the Namaka residential area in preparation for the expansion. The outcome of the Residential survey was carried out from 18/10/10 to 22/10/10 covered all subdivision in the Namaka Ward. The total for the residential area was 1048 and for commercial area ( Namaka Industrial & Beddoes Circle) was 120 covering a total of 1168.

**j.1           Training of 3 R Promoters and preparing distribution materials**

Training of 3 R Promoters was conducted by the Counterparts to assist with awareness and distribution works in whole of Namaka Ward. The Matavolivoli committee members were used as 3 R Promoters together with a few others. The Matavolivoli members were very actively involved during the whole of the distribution works.

**j.2           House-to-house visit in Namaka Ward.**

Based on the flat survey results, sacks, leaflet, circulars were prepared and distributed with the assistance of the 3 R Promoters



Presentation and explaining to 3 R Promoters in preparation of awareness and distribution work

#### **k. Sustained Implementation of Nadi Clean Schools Programme**

The Clean School Programme 2010 was successfully concluded after the final judgment and awarding ceremony with the cooperation of JICA, Ministry of Education and Department of Environment.

All the schools have shown the implementation of the 3R concept with some schools showing remarkable practices and sustainability of this programme. The experiences, challenges and lessons learnt (good and bad practices) from these schools was then used to modify and amend the current guidebook which will be used from this year.

Nadi Town Council and Lautoka City Council in partnership with Department of Environment and support from Ministry of Education intend to embark on a joint Clean School Programme in 2011 enhancing more schools to participate and compete for future sustainability.

#### **l. ODA (Official Development Assistance) Press Tour**

The ODA Tour was organized by the Embassy of Japan to promote and record activities and assistance given by the Government of Japan to developing Countries, Projects implemented and the progress of the projects. The tour was attended by members of the various media organizations including JICA and staff of the Embassy.

Promotion of the project was aired through the TV during the Talk Business programme as well as National 1 News in Fiji One.



Press Tour Participants at the 3 R station during Bula Festival



Press Tour Participants meeting with Committee in Pilot Project area



Press Tour Participants observing the discharge and collection system

**m. Conducting Community meetings in Namaka Ward**

Series of Community meetings was conducted subdivision wise in the evenings to create awareness amongst the residents at the same time explaining the new garbage collection system.

Table 14: WORK SCHEDULE FOR EXPANSION PLAN

AREA	House Hold number	Distribution Day	In	Group Charge	Community Meeting Day	Community Meeting Venue
ATS 1,2	121(3)	Tues 16th Nov		Group A,B	Tues 16th Nov	Amar Chand Resident Lot 12 ATS
Tanoa	14 Flats	Tues 16th Nov		Group C	-----	-----
Namaka Line	84	Tues 16th Nov		Council staff + Group C	-----	-----
Deo Street	75	Wed 17th Nov		Group A,B	Wed 17th Nov	Mr. Kesho Psd Residence@ runabout
Concave	89	Wed 17th Nov		Group C,D	Thus 18 Nov	Mr. Shaukat Ali Residence Lot, Manesh Dutt Concave
Votualevu Low-Cost	151(2)	Thus 18th Nov		Group A,B,C,D	Fri 19th Nov	Mr. Esira's Residence LO-Cost PRB Flats
Vunisalato Bountiful	73(1)	Mon 22nd Nov		Group A,B	Mon 22nd Nov	Kakala Church Hall
Waqadra Housing	353(2)	Mon 22nd Nov Tues 23rd Nov		Group C,D Group A,B,C,D	Tues 23rd Nov	Methodist Church Hall, Vudi Crescent
Namaka Park	127(1)	Wed 24th Nov		Group A,B	Wed 24th Nov	Mr. Amka Psd Residence Lot 7 Namaka Park
Matavolivoli	155	Sat 20th Nov		Group A,B,C,D	-----	-----
Sanawai	164	Sat 20th Nov		Group A,B,C,D	-----	-----
Waqadra Cooperative	46	Fri 19th Nov		Group D	-----	-----
Skylodge Cottage	17	Wed 24th Nov		Group C,D	Wed 24th Nov	Mr. Amka PsP Residence Lot 7 Namaka Park
Beddoes and Namaka Industrial	69+44	Wed 24th Nov		Group C,D	-----	-----





Community meeting



House to house distribution is being carried out



Community meeting in Deo Street and Votualevu low-cost



### Activity 3-4 Review and Evaluate 3R Promotion

After monitoring the pilot commercial and residential areas in Namaka, Council decided to expand the service of recyclables collection to whole of Namaka Ward. In doing so it was decided to reduce the garbage collection days from three days a week to two days a week in residential areas and from six days a week to five days a week in commercial areas. The Council introduced one day a fortnight of recyclables collection in residential areas and one day a week of recyclables collection in commercial areas.

Figure 11: Collection schedule

Ward		Collection schedule for garbage and recyclables					
Residential	Town/Martintar	Mon	Tue	Wed	Thu	Fri	Sat
	Namaka	Mon	Tue	Wed	Thu	Fri	Sat
Commercial	Town/Martintar	Mon	Tue	Wed	Thu	Fri	Sat
	Namaka	Mon	Tue	Wed	Thu	Fri	Sat



: Garbage collection day,

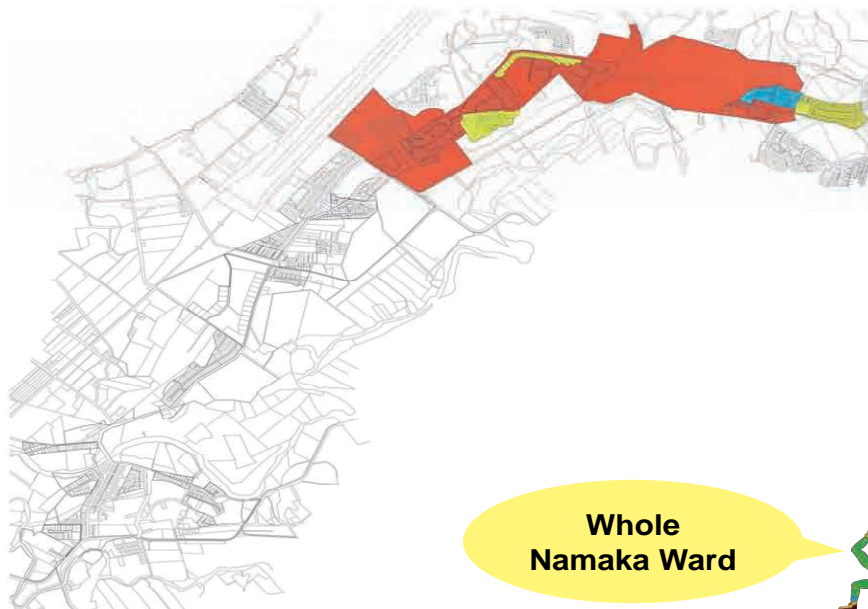
: Recyclables collection day



### 3. New waste management system in Nadi



## 3R Promotion target area



Ja Sa Clean Nadi

The new garbage collection system was introduced concurrently with the expansion plan of 3R to whole of the Namaka ward covering 55% of the target population.

Table 15: Expand period, target area and population for each step

Step	Period		Target area	Target population	
	Preparation	Commencement		Population	Accumulation
Step 1	Apr. – Aug. 2009	Sep. 2009 -	3R PP Area (Matavolivoli)	914	914 (7%)
Step 2-1	Apr.-Jun. 2010	Jul. 2010 -	Matavolivoli, Savenawai, Waqadra Cooperative, Namaka Lane, All schools	2,000 (+110 BE)	2,914 (23%)
Step 2-2	Oct.-Dec. 2010	Jan. 2010 -	Whole Namaka Ward	3,172	7,000 (55%)
Step 3	Jan.-Mar. 2011	Apr. 2011 -	Whole Martintar Ward	4,580 (+200BE)	12,737 (100%)
			Whole Town Ward	1,157 (+659BE)	

**a. Result of the recyclable collection in Namaka ward**

**a.1 Participation rate**

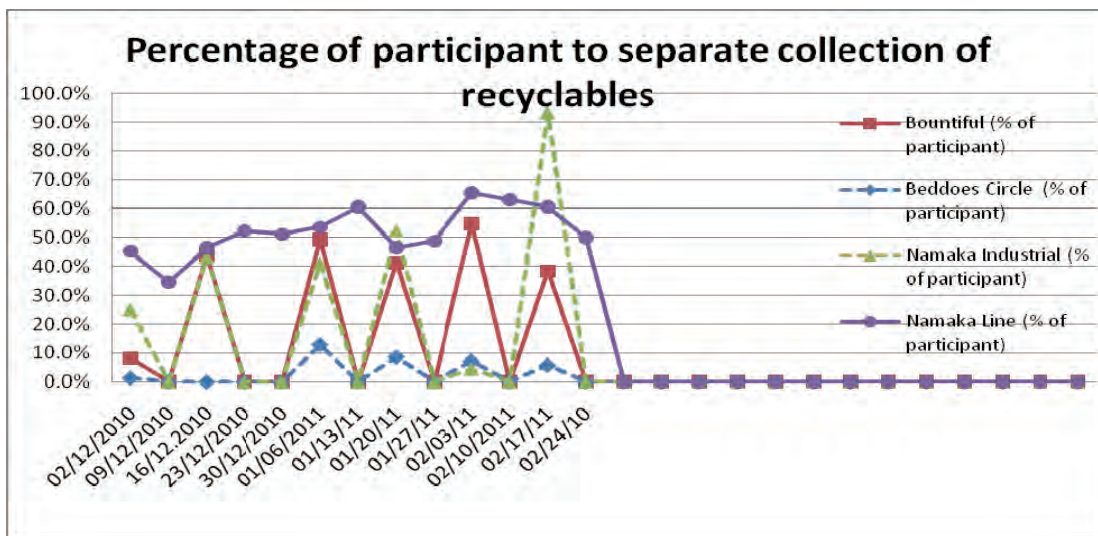


Figure 12: PArcentage of Participant to Recyclables collection

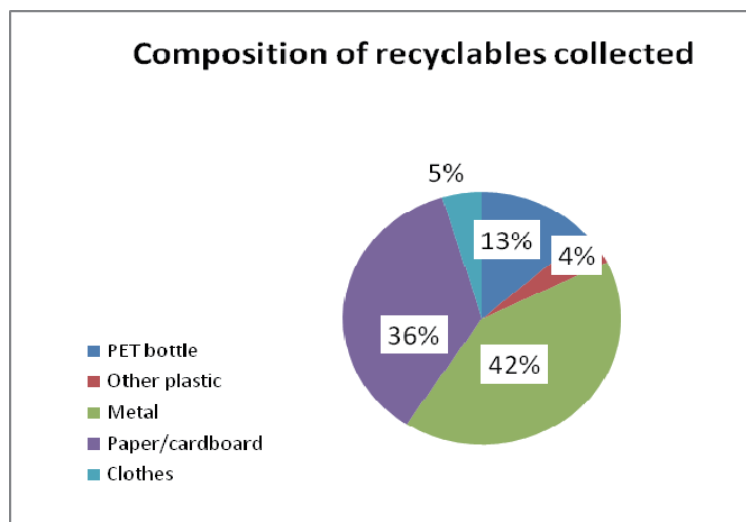
**Residential area (1<sup>st</sup> and 3<sup>rd</sup> Thursday)**

or areas schedule as of 1<sup>st</sup> and 3<sup>rd</sup> week (Bountiful, Waqadra cooperative, Waqadra housing, Namaka park, Beddoes circle and Namaka industrial) the **average participation rate stands at about 29%.**

(2<sup>nd</sup> and 4<sup>th</sup> Thursday)

	09/12/2010	23/12/2010	13/01/2011	27/01/2011
Votualevu Low Cost	13.9%	13.9%	7.9%	21.2%
Matavolivoli	27.1%	24.5%	18.1%	38.7%
Savenawai	29.3%	31.7%	27.4%	29.3%
Tanoa Housing	14.3%	7.1%	7.1%	7.1%
ATS Stage I/II	13.2%	16.5%	24.8%	20.7%
Concave Subdivision	14.6%	20.2%	21.3%	18.0%
Deo Street	18.7%	21.3%	37.3%	13.3%

For areas schedule as of 2nd and 4th week (Votualevu low cost, matavolivoli, Savenawai, Tanoa housing, ATS1, 2, concave and Deo street)-**The average participation rate stands at about 20 %**



The highest amount of recyclables collected was metals which accounted for 42% followed by paper/ cardboard which was 36%.

### Findings

- Residence still mix recyclables with garbage
- Misuse of 3R sack –residence discharge other refuse in nylon sack
- Some residence still confuse with days of recyclable collection though the leaflet and calendar were distributed house to house
- Some residence complains about sack stolen from drive way
- Prior to announcement participation rate is still low
- According to our calendar recyclables suppose to be discharge at 6.00am and they are not following it so we have shifted collection time to 7.00am
- During announcement incident of a residence throwing stone on announcement vehicle-security of staff
- Low turn- up during community meeting(circulars were distributed followed with announcement)
- During 3Rpromotion - distribution by promoters –houses were vacant so revisiting of these houses was conducted.
- Short term tenant move in and out – have to identify such people and have to pass on the message of 3R

**Activity 3-5: Monitor the progress of communities' perception, behavior change of the people by conducting the Public Opinion Survey.**

Results of monitoring from POS

**1. Current waste management**

**Q1-1. In general, do you think that improper waste management causes problems?**

Date	Yes	Total (%)	No	Total (%)	I do not Know	Total (%)	Total Questionnaire Response	Total Contracted Expected Questionnaire	Total %
September 2009	136	87.7%	5	3.2%	14	9.0%	155	163	95.1%
April 2010	136	87.7%	18	11.6%	1	0.65%	155	163	95.1%
February 2011	139	93.9%	9	6.1%	0	0.00%	148	158	93.7%

**Q1-2. What kinds of problems are there? (check all answers you observe in the table below)**

No	Problems	Sep.09		Apr.10		Feb.11		Oct.11	
		Total	%	Total	%	Total	%	Total	%
1	Litter (rubbish scattered on the street)	129	83.2%	82	52.9%	99	66.9%		
2	Litter causes bad smell.	89	57.4%	90	58.1%	92	62.2%		
3	Litter attracts rats and flies.	95	61.3%	58	37.4%	80	54.1%		
4	Litter is eaten by animals (dogs, cats).	113	72.9%	112	72.3%	91	61.5%		
5	Rats and flies attracted by rubbish bring about some kinds of diseases/sickness.	42	27.1%	34	21.9%	47	31.8%		
6	Dumped rubbish in drains/waterways blocks drainage systems and result in flooding.	61	39.4%	32	20.6%	44	29.7%		
7	Dumped rubbish in drains/waterways pollute water which causes sickness (e.g. skin diseases and diarrhea)	42	27.1%	21	13.5%	37	25.0%		
8	Burning of rubbish releases harmful gases.	62	40.0%	23	14.8%	34	23.0%		
9	Rubbish at the rubbish dump pollutes ground water and/or sea and river water.	20	12.9%	14	9.0%	33	22.3%		
10	The current dumpsite is almost full/overloaded,	3	1.9%	6	3.9%	17	11.5%		
11	Others (Please specify):	7	4.5%	8	5.2%	0	0.0%		
	TOTAL	663		480		574			

**1-3. Do you think that waste that your household produces contributes to these problems?**

	Yes Response	Total (%)	No Response	Total (%)	Total Questionnaire Response	Total Expected Questionnaire	Total (%)
September 2009	71	45.8%	84	54.2%	155	163	95.10%
April 2010	72	46.5%	83	53.5%	155	163	95.1%
February 2011	57	41.0%	82	59.0%	139	158	88.0%

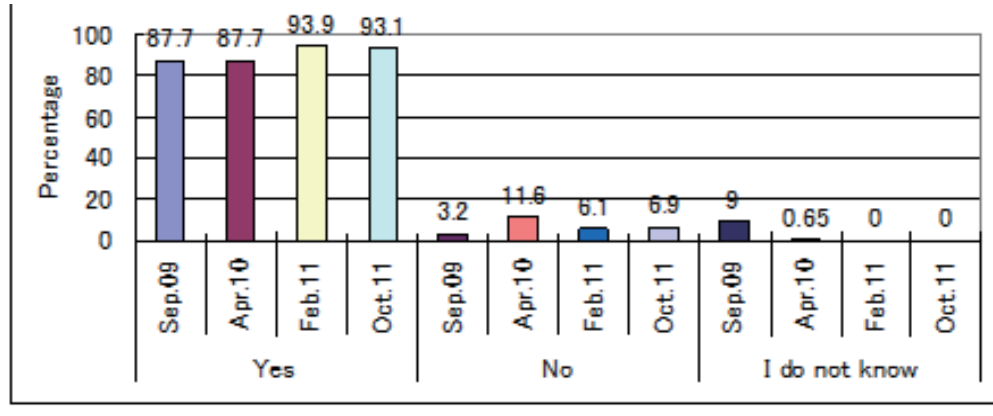
**Q1-3 (2). Do you think that waste that your household produces contributes to these problems? (With “Yes” response)**

No	Problems	Sep.09		Apr.10		Feb.11		Oct.11	
		Total	(%)	Total	%	Total	%	Total	%
1	Litter (rubbish scattered on the street)	41	26.5 %	5	3.2%	26	17.6 %		
2	Litter causes bad smell.	21	13.5 %	8	5.2%	29	19.6 %		
3	Litter attracts rats and flies.	16	10.3 %	14	9.0%	24	16.2 %		
4	Litter is eaten by animals (dogs, cats).	51	32.9 %	47	30.3 %	37	25.0 %		
5	Rats and flies attracted by rubbish bring about some kinds of diseases/sickness.	12	7.7%	6	3.9%	16	10.8 %		
6	Dumped rubbish in drains/waterways blocks drainage systems and result in flooding.	14	9.0%	4	2.6%	15	10.1 %		
7	Dumped rubbish in drains/waterways pollute water which causes sickness (e.g. skin diseases and diarrhea)	13	8.4%	3	1.9%	12	8.1 %		
8	Burning of rubbish releases harmful gases.	27	17.4 %	0	0.0%	20	13.5 %		
9	Rubbish at the rubbish dump pollutes ground water and/or sea and river water.	7	4.5%	1	0.6%	13	8.8 %		
10	The current dumpsite is almost full/overloaded,	2	1.3%	0	0.0%	9	6.1 %		
11	Others (Please specify):	2	1.3%	0	0.0%	0	0.0 %		
TOTAL		206		88		201			

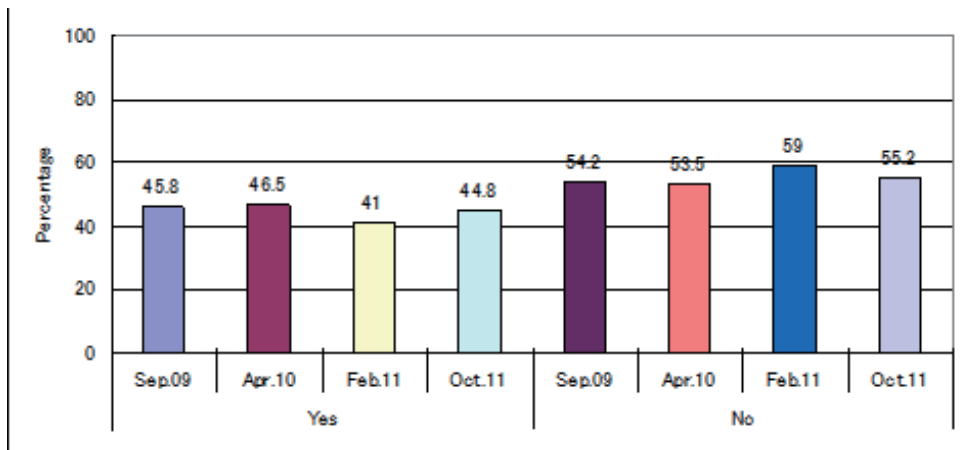
**Public Opinion Survey Report – November 2011**

**Public Opinion Survey Report**

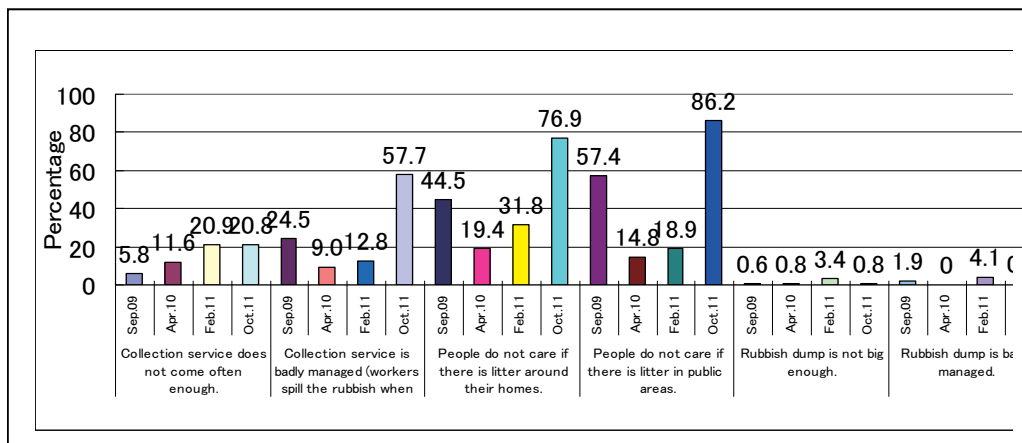
1. In general, do you think that improper waste management causes problems? The result shows 93.1 % accept the cause of the problem



2. What kinds of problems are there? 96.2 % said litter is a major problem
3. Do you think that waste that your household produces contributes to these problems? 45.8% said yes to it.

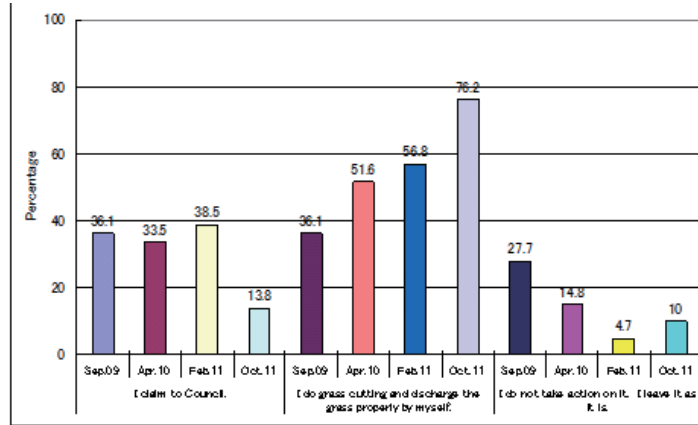


4. What do you think is the cause of these problems? 20.9% said collection is not on time.

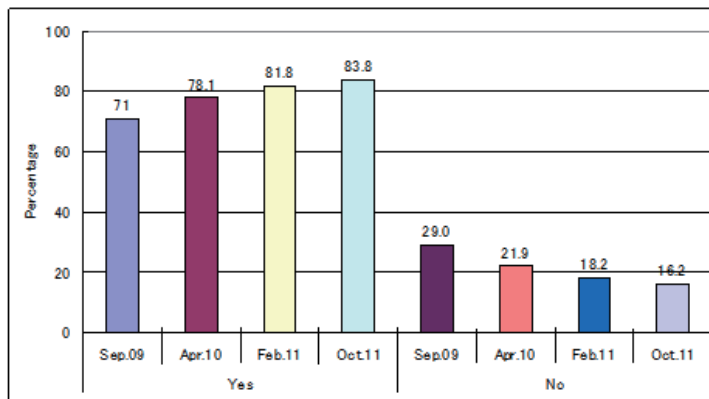


5. If you found a place that may need grass cutting in the sidewalk or public areas, what would you do?

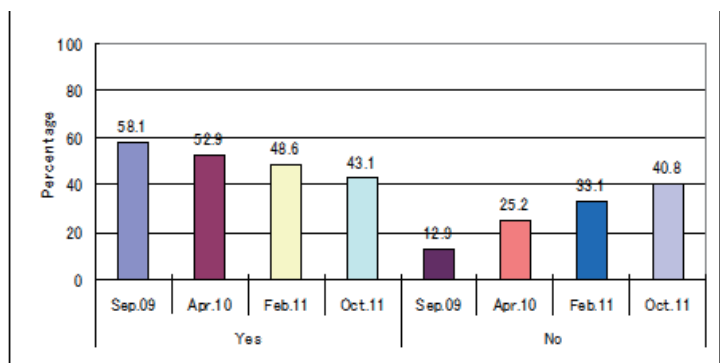
38.5% claims to council.



6. Do you generate green waste (garden waste, off-cuts from plants and trees)? 78.1% said yes.

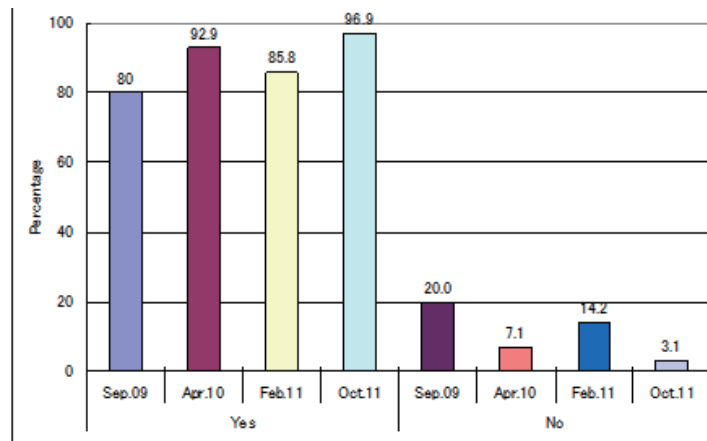


7. NTC is providing green waste collection service once a month by area. The collection fee is \$35 per load. Do you want to use this service? 43.1 said yes they want to use it.





8. Do you know the collection service of the recyclables including PET bottles, plastics, tin cans, aluminum & steel cans and spray cans, metal, paper, cardboard, glass bottles and jars, and old clothes, that are collected once a week by Council as a part of the JICA Project? 96.9% said yes they know.



## ACTIVITY4 AWARENESS RAISING OF RESIDENTS THROUGH ENVIRONMENTAL EDUCATION ACTIVITIES

### Activity 4-1 Review on environmental educational tools/programmes in Fiji, Japan and other countries.

Two municipalities, Beaverton (Oregon, US) and Halifax (Canada), which have separate collection system of recyclables along with garden waste collection service were selected, and their recycling systems and educational programs were analyzed together. In addition, container collection of recyclables and garden waste treatment in Guam, 3R programs in Shibushi City and a community-based group collection system in Mitaka City were reviewed as a reference. At the end of the report, the current condition in Lautoka and Nadi were analyzed.

Both Beaverton and Halifax simplified the separate collection and recycling systems as much as possible, so that residents can easily join their systems. Their educational materials, distributed to households and business establishments, make it easier for readers to understand the collection and recycling systems, with a lot of illustrations. On the other hand, in Shibushi, a small city with a traditional village-like community, community groups take critical roles, and the municipality implements a complicated collection system in cooperation with community groups and residents.

### Activity 4-2 Develop effective educational tools/programmes.

#### a. Procedures

Since the basic approach of the 3R pilot project is community based, and a community

committee is given a critical role, the C/P and expert team first tried to provide necessary information through the committee. The committee, however, is not active enough to take a leading role, so Lautoka health department workers conveyed the necessary information at community meetings and by handing out leaflets and other education materials.

Several committee meetings were arranged during the preparation period in order to finalize the pilot project plan, and the community meeting was organized once before the start of the new collection system in order to explain the PP and ask residents for their active cooperation.

The Launching ceremony was organized in order to make the pilot project known widely and increase people's awareness of solid waste management in Lautoka.

After the new collection systems started, the health department conducts regular monitoring in order to check the number of households who join the new collection activities and their discharge manners.

**b. Educational materials**

Various leaflets such as notice leaflet, recycling leaflet, documentaries and garden waste leaflet, were prepared before the start of the PP, and additional leaflets are made after the PP started based on the result of the monitoring.

**Activity 4-3 Conduct trainings, on the job trainings, etc. for the groups & personnel concerned on 3R promotion in Lautoka and Nadi Town.**

Total of 8 counter part staffs from the council have so far attained knowledge on 3R promotion as a result of their exposure in Kitakyushu and Shibushi Cities during the 2 weeks group focused training. Other forms of OJT training opportunities have been gained from the JET consultants during the course of the project. The participation of the staffs during the Joint Fortnightly meetings also offered opportunity to share and gain knowledge from each other. C/P staffs have acquired necessary training during the last 2 years of the project and they are now equipped to implement the 3R Expansion Plan to the whole of the city area.

Some basic training gained includes:

- Conducting community meetings.
- Preparation of presentations and conducting presentations to members of public.
- Preparation of educational and awareness raising tools like leaflets, pamphlets, posters, circulars, notices, media awareness materials, tender documents etc.
- Interpretation of monitoring results of recyclable collection.
- Carry out all monitoring works including home composters, recyclable collection, market waste composting, environmental monitoring at VDS , green waste chipping etc.
- Conduct basic baseline surveys like Public Opinion Surveys, community surveys etc and interpret results.
- Organise, facilitate and coordinate seminars.
- Prepare manuals.
- Conduct awareness raising of target population especially by house to house visits and

announcements.

- Implement Clean schools Programme focusing on 3R's concept.

#### **Activity 4-4 Introduce the educational tools/programmes in the pilot project areas.**

The council was able to make optimal utilization of the various educational tools developed under the project to implement activities to raise the awareness of the residents in Pilot project areas. The educational tools like circulars and leaflets were distributed during house to house visits whilst the presentation materials were utilized during the community meetings. Home composting manual and recycling calendar was particularly effective in disseminating the awareness to the citizens of the 3R PP area.

#### **Activity 4-5 Evaluate the educational tools/programmes.**

Education materials were prepared by the C/P staffs and JET. The education materials included leaflets for 3R expansion in Andhra Street, home composting manual, council newsletters, circulars for market vendors on waste separation awareness and 2 project newsletters. The C/P staffs also prepared power point presentations for community meetings, joint weekly meetings, and stakeholder's workshop in consultation with the JET.

Therefore, evaluation of the educational materials and program are given as follows:

##### **a. Community Meeting**

Community meetings is perceived as idealistic, it has been experienced from pilot project activities that approximately 30 percentage of the community members only turn up for community meetings. Though the information is disseminated and filters into the community at large, not all members receive the awareness. Nonetheless, C/P will continue with the community meetings whereby it has been observed that influential members and community leaders are present who are targeted to disseminate the information on behalf of the council.

##### **b. House to House Visits**

This means of education and awareness has been noted to be most effective whereby the C/P have the opportunity to meet the community members face to face and explain the information needed to be disseminated more effectively. Through house to house visits, Council is sure that 100% of the community members are made aware of the target activities and the response from the community is more positive.

##### **c. Announcements and Music (Melody) from MPT (Collection vehicle)**

This means of the awareness and notification has been also proven to be very effective in particular prior to collection of recyclables whereby residents respond more positively. The residents get accustomed to the melody in particular and understand that it is meant for discharge of recyclables on road side.

##### **d. Leaflets and Circulars**

Significant improvements have been noticed in respect to the standard of leaflets and circulars prepared since the inception of the project. C/P staffs have gained considerable knowledge in respect to formulating such education tools.

#### **Activity 4-6 Improve the educational tools/ programmes**

The council in cooperation with JET members prepared the following educational tools and programmes for effective awareness and dissemination of information on 3R promotion.

1. 3R music and specific announcement of recyclable collection developed for Namaka commercial area, Savenawai and Waqadra cooperative.
2. Recyclable Collection Leaflets on Calendar Format Developed for Namaka commercial area, Savenawai and Waqadra cooperative.
3. Manual on Home Composting.
4. Posters on Home Compost Subsidy Programme.
5. Stickers for Recyclable discharge container, compost bins, logos, etc.
6. Developed Nadi Clean Schools Guide.

#### **Activity 4-7 Implement activities to raise awareness through using the educational tools/ programmes in NTC.**

- a. **3R campaign at Namaka Market was carried out to create awareness for the members of the public on 3R**
- b. **Community meeting at Savenawai and Waqadra Cooperative.**



**c. Awareness and 3R presentation to Vatutu Village and Moala Village.**



Awareness to the Vatutu Village

**d. Awareness at PSC Day, Disaster awareness week.**

**e. Media awareness through *The JET* and *Nadi Sun*.**

**f. 3R Awareness for Namaka commercial area, Savenawai and Waqadra Cooperative through house to house visits.**

**g. Conducted follow-up Nadi Clean schools Workshop for Teachers**



Follow-up Teachers workshop



Teachers visit to the best school

The Table below Shows 3R Awareness Raising Activities Conducted Using the Education Tools Developed Under the Project

NO	TARGET GROUP	NO.OF PEOPLE
1	Matavolivoli Committee meeting with Jet, Mid Term Review Team, Health Staff and Committee members May 2010.	15
2	3R promotion and clean schools program presentation to Teachers of Nadi Arya Samaj Primary. May 2010.	20
3	3R promotion presentation at Vatutu Village. June 2010	30
4	2nd Monitoring of 9 schools for clean schools program. June 2010	45
5	Presentation made to Teachers of Clean Schools Program in Lautoka. June 2010	50
6	3R awareness stakeholder meeting for Namaka Commercial at Skylodge Hotel . June 2010	25
7	Distribution of notice & leaflet in Savunawai, Waqadra Cooperative and Namaka Commercial Area (23/06/10)	1500
8	Community Meeting At Savunawai	56
9	Community Meeting at Waqadra Cooperative	50
10	Campaign at Namaka Market (booth display)	800
11	Training of 3R Promoters to carry out awareness activities – June 2010	30
12	3R Awareness presentation to health team of Vatutu Village. July 2010	30
13	Promotion with 3 R Station using Volunteers – Sept. 2010	500
14	3R Promotion in Moala village Sept. 2010	20
15	Matavolivoli Committee Meeting - Sept. 2010	15
16	3R awareness cleanup campaign organized by Matavolivoli Committee	40
17	Follow-up Teachers workshop on clean schools program-October, 2010	50
18	3R promotion display – Koroivolu Park Oct. 2010	2000 (incl. sch. children)
19	Presentation on clean schools program by JOCV at Japanese Ambassadors residence	40 (media present as well)
20	Matavolivoli community meeting – Oct 2010	15
21	Seminar on 3R Expansion to both Residential and Commercial Stakeholders, Oct, 2010	60
22	Shop to shop survey conducted in Namaka Commercial to create awareness on Recyclables collection. Nov. 2010	20
23	Community meeting in Waqadra to promote 3R activities, Nov. 2010	15
24	Press release made in the Fiji Sun and the JET on Introduction of New Garbage Collection for Namaka Ward. Nov. 2010	6500
25	Awareness raising on 3R promotional activities to 3R promoters	14
26	House to house distribution of 3R promotional material and awareness activities using 3R promoters	5000
27	Community meeting in Concave Subdivision to promote 3R	15

NO	TARGET GROUP	NO.OF PEOPLE
	Activities . Nov.2010	
28	Community meeting in Namaka Park to promote 3R Activities. Nov.2010	30
29	Community meeting in ATS Subdivision to promote 3R Activities. Nov.2010	40
30	Community meeting in Bountiful Subdivision to promote 3R activities - Nov. 2010	15
31	Community meeting in Waqadra Housing to promote 3R activities Nov.2010	40
32	Community meeting in Deo St. To promote 3R activities , Nov. 2010	20
33	Community meeting in Low Cost Housing to promote 3R activities Nov.2010	50
34	3R promotional booth display at Bula Festival ground. Dec. 2010	General Public
35	Bula Festival Float with message on 3R awareness Dec.2010 (Won 1st prize)	General Public
36	Facilitate ODA Press Tour 9/12/10	30
37	Random survey of households on Radio awareness	20
38	3R booth display at Launching of Environment bus – Lautoka	200
39	Facilitated 3R Guideline and Manual Workshop for all Municipalities (Presentations and training was done by CP of LCC/NTC/DoE – 2 workshops)	110
40	Visit all schools to create awareness on “Clean Schools Program”	14
41	Training of 3R promoters for Expansion to Martintar Ward	20
42	House to house distribution of leaflet, sack and invitation to community meeting together with creating 3R awareness	4500
43	Community meeting in Kennedy Avenue to promote 3R awareness and activities, March 2011	30
44	Community meeting in Martintar Rd to promote 3R activities - Mar. 2011	22
45	Community meeting in Northern Press Rd to promote 3R activities - Mar. 2011	40
46	Community meeting in Wasawasa Rd to promote 3R activities - Mar. 2011	12
47	Community meeting in Grey Rd to promote 3R activities - Mar. 2011	25
48	Community meeting in Ropate Rd to promote 3R activities - Mar.2011	20
49	Community meeting in FASA to promote 3R activities - Mar. 2011	20
50	Workshop for Hotel Managers to create 3R awareness and activities to be supported, March 2011	15
51	3R promotional Billboard installed at Kewals Park – Namaka, Mar.2011	General Public
52	Professional Development for Teachers on Solid Waste	50

NO	TARGET GROUP	NO.OF PEOPLE
	Management activities at SSKMC May 2011	
53	1st monitoring of Clean Schools program, advise on good practice given (11 schools x 2 teachers) May 2011	22
54	Awareness levels on 3R activities of schools children during monitoring , shared ideas of good practices (11 schools x 3 classrooms x 30 students) May 2011	990
55	Presentation on 3R practices and proper waste management to Mana Island Resort May 2011	6
56	Presentation on 3R activities and clean schools program to Nadi Muslim kindergarten children	85 children 25 parents
57	Presentation on 3R activities and clean schools program to Nadi Muslim Primary children	230 children 8 Teachers
58	Promotion of compost of kitchen organic waste at FNU Namaka Campus	10
59	Presentation by JOCV to JICA President Ms Ogata at Arya Samaj Primary School	100
60	Facilitate JICA Presidents visit to Matavolivoli	15
61	Professional Development for Teachers on Solid Waste Management activities at Nadi Sangam Primary School	35
62	Conduct 2nd Monitoring of Clean Schools Program and advise given on good practice (11 schools x 2 teachers)	22
63	Awareness levels on 3R activities of school children during monitoring, shared ideas of good practices (11 schools x 3 classrooms x 30 students) July, 2011	990
64	Professional Development for Teachers on Solid Waste Management activities at Nawai Secondary School for Northwest Cluster Teachers	60
65	Professional Development for Teachers on Solid Waste Management activities at Nadi College	35
66	Presentation on 3R Promotion at Lau Provincial Council meeting	200
67	Presentation to Market Vendors association on Manner of organic waster discharge	12
68	Presentation on 3R promotion to Nadi Chamber of Commerce meeting	100
69	Distribution of 3R promotion circular in Nadi Market	300
70	Distribution of 3R promotion circular to Namaka Market	150
71	Presentation to Nadi & Namaka Market Vendors	350
72	Launching of Market Waste Composting at Nadi Market	300
73	Distributed leaflet during Bula Festival Float procession	300
74	Distribution of leaflet and circulars for 3R promotion and awareness activities – Town Ward Residential	700
75	Community meeting in Narewa Road to promote 3R awareness and activities July 2011	7
76	Community meeting in Richmond Crescent to promote 3R	22



NO	TARGET GROUP	NO.OF PEOPLE
	awareness and activities – July 2011	
77	Community meeting in Nakurakura to promote 3R awareness and activities , July 2011	15
78	Presentation on 3R promotion to Korociri Settlement , August, 2011	21
79	Presentation on 3R promotion to National Scouts Jamboree at Togo Bhartiya Schools	675
80	Presentation at Korociri Settlement	70
81	3R Article Published in Diwali Catalogue – Oct. 2011	National Level
82	3R Rap Radio programme from end of October for a month	National Level
83	3R Awareness via Bus Awareness (3 buses in Central, Western and Northern Division)	National Level
84	3R Media Awareness via Mai TV (20 minutes 3R Documentary)	National Level
85	3R media awareness via Fiji Sun, Fiji Times and The JET	National Level
86	Radio interview on 3R via Mix FM (2010 and 2011)	National Level
87	Radio awareness/commercials for one and half months on 3R's8(recyclable collection)	National Level
88	TV 39 commercial advertisement for one month on separate collection of recyclables and home composting	National Level
89	30 minutes TV Media awareness on 3R activities during talk business program	National Level
90	TV 3R awareness during the Fiji One news program	National Level
91	Radio Awareness on 3Rs via Radio Fiji 2 morning Talk (Nov.2011)	National Level

## ACTIVITY 5 DEVELOP AND RECOMMEND A 3R MODEL FOR FIJI

### Activity 5-1 Review all the process & results of the activities for 3R promotion by the project and extract findings.

All the process and results of the activities carried out in the City of Lautoka and the Town of Nadi realized that the 3R model can only be achieved through a legal framework which shall be developed by the Department of Environment. as a National Policy A draft 3 R Guideline and Promotional Manual was produced by the DoE in collaboration with the JICA Expert Team in view that the Guideline will serve as a National Policy to implement 3 R practices to achieve waste minimization nationwide.

The Guideline and manual was presented in a stakeholder workshop in Lautoka from the 23<sup>rd</sup> – 25<sup>th</sup> February, 2011 to explain the proposal to the various Local Authorities and seek their views on any improvement that should be made to the Guideline and Manual in order for them to implement them in their respective regions.



3R Workshop Participants Site Observation of Separate Collection of Recyclables and Composter Monitoring In Matavolivoli in Namaka, Nadi



**Activity 5-2 Develop draft guidelines, manuals on 3R model for Fiji, etc. for its promotion.**

The JET in mutual consultation with C/P staffs developed the draft framework of the 3R Guideline and 3R Manual. Lessons learnt and challenges faced from implementing 3R promotion was reflected in the 3R Guideline and 3R Manual. The objective of the 3R Guideline is to:

- Reveal the National Policy on 3R promotion to the person in charge of SWM
- The person in charge of SWM (LA) to implement the Guideline in his jurisdiction

3R Guideline consists of the following content.

1. Background and Objectives
2. 3R Targets and Policy of Promotion
3. Basic Accord for 3R Promotion

The objective of the 3R manual is to **provide the technical and practical information which guides Local Authorities to promote the 3Rs** according to the 3R Guideline which serves as the national policy

**Activity 5-3 Finalized the guidelines and manuals on the concept of 3R promotion.**

All the process and results of the activities carried out in the City of Lautoka and the Town of

Nadi realized that the 3R model can only be achieved through a legal framework which shall be developed by the Department of Environment. As a National Policy a draft 3 R Guideline and Promotional Manual was produced by the DoE in collaboration with the JICA Expert Team in view that the Guideline will serve as a National Policy to implement 3 R practices to achieve waste minimization nationwide.

The Guideline and manual was finalized and presented in a stakeholder workshop in Lautoka from the 3<sup>rd</sup> to 4<sup>th</sup> November, 2011 to explain the finalized details to the various Local Authorities in order for them to implement.

#### **Activity 5-4 Conduct seminars to present to other municipalities the guidelines and manuals**

The 3R Guideline and 3R manual was presented to all the waste management personnel from the respective municipalities including some Chief Executive Officers and Special Administrators on November 2, 2011 at Tanoa Waterfront Hotel, Lautoka.

Since the above documents will serve as the national policy to implement 3R practices to achieve waste minimization nationwide and the driving force for this activity will be waste management personnel working at various local authorities, it is essential that they understand the 3R Guideline and utilize the 3R Promotion Manual.

The Seminar was therefore held by DOE and JET in partnership with C/P staffs of LCC/NTC to explain this proposal to local authority waste management personnel in order to promote 3Rs using 3R Promotion Manual in accordance with 3R Guideline as a national policy on waste minimization in their respective regions.

The 3R Guideline was presented by Doe staffs and C/P of LCC whilst the 3R Manual was presented by the LCC/NTC C/P staffs. Proposed Waste disposal and recycling Legislation was also presented and discussed.

フィジー国廃棄物減量化・資源化促進プロジェクト

環境局（DOE）活動報告書

## Contents

<b>ACTIVITY 5</b>	<b>DEVELOP AND RECOMMEND A 3R MODEL FOR FIJI .....</b>	<b>1</b>
Activity 5-1	Review all the process & results of the activities for 3R promotion by the project and extract findings. ....	1
Activity 5-2	Develop draft guidelines, manuals on 3R model for Fiji, etc. for its promotion. ....	2
Activity 5-3	Finalized the guidelines and manuals on the concept of 3R promotion. ....	4
Activity 5-4	Conduct seminars to present to other municipalities the guidelines and manuals .....	4
Other SWM-related Activities	.....	15



## ACTIVITY 5 DEVELOP AND RECOMMEND A 3R MODEL FOR FIJI

**Activity 5-1 Review all the process & results of the activities for 3R promotion by the project and extract findings.**

**a. Attendance of JWM**

All the process and results of the activities carried out in the City of Lautoka and the Town of Nadi was reviewed by attending Joint Weekly Meeting held in LCC and NTC. Since DoE Western Office opened in April 2010, it was also utilized as venue for JWM. Necessary advices and information on Solid Waste Management apart from 3R were provided during the meeting. At the same time, DoE staff conducted site visits to the project sites to observe actual activities on the ground sometimes.

**b. Development of 3R Website**

The Department of Environment has finally launched 3R Promotion Website as a part of DoE Website in 2011 December. This website aims at promoting 3Rs of Municipal Solid Waste in Fiji and other southern Pacific island countries by introducing various cases of 3R related activities in Fiji. All the process and results of the 3R activities implemented by LCC, NTC and other stakeholders were introduced in the website. 3R Website can be accessed from: <http://www.environment.gov.fj/3rproject/>



Launching



3R Promotion Website (DOE website)

**c. JCC meetings**

The Department of Environment organized Joint Coordinate Committee (JCC) meetings ten (10) times. DoE with JET and two counterparts, developed the agenda, and sent invitations to all JCC members. Before the day of JCC meeting, the preliminary meetings were organized at DoE Suva Office to discuss matters to be proposed to the JCC members among implementing agencies. In the meeting, each counterpart including DoE presented the progress of the project activities, and matters such as modification of PDM, were discussed. The Department JCC meetings were good opportunity to share the progress of the project activities and discuss countermeasures implementing agencies had faced.

**d. 3R Project Newsletters(vol.1-6)**

Since the second year of the project, six (6) Project newsletters were developed with assistance of JET. In the newsletters, the results of the activities for 3R promotion by the project were described. It was good to review what the project had done for particular term and share the achievements and findings with other stakeholders, especially other municipalities and citizens.

**Activity 5-2 Develop draft guidelines, manuals on 3R model for Fiji, etc. for its promotion.**

**a. 3R Workshop (March 2011)**

Based on the experiences gained in Lautoka and Nadi, the Department of Environment (DoE) was positive that waste minimization should be developed as a sustainable practice under a sound Solid Waste Management system. Hence, DoE recognized that the 3R guideline as a national policy to promote 3R activities nationwide and 3R Promotion Manual as a handbook to put 3R promotion activities into practice. The driving force for 3R activities will be waste management personnel working at various local authorities, so it is essential that they understand the 3R Guideline and utilize the 3R Promotion Manual for implementation.

Department of Environment held a “3R workshop” on 23-25 February 2011 for 3 days at Tanoa Waterfront Hotel Conference Room in Lautoka. DoE and staffs of Lautoka City Council (LCC) and Nadi Town Council (NTC) presented the draft 3R Guideline and 3R Promotion Manual to all Special Administrators and waste management personnel of local authorities (municipal councils and rural local authorities) with the purpose of gathering their viewpoints on any improvements that should be made in order to implement the Guideline in their respective region.

As part of the program, site visit was also organized. Participants visited some project sites to observe how these two municipalities have actually implemented 3R activities. Participants also exchanged views with Matavolivoli 3R Promotion Committee members on the primary importance of community involvement.

During the three-day workshop, various comments and suggestions were given by participants. Especially, it was highlighted that there is need for legal and financial system and/or framework to ensure the implementation of 3R promotion which is carried out by municipalities. DoE noted and will consider the matter. In addition, LCC and NTC staffs were requested to instruct other municipalities for 3R promotion as resource persons. Lastly, sustainability of the Project is envisaged after the Project term ends in March 2012.





Workshop



DoE presented draft 3R guideline



Site visit for NTC recyclables collection



Discussion with Matavivoli 3R Committee



Training on development of Waste Flow



LCC/NTC CPs presented 3R Promotion Manual

**b. 3R Billboards**

In order to increase visibility and advocate 3R awareness, the project developed billboards for the projects to be displayed in the center of Lautoka and Nadi. TV ads focusing on home composting and recyclables collection are also scheduled to run from mid February for two months. The Project really appreciates the stakeholders and private companies that have already come forward to be sponsors for the above awareness campaign.

As a part of awareness activities at national level, similar 3R signboards were developed and set up at other area for other area like Labasa and Savusavu town to introduce 3R concept.



LCC billboard



NTC billboard



3R billboard for  
Labasa and Savusavu

### c. 3R Environmental Awareness bus

The environment awareness bus with 3R design was also launched on February 2011 in the Western Division by the Minister for Local Government, Urban Development, Housing and Environment. It is also expected to capture the attention of the public in the west along the Nadi and Lautoka corridor, and to strengthen advocacy in maintaining a sustainable and pristine environment for Fiji. The 3R environmental awareness bus with 3R design was launched at the Northern division on March 2011.



Environment Awareness West Bus (Western)



Environment Awareness West Bus (Northern)

### Activity 5-3 Finalized the guidelines and manuals on the concept of 3R promotion.

Taking all comments and suggestions given during the above 3R Workshop into consideration, 3R guideline and 3R Promotion Manual were finalized. Series of discussion with JET and LCC/NTC CPs through e-mail, meetings and JWM, were undertaken for finalization.

### Activity 5-4 Conduct seminars to present to other municipalities the guidelines and manuals

#### a. 3R Seminar (October 2011)

The 3R Guideline and 3R manual was presented to all the waste management personnel from the respective municipalities including some Chief Executive Officers and Special Administrators on November 2, 2011 at Tanoa Waterfront Hotel, Lautoka.

Since the above documents will serve as the national policy to implement 3R practices to

achieve waste minimization nationwide and the driving force for this activity will be waste management personnel working at various local authorities, it is essential that they understand the 3R Guideline and utilize the 3R Promotion Manual.

The Seminar was therefore held by DOE and JET in partnership with C/P staffs of LCC/NTC to explain this proposal to local authority waste management personnel in order to promote 3Rs using 3R Promotion Manual in accordance with 3R Guideline as a national policy on waste minimization in their respective regions.

The 3R Guideline was presented by Doe staffs and C/P of LCC whilst the 3R Manual was presented by the LCC/NTC C/P staffs. Proposed Waste disposal and recycling Legislation was also presented and discussed.

The activities on 3R which DOE had conducted during this period were “Joint Seminar Workshop on 3R Guideline & Manual, J-PRISM and Shibushi Model Project”. As this Workshop/Seminar is outlined in Chapter 5, therefore, the key issues to be considered for establishment of the 3R policy being summarized by DOE based on the questions and comments raised during the workshop, is reported as shown below.

**b. Key Issues (Day 1)**

Key issues presented and discussed during the 1<sup>st</sup> Day of the training were:

- Recap and Review of previous discussion on 3R Guideline and 3R Promotion Manual that was held in February, 2011
- 3R Guideline (Targets and Basic Accord of 3R Policy)
- Proposed Recycling Decree
- Working Group Discussions and Presentations
- Outline of 3R Promotion Manual
- Understanding the situation and problems of current MSWM - Waste Stream
- Home Composting
- Market Waste Composting
- Green Waste Chipping and Recycling
- Separate Collection of Recycling
- 3R Promotion in Schools
- Group Discussions

**b.1 Recap and Review of Previous Discussion on 3R Guideline and 3R Promotion Manual:**

The presenter delivered a review of previous discussion and also outline the current 3R Guideline and 3R Manual that aims at the effective minimization or management of waste. The agenda of this presentation include the following:

- Legal System
- Finances
- Human resources and
- 3R by Local Authorities.

## **b.2 Introduction of 3R Policy, Action Plan and Basic Accord**

The presenter gave an overview of the content of the 3R policy and action plan. The agenda of this presentation include the following:

- National policy on 3R
- Roles
- Municipal Solid Waste Management System
- Legal System and
- Establishment

## **b.3 Proposed Recycling Decree**

The presenter gave an overview on the proposed recycling decree. The agenda of this presentation include the following:

- Background
- Purpose
- Interpretation
- Authorized officers
- Powers and Duties of Authorized Officers
- 3R Promoters
- Powers and Duties of 3R Promoters
- Offences in respect of or committed by Authorized Officers and 3R Promoters
- Commercial Facility
- Offences
- Constructive Burning of Waste
- Liability of officers of Corporate Body
- Institution and Proceedings
- Issue of Fixed Penalty Notice
- Procedure consequent upon issue of FPN
- Application of Fines
- Penalties
- Liabilities
- Application

## **b.4 Group Discussions**

Participants were placed in groups of four and were tasked with submitting comments to the 3R guideline.

The comments from the groups were as follows:

### 3R:

- To include importance of 3R

- Community involvement
- To be included in school curriculum
- 

### 3R Promotion by Local Authority

- Establishment of Recycling facility in central and northern division
- MOU with the recycling company and local authority
- Recycling Plant near the port of entry
- Impose tax levy
- Promotion of fresh milk rather than package milk
- Advantages and support of the Recycling Decree
- Promotion education system
- Religious community involvement
- Program included and partially implemented in the provincial area – RENEW the mind and changing of mindset

### Targets of 3R:

- The two output indicators are Final Disposal Amount and Recovery Rate
- Waste generation rate needs to be reduced
- Green waste can be greatly reduced through proper composting
- Future forecast of waste generation and resulting costs need to be established along with trends in order to establish a baseline for waste generation.
- The projected baseline can then be compared to actual current waste statistics in order to determine effectiveness.
- Increase tariffs on unrecyclable imports.
- Introduce waste separation scheme in Local Authority waste disposal
- Investment incentives for Recycling infrastructure needs to be considered
- Tax incentives could be introduced to green businesses that have proven good recycling practices.
- 3R media campaign
- 

### Basic Accord for 3R Promotion

- Need for Waste Disposal and Recycling Regulation shall be also incorporated as one of the legislation to sustain the 3R initiatives of Local Authority. The power to enforce shall be delegated to Local Authority.
- 3R Guideline shall be regarded as 3R Policy.
- Sustainable financing mechanisms through introduction of polluter pay system.
- Solid Waste Management Plan shall be formulated in line with the National Solid Waste Management Strategy 2011 – 2014.
- Port of entry shall enforce packaging conditions for import items. This shall be incorporated as matter of policy for government under the 3R Policy.
- Should have inbuilt facilities provided for waste segregation and recycling purpose.
- Local Authority need the legislation as proposed to support them to promote and sustain the 3R initiatives.
- National government to allocate budgetary support for promotion of 3R initiatives. This shall be sourced annually from national budget.
- Government shall support recycling companies to subsidize.

- Proposed Recycling Legislation: Highly need this legal framework and shall be incorporated in this 3R policy as supporting tool to back up the initiatives of council

- 

#### **b.5 Outline of 3R Promotional Manual**

The presenter delivered an overview on the outline of the 3R promotional manual. The agenda of this agenda include the following:

- Objectives of 3R promotional manual
- Step-by-step 3R promotion
- User Guide
- Contents of Manual

- 

#### **b.6 Understanding the situation and problems of current MSWM - Waste Stream**

The presenter delivered the content of understanding the situation and problems of current Municipal Solid Waste Management – Waste Stream. The agenda of this presentation include the following:

- Baseline Survey
- Final disposal amount survey
- Statistic survey
- Waste composition

- 

#### **b.7 Home Composting**

The presenter gave an overview discussion on home composting. The agenda of this presentation include the following:

- Implementation procedure for home composting
- Pre-conditions for home composting
- Establish a subsidy programme for compost bin to encourage residents to buy a bin.
- Develop an Implementation Plan
- Review the progress of the project, and amend the plan if necessary

- 

#### **b.8 Market Waste Composting**

The presenter gave an outline on market waste composting. The agenda of this presentation include the following:

- Implementation procedure for market waste composting
- Conduct a preliminary evaluation
- Preconditions
- Develop an implementation plan
- Conduct awareness activity and implement

- 
- b.9 Green Waste Chipping and Recycling**

The presenter gave an outline on green waste chipping and recycling. The agenda of this presentation include the following:

- Pre-condition and Prelim Evaluation
- Basic Policy to overcome constraints
- Examine Implementation System
- Awareness Activities
- Ensure how to utilize the generated chips

- 
- b.10 Separate Collection of Recycling**

The presenter gave an overview on separate collection of recyclable wastes. The agenda of this presentation include the following:

- Implementation procedure
- Pre-conditions for separate collection of recyclables
- Basic procedure of recycling
- Examine an Implementation System
- Prepare for awareness materials
- Conduct awareness activity
- Implement area by area
- Conduct regular monitoring for recyclables being discharged

- b.11 3R Promotion in Schools**

The presenter gave an outline on promoting 3R in schools. The agenda of this presentation include the following:

- Pre-condition and Prelim evaluation
- Basic Policy
- 3R Promotion Action Plan/Preparation
- Clean School Program
- Composting and benefits
- Introducing of Recycling methods in school
- Implementation/Monitoring, Follow-up
- Challenges
- Monitoring

- 
- c. Key Issues**

Key issues presented and discussed during the 2<sup>nd</sup> Day of the training were:

- Recap of the first day

- Presentation on Shibushi's 3R policy and experience
- Outline of Shibushi Project
- Report on 3R Training in Shibushi and community meetings
- Framework of J-PRISM
- Presentation on current 3R Activity and Action Plan on 3R Promotion

**c.1 Recap of day 1**

Each participant was being requested to share their understanding on what they have learnt on Day 1 of the training workshop. This gave the facilitators the opportunity to grasp an idea, how much information has been disseminated to the participants and whether the first day of the workshop has been a fruitful one.

**c.2 Presentation on Shibushi's 3R Policy and experience**

The presenter gave discussions on

**c.3 Outline of Shibushi Project**

The presenter gave an outline of Shibushi project.

**c.4 Report on 3R Training in Shibushi and Community Meetings**

The presenter gave a report on the 3R training in Shibushi city and other community meetings. The agenda of this presentation include the following:

- What have we learned through the training?
- What impressed most about Shibushi training?
- How do we want to utilize the fruits of the training to promote in LCC?
- What is the role of municipality for 3R promotion in Fiji?
- What is the key to the success of 3R promotion?
- 

**c.5 Framework of J-PRISM**

The presenter gave an outline on the framework of J-PRISM. The agenda of this presentation include the following:

- Background
- Objective/Purpose
- Outputs of Project
- Plan of Operation
- Technical and Financial Support
- Schedule for Councils
- 

**c.6 Presentation on Current 3R activity and action Plan on 3R Promotion**

The presenters from the Sigatoka Town Council presented on the current 3R activity and



action plan on 3R promotion. The agenda of this presentation include the following:

- Baseline survey of Sigatoka dump
- Town and Market waste survey
- Sigatoka green waste minimization focus
- Market green waste sustainable cycle
- Compost and organic farming

**d. Discussion and Information Gatherings**

This session encouraged the participants to raise their views on the presentation from each group. It was being focused on the collation of relevant information that can be used to act as the baseline for the 3R Guideline and 3R Manual. Below are some of the responses obtained from the stakeholders during the open forum of Day 2:

- National Government should review existing legislations and legalize the 3R Concept.
- Need legal system/framework to ensure the implementation of 3R promotion is carried out by municipalities.
- National Government to support Rural Local Authority (RLA) financially, Department of Environment's role and assistance need to be clearly defined in terms of securing financial support and assistance
- Local Authority to submit budget proposal to National Government for implementing 3R activities, Department of Environment to assist in facilitating the process.
- Department of Environment to consider subsidize 50% cost on 3R programs to municipal/rural local authorities
- Review of the Waste Disposal Permit Fee received by DOE.
- Passing a law would not solve the problem of waste management, but the change in the behavior of community would so there is challenge to put forward measures that arte practical

**e. Recommendations**

The participants showed their enthusiasm and confidence towards the 3R Guideline and 3R Manual, their knowledge and skills have been developed and they have been made to understand their roles, responsibilities in the better management or minimization of waste in the country.

Therefore, it is recommended that:

- a) All comments and recommendation made by the participants from this training and awareness program are thoroughly examined and taken into consideration. All major and relevant issues however should be taken up to the Permanent Secretary as well as the Minister for Environment for their opinion and endorsement.
- b) All the Heads of the relevant stakeholders, being represented in this workshop are being requested to give support to the Department of Environment during the establishment of the new policy. The support given includes but not limited to the provision of cooperation and resources support.

- c) The Department is also encouraged to view this workshop as a beginning of a new partnership being established amongst all stakeholders in tackling waste issues.

**f. Capacity Development**

- Training using developed manual.
- Lautoka City Council and Nadi Town Council staffs are expected to instruct other municipalities.
- Recycling plant proposal to be examined to promote recycling activity.
- Comparative data for 2-3 more councils in other divisions will be useful to implement 3Rs.
- Need technical supports after 3R Project ends (after March 2012)

**g. Conclusion**

The workshop for the Joint 3R Guideline and 3R Promotion Manual, JPRISM and Shibushi City Model Project was undertaken in the month of November, 2011. This particular workshop facilitated by the Department of Environment (DoE) and JICA, not only gave the participants' the knowledge of waste minimization in Fiji but the opportunity to inform other stakeholders of the difficulties faced within demarcated boundaries and proposed changes so as to effectively undertake the minimization of waste and other pressing issues associated within.

All of the consultation, comments that took place revolved around issues covered by the DoE and JICA facilitator in the topic of the Establishment of baseline for the 3R Guideline and Manual, the period of the 3R Guideline to last, the JICA perspective with relation to the 3R Guideline and Manual and its related activities. Furthermore, the comments and recommendations highlighted by the participants were also related to the overview of the 3R Guideline and manual and its functions, other Environmental policies and related laws that should be made to harmonize with the minimization of waste.

Most of the consultations that were made were what they generally thought were the loopholes in the 3R Guideline. Some participants, for instance, highlighted their concern in regards to the inadequate set up technologies and harmonizing of existing legislation for effective waste management.

In terms of the programme, the facilitators modified the programme a bit, during the second day of the workshop in order to suit all speakers as well as the need of the participants. Copies of the 3R Guideline and Manual were being issued to each of the invited stakeholder, to assist them during the workshop. The overview by the participants is subsequently resulted in amendments to the vision, goals, and scope and performance indicators.

Finally, the participants showed their enthusiasm and confidence to the Department of Environment in terms of the establishment of the 3R Guideline. They however have pleaded the Department to consider their comments and concerns raised during the two days workshop in order to effectively undertake their roles and responsibilities with relation to these works.

3R Guideline and 3R Promotion Manual will be finalized and presented at “3R Seminar” which is scheduled in November 2011 based on the comments obtained in the Workshop. The JET in mutual consultation with C/P staffs developed the draft framework of the 3R Guideline and 3R Manual. Lessons learnt and challenges faced from implementing 3R promotion was reflected in the 3R Guideline and 3R Manual. The objective of the 3R Guideline is to:

- Reveal the National Policy on 3R promotion to the person in charge of SWM
- The person in charge of SWM (LA) to implement the Guideline in his jurisdiction

3R Guideline consists of the following content.

- Background and Objectives
- 3R Targets and Policy of Promotion
- Basic Accord for 3R Promotion

The objective of the 3R manual is to **provide the technical and practical information which guides Local Authorities to promote the 3Rs** according to the 3R Guideline which serves as the national policy.



DoE presented 3R guideline



LCC CP presented draft  
Recycling Decree



NTC CP presented 3R Promotion  
Manual

#### **h. Discussion in the Local Government Forum (Dec 2011)**

Local Government Forum is organized on quarterly basis hosted by Department of Local Government. All Special Administrator (SA) and Chief Executive Officer (CEO) attended.

In response to a request from Ministry of Local Government, Urban Development, Housing and Environment, LCC project members presented the outline of the project and took all participants around to the project sites such as Vunato recycling facilities in December 2010.



LCC CP presented outline of the project



Site visit by SA and CEO

In December 2011, at a request of the Ministry, LCC CP presented the result of cost-benefit analysis in the Local Government Forum

The 3R Guideline has been formulated by DOE with assistance of JET, which now requires all municipalities to promote the 3Rs within their jurisdictions. For implementation, it is important to know the benefits comparing costs of each activity for making decision. Hence, LCC was invited to the Local Government Forum which was held on December 23, 2011 to share the cost – benefit analysis in terms of implementing the 3R activities. This was undertaken to provide analytical overview to senior management staffs of municipalities and Ministry of Local Government in terms of the inputs required to implement respective 3R activities, the challenges faced, lessons learnt and expected profit or savings from financial point of view.

Analysis was conducted in respect to expected unit costs of conducting each 3R activity and comparing with the expected financial returns or cost savings.

In the case of LCC, the cost - benefit analysis reveal that clean schools programme is the most viable 3R activity since it requires costless works, followed by market waste composting, then home composting. It was noted that green waste chipping and separate collection of recyclables require substantial costs with limited financial gains. Overall, it was noted that \$17,052 was spent in all the 3R activities whilst financial benefit was \$16,370 in LCC.

The costs incurred in the implementation of 3R activities would normally be more than the financial returns. However, for municipalities which incur exorbitant costs in terms of waste collection, transportation and disposal fees, implementation of 3R activities would result in cost savings. NTC has no disposal site within their boundary, so it is effective to promote 3R to save their transport cost and disposal fees.

Finally, it is quite difficult to evaluate the dollar value of the positive impacts realized from establishing “a sound material recovery society”. The impact of these gradual and progressive positive impacts achieved from implementing the 3R activities would augur well for any municipality.

Most participants agreed these conclusions and is willing to invest in these meaningful activities. Participants also highlighted the need for enactment of recycling legislation.



LCC CP presented the result of cost-benefit analysis in Local government forum (December 2011)

## Other SWM-related Activities

### a. Revised National Solid Waste Management Strategy 2011 – 2014

The Department has revised its Solid Waste Management Strategy and launched in September, 2011.

The strategy has highlighted the successful achievement of measurable results for the 3R project as the ideal 3R model for Fiji. Thus, the strategy has considered the replication of the 3R promotion in other town municipalities and rural local authorities.

### b. Environment Management (Container Deposit) Regulations 2011

Approved by cabinet on the 27th of September 2011, the Environment Management (Container Deposit) Regulations 2011 provides the legal framework for the establishment of the Container Deposit and Refund Recycling System. The purpose of the Regulations is to minimize environmental pollution by establishing a container deposit scheme in Fiji.

This regulation is a tool for the promotion of 3R where the public can get money back from recycling practices.

添付資料 4

フィジー国廃棄物減量化・資源化促進プロジェクト

Minutes of Meeting 25 July, 2008

**MINUTES OF MEETINGS  
BETWEEN  
JAPAN INTERNATIONAL COOPERATION AGENCY AND  
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF  
THE REPUBLIC OF THE FIJI ISLANDS  
ON JAPANESE TECHNICAL COOPERATION FOR  
WASTE MINIMIZATION AND RECYCLING PROMOTION PROJECT**

Japan International Cooperation Agency (hereinafter referred to as "JICA") had a series of discussions through Resident Representative of JICA Fiji Office with the authorities concerned of the Republic of the Fiji Islands (hereinafter referred to as "the Fiji side") on the implementation of Japanese technical cooperation regarding the Waste Minimization and Recycling Promotion Project (hereinafter referred to as "the Project").

As a result of the discussions, the Fiji side and JICA agreed to summarize the matters referred to in the document attached hereto as a supplement to the Record of Discussions (hereinafter referred to as "the R/D").

Suva, 25 July, 2008



---

Mr. Teiji TAKESHITA  
Resident Representative  
Fiji Office  
Japan International Cooperation Agency



---

Mr. Taito Waqa  
Acting Permanent Secretary for Local  
Government, Urban Development & Housing,  
and Environment  
Ministry of Local Government, Urban  
Development & Housing, and Environment  
The Republic of the Fiji Islands



---

Mr. Mosese Kama  
Director of Local Government  
Ministry of Local Government, Urban  
Development & Housing, and Environment  
The Republic of the Fiji Islands



---

Mr. Epeli Nasome  
Director of Environment  
Ministry of Local Government, Urban  
Development & Housing, and Environment  
The Republic of the Fiji Islands

## THE ATTACHED DOCUMENT

This document has been prepared for the better understanding of the R/D agreed upon between the Fiji side and JICA on the date of signing. The main items that had been discussed and agreed upon by both sides are summarized as follows.

### I. Project Design Matrix and Plan of Operation

JICA explained that the Project Design Matrix (hereinafter referred to as "the PDM") is to be introduced for the efficient and effective management and evaluation of the Project. Both sides agreed the PDM to the Project as shown in ANNEX I. Plan of Operation (hereinafter referred to as "the PO") based on the PDM is shown in ANNEX II. The PDM and the PO will be reviewed and revised if necessity arises. Especially, Objectively Verifiable Indicators and Means of Verification of the PDM will be determined within one year after starting the Project.

### II. Definition of 3R (3R for SIDS)

In general, 3R is known as the acronym of "Reduce, Reuse and Recycle" which illustrates the principle of minimizing waste. The 3R also indicates the three preferred options from the top of the waste management hierarchy (reduce, reuse, recycle, and dispose). According to the 3R concept, minimization of waste could be efficiently achieved by focusing at first on "reduce," followed by "reuse" and then "recycle." The residual waste should then be disposed of properly.

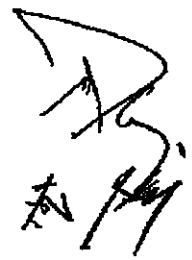
People of the Small Islands Developing States (SIDS) in the Pacific region including Fiji are heavily dependent on goods and materials imported from industrialized countries. It is however very difficult to recycle those materials and goods within their respective countries because of the geographical isolation and uneconomically small size of the recycle market. The imported goods and materials consumed in SIDS can be recycled only by returning to the market places in industrialized or large countries. Therefore, the Project proposes a new interpretation of 3R as "Reduce, Reuse and Return" for a small island country like Fiji.

### III. A partial improvement of Lautoka Landfill

Both the Fiji side and JICA agreed that the focus of the Project is to develop a model of waste minimization for Fiji based on the 3R concept and that the Project includes a pilot project in order to demonstrate proper waste disposal using a small section of Lautoka Landfill. Expected components of the pilot project include the following:

- (1) Conduct a field survey and site investigation at Lautoka Landfill (Activity 1-2)

38





- (2) Develop a pilot project plan as well as overall management plan for the Lautoka Landfill site. (Activity 2-4)
- (3) Develop a draft Environment Management Plan and follow the EIA procedure for the pilot project. (Activity 2-6)
- (4) Demonstrate physical improvements to a small section (several acres) of Lautoka Landfill that include construction of dikes, installation of pipes, etc. (Activity 2-8)
- (5) Demonstrate day-to-day landfill operation and maintenance. (Activities 2-5 and 2-8)
- (6) Improve access from the main road to tipping faces, as required. (Activities 2-5 and 2-8)
- (7) Carry out site preparation and other work for composting facilities. (Activity 2-8)
- (8) Install a weighbridge system and auxiliary facility. (Activity 2-8)
- (9) Conduct trainings on record-keeping, data collection and analysis, including the financial aspect. (Activities 2-5 and 2-8)
- (10) Develop a landfill operation manual. (Activities 2-8 and 2-9)

The components (4), (5) and (6) above shall be continued by the Lautoka City Council at its own expense in accordance with the landfill operation manual, to be developed under component (10), after the pilot project implementation. Operation of the composting facilities is considered to be included in the Activities 2-3 and 3-3.

Data management operation after the trainings in relation to the component (9) above shall be continued by the Lautoka City Council at its own expense after the pilot project implementation.

In addition to the above, it is suggested and agreed in principle that consideration be given to the people who collect and sell recyclables at Lautoka Landfill for their living since the introduction and promotion of 3R activities will reduce to a great extent or even deprive of their opportunity for waste-picking at the landfill site.

#### **IV. Pilot Project Areas**

Joint Coordinating Committee will approve the Pilot project areas to be selected from Lautoka City and Nadi Town.

#### **V. Environmental and Social Considerations**

JICA explained JICA guidelines for environmental and social considerations, and that it would be applied to the Project. The Fiji side understood the policy of the JICA guidelines and agreed in principle to the followings;

- (1) Lautoka City Council will follow EIA regulations in Fiji for project activities at Lautoka city (Vunato) Landfill site and take appropriate measures, if necessary. The expert team will provide the technical support for the Fiji side to do it.

38

- (2) The information disclosure such as opening the study report to public shall be made in order to ensure the participation and dialogues with various stakeholders, in order to achieve appropriate environmental and social considerations.
- (3) In the course of implementation of the Project, public consultation with communities and stakeholders shall be included if necessary.

In view of the Project purpose, both sides agreed the Project to follow the laws and regulations in force in Fiji and the JICA guidelines.

**ANNEX I      PROJECT DESIGN MATRIX (PDM)**  
**ANNEX II     PLAN OF OPERATION (PO)**

JK

JK  
JK

Annex I Project Design Matrix (PDM)

Project Title: Waste Minimization and Recycling Promotion Project

Duration: 2008-2011 (3.5 years)

Project Area: Lautoka City and Nadi Town

Target Group: The staff of Department of Environment, the staff of Lautoka City and Nadi Town Councils and their residents

PDM Version 1

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>Overall Goal</b> 3R (Reduce, Reuse, Return) is progressed in Fiji, mainly in Western Division.</p>	<ol style="list-style-type: none"> <li>Other municipalities mainly in Western Division introduce the 3R model for Fiji.</li> </ol>	<ol style="list-style-type: none"> <li>Interview with officials in charge of SWM in the municipalities</li> </ol>	<ol style="list-style-type: none"> <li>National waste management policy is still in line with 3R.</li> </ol>
<p><b>Project Purpose</b> Capacity on 3R of Department of Environment (DOE), Lautoka city and Nadi town is increased through developing 3R model for Fiji.</p>	<ol style="list-style-type: none"> <li>At least XX seminars/workshops on 3R promotion are organized by DOE.</li> <li>Action plan for 3R promotion is drafted by DOE.</li> <li>Policy and budget for 3R promotion is secured within DOE.</li> <li>Amount of waste disposal is decreased by XX% in Lautoka city and Nadi town.</li> </ol>	<ol style="list-style-type: none"> <li>Report on the seminars</li> <li>3R promotion action plan</li> <li>Relevant documents to verify the status of policy and budget of DOE.</li> <li>The survey report on current situations of SWM and the evaluation report on 3R project</li> <li>National strategy on 3R</li> <li>By-laws on 3R</li> </ol>	<ol style="list-style-type: none"> <li>Awareness is not spoiled by opening new landfills mainly in Western division.</li> <li>SWM policy of other municipalities mainly in Western Division is not dramatically changed.</li> <li>Market situation of recyclable products is not dramatically changed.</li> </ol>
<p><b>Outputs</b></p> <ol style="list-style-type: none"> <li>Solid Waste Management Plans focusing on 3R are developed respectively in Lautoka City and Nadi Town respectively.</li> <li>Lautoka City and Nadi Town obtain the capacity for proper Solid Waste Management (SWM) through the implementation of Pilot projects.</li> <li>Lautoka City and Nadi Town obtain the capacity for 3R promotion activities at whole area of Lautoka City and Nadi Town.</li> <li>Awareness of residents in Lautoka City and Nadi Town is raised through implementation of environmental education activities on 3R promotion.</li> <li>3R model for Fiji is developed and recommended.</li> </ol>	<ol style="list-style-type: none"> <li>Solid Waste Management Plans</li> <li>1 Evaluation reports on Pilot projects</li> <li>2 The improved area of Lautoka Landfill by the pilot project is operated as planned.</li> <li>3-1 XX% of households in Lautoka city and Nadi town participate seminars and/or trainings on 3R.</li> <li>3-2 XX% of households in Lautoka city and Nadi town conduct 3R.</li> <li>3-3 At least one segregation stations is established per XX households.</li> <li>3-4 Reports on 3R promotion project.</li> <li>4 Awareness of XX% of households in Lautoka city and Nadi town is improved.</li> <li>5-1 Guideline, manuals, etc. are developed.</li> <li>5-2 Seminars to present the guideline and manuals are conducted to more than half of other municipalities which</li> </ol>	<ol style="list-style-type: none"> <li>Solid Waste Management Plans</li> <li>1 The survey report on current situations of SWM and the pilot project evaluation report</li> <li>2 Landfill operational manuals</li> <li>3 The evaluation report on 3R promotion</li> <li>4 The survey report on current situations of SWM and the evaluation report on 3R promotion</li> <li>5-1 Guidelines, manuals, etc.</li> <li>5-2 Report on the seminars</li> </ol>	<ol style="list-style-type: none"> <li>Counterpart personnel keep working in the field of SWM.</li> <li>Political disorder does not occur in Fiji.</li> </ol>

Activities	Input	Input	Precondition
1-1 Survey the current status of Solid Waste Management (SWM). 1-2 Conduct a field survey on Lautoka city Yunato Landfill site (Lautoka Landfill). 1-3 Trace the current waste flow from generation to final disposal and identify issues to be addressed. 1-4 Develop frameworks of SWM. 1-5 Build a consensus on the frameworks of SWM among stakeholders. 1-6 Develop draft SWM plans based on the frameworks of SWM. 1-7 Finalize SWM plans.	Input Japanese side a) Personnel 1. Chief advisor 2. Solid Waste Management 3. Waste minimization and recycling 4. Solid waste education and awareness raising 5. Capacity assessment 6. Financial, institutional and organizational aspects 7. Final disposal (planning, construction and operation of sanitary landfill) 8. Collection and transportation 9. Environmental and Social Consideration 10. Project Coordinator  b) Counterpart training c) Machinery, equipment and materials	Fiji side a) Personnel -Assign necessary number of counterpart personnel at Lautoka city council and Nadi town council b) Office spaces and facilities -Office spaces and facilities c) Machinery, equipment and materials d) Administrative and operational cost e) Others -Provision of necessary data, information, etc.	Precondition
2-1 Conduct a community survey. 2-2 Select pilot areas on the basis of the community survey. 2-3 Develop a pilot project plan on 3R.			
2-4 Develop a pilot project plan on a partial improvement of Lautoka Landfill. 2-5 Conduct trainings, on the job trainings, etc. for the staff of Lautoka city council and Nadi town council to implement pilot projects.			
2-6 Complete the Environmental Impact Assessment (EIA) process required for the pilot project on a partial improvement of Lautoka Landfill. 2-7 Conduct the pilot project on 3R at pilot areas.			
2-8 Conduct the pilot project on a partial improvement of Lautoka Landfill. 2-9 Review and evaluate the pilot projects.			
3-1 Develop a 3R promotion action plan at whole area of Lautoka city and Nadi town.			
3-2 Conduct trainings, on the job trainings, etc. for the staff of Lautoka city council and Nadi town council to implement 3R promotion.			
3-3 Implement 3R promotion. 3-4 Review and evaluate 3R promotion.			
4-1 Review on environmental education tools/programmes in Japan and other countries			
4-2 Develop effective educational tools/programmes			
4-3 Conduct trainings, on the job trainings, etc. for the groups and personnel concerned on 3R promotion in Lautoka and Nadi			
4-4 Introduce the educational tools/programmes in the pilot project areas			
4-5 Evaluate the educational tools/programmes 4-6 Improve the educational tools/programmes 4-7 Implement activities to raise awareness through using tools/programmes in Lautoka city and Nadi town.			
5-1 Review all the process and results of the activities for 3R promotion by the project and extract findings. 5-2 Develop draft guidelines, manuals on 3R model for Fiji, etc. for its promotion.			
5-3 Finalize the guidelines, manuals, etc. 5-4 Conduct seminars to present other municipalities the guidelines and manuals.			

Annex II Plan of Operation (PO)

Name of Project: Waste Minimization and Recycling Promotion Project	Term of Cooperation: Three years and six months	2008												2009												2010												2011												2012				
		1Q			2Q			3Q			4Q			1Q			2Q			3Q			4Q			1Q			2Q			3Q			4Q			1Q	2Q	3Q	4Q													
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5												
Project Area: Lauloka City and Nadi Town	Target Group: Department of Environment, Municipal Governments and Communities in Lauloka City and Nadi Town	Period of the Project		JCC												Joint Evaluation												Customer												Present														
Output 1: Solid Waste Management Plans basing on 3R are developed respectively in Lauloka City and Nadi Town.	Results of Activities	JCA Experts																																																				
1-1 Survey the current status of Solid Waste Management (SWM).	Waste survey Capacity assessment etc.																																																					
1-2 Conduct field survey on Lauloka city Unstable Landfill site (Lauloka landfill).	Survey report on Lauloka Landfill																																																					
1-3 Assess the current waste flow from generation to final disposal and identify issues to be addressed.	Waste flow, Waste analysis report																																																					
1-4 Develop frameworks of SWM.	Framework document of SWM																																																					
1-5 Build a consensus on the frameworks of SWM among stakeholders.	MM of stakeholder meetings																																																					
1-6 Develop draft SWM plans based on the frameworks of SWM.	Draft SWM plans																																																					
1-7 Finalize SWM plans.	SWM plans																																																					
Output 2: Lauloka City and Nadi Town obtain the capacity for proper Solid Waste Management (SWM) through the implementation of Pilot projects.	Community survey report																																																					
2-1 Conduct a community survey.	Map for pilot project areas																																																					
2-2 Select pilot areas on the basis of the community survey.	Pilot project plan on 3R																																																					
2-3 Develop a pilot project plan on 3R.	Pilot project plan on a partial improvement of Lauloka Landfill																																																					
2-4 Develop a pilot project plan on a partial improvement of Lauloka Landfill.	Materials for capacity development process																																																					
2-5 Conduct trainings, on the job trainings, etc. for the staff of Lauloka city council and Nadi town council to implement pilot projects.	Progress reports																																																					
2-6 Complete the Environmental Impact Assessment (EIA) process required for the pilot project on a partial improvement of Lauloka Landfill.	Progress reports																																																					
2-7 Conduct the pilot project on 3R at pilot areas.	Progress reports																																																					
2-8 Conduct the pilot project on a partial improvement of Lauloka Landfill.	Progress reports																																																					
2-9 Review and evaluate the pilot projects.	Evaluation reports																																																					
Output 3: Lauloka City and Nadi Town obtain the capacity for 3R promotion activities at whole area of Lauloka City and Nadi Town.	3R promotion action plans																																																					
3-1 Develop a 3R promotion action plan at whole area of Lauloka city and Nadi town.	Materials for capacity development																																																					
3-2 Conduct trainings, on the job trainings, etc. for the staff of Lauloka city council and Nadi town council to implement 3R promotion.	Progress reports																																																					
3-3 Implement 3R promotion.	Evaluation reports																																																					
3-4 Review and evaluate 3R promotion.	Review report																																																					
Output 4: Awareness of resident in Lauloka City and Nadi Town raised through implementation of environmental education activities on 3R promotion.	Educational tool/programmes																																																					
4-1 Review an environmental education tool/programmes in Japan and other countries	Training reports																																																					
4-2 Develop effective educational tool/programmes	Progress reports																																																					
4-3 Conduct trainings on the job trainings, etc. for the groups and personnel concerned on 3R promotion in Lauloka and Nadi	Evaluation reports																																																					
4-4 Introduce the educational tool/programmes in the pilot project areas	Improved educational tool/programmes																																																					
4-5 Evaluate the educational tool/programmes	Progress reports																																																					
4-6 Improve the educational tool/programmes	Progress reports																																																					
4-7 Implement activities to raise awareness through using tool/programmes in Lauloka city and Nadi town.	Outputs/review report																																																					
Output 5: 3R model for Fiji is developed and recommended.	Draft guidelines, manuals, etc																																																					
5-1 Review all the process and results of the activities for 3R promotion by the project and extract findings.	Guidelines, manuals, etc																																																					
5-2 Develop draft guidelines, manuals on 3R model for Fiji, etc. for its promothion.	Guidelines, manuals, etc																																																					
5-3 Finalize the guidelines, manuals, etc.	Review reports																																																					
5-4 Conduct seminars to present 3R model to municipalities the guidelines and manuals.																																																						

フィジー国廃棄物減量化・資源化促進プロジェクト

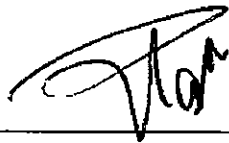
Record of Discussion 25 July, 2008

**RECORD OF DISCUSSIONS  
BETWEEN  
JAPAN INTERNATIONAL COOPERATION AGENCY AND  
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF  
THE REPUBLIC OF THE FIJI ISLANDS  
ON JAPANESE TECHNICAL COOPERATION FOR  
WASTE MINIMIZATION AND RECYCLING PROMOTION PROJECT**

Japan International Cooperation Agency (hereinafter referred to as "JICA") exchanged views and had a series of discussions with the authorities concerned of the Republic of the Fiji Islands (hereinafter referred to as "Fiji") with respect to desirable measures to be taken by JICA and the Government of Fiji for the successful implementation of the above-mentioned Project.

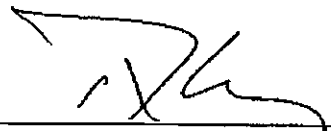
As a result of the discussions, the authorities concerned of the Republic of the Fiji Islands and JICA agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Suva, 25 July, 2008



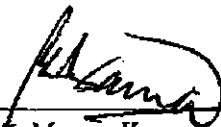
---

Mr. Teiji TAKESHITA  
Resident Representative  
Fiji Office  
Japan International Cooperation Agency



---

Mr. Taito Waqa  
Acting Permanent Secretary for Local  
Government, Urban Development & Housing,  
and Environment  
Ministry of Local Government, Urban  
Development & Housing, and Environment  
The Republic of the Fiji Islands



---

Mr. Mosese Kama  
Director of Local Government  
Ministry of Local Government, Urban  
Development & Housing, and Environment  
The Republic of the Fiji Islands



---

Mr. Epeli Nasome  
Director of Environment  
Ministry of Local Government, Urban  
Development & Housing, and Environment  
The Republic of the Fiji Islands

## THE ATTACHED DOCUMENT

### I. COOPERATION BETWEEN JICA AND THE GOVERNMENT OF FIJI

1. The Government of Fiji will implement Waste Minimization and Recycling Promotion Project (hereinafter referred to as "the Project") in cooperation with JICA.
2. The Project will be implemented in accordance with the Master Plan which is given in Annex I.

### II. MEASURES TO BE TAKEN BY JICA

In accordance with the laws and regulations in force in Japan, JICA will take, as its own expense, the following measures according to the normal procedures under the Colombo Plan Technical Cooperation Scheme.

#### 1. DISPATCH OF JAPANESE AND OTHER COUNTRY EXPERTS

JICA will provide the services of the Japanese and other country experts (hereinafter referred to as "the JICA experts") as listed in Annex II.

#### 2. PROVISION OF MACHINERY AND EQUIPMENT

JICA will provide such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Annex III. The Equipment will become the property of the Government of Fiji upon being delivered C.I.F. (cost, insurance and freight) to the Government of Fiji at the ports and/or airports of disembarkation.

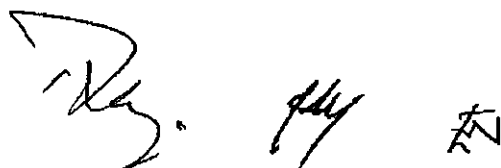
#### 3. TRAINING OF PERSONNEL OF THE GOVERNMENT OF FIJI

JICA will receive and/or dispatch the personnel of the Government of Fiji connected with the Project for technical training in Japan and/or other countries.

### III. MEASURES TO BE TAKEN BY THE GOVERNMENT OF FIJI

1. The Government of Fiji will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of Japanese technical cooperation, through full and active involvement in the Project by all related authorities and institutions.
2. The Government of Fiji will ensure that the technologies and knowledge acquired by the people of Fiji as a result of Japanese technical cooperation will contribute to the economic and social development of Fiji.

zk

Handwritten signatures and initials, including a large stylized signature, the initials 'JLJ', and the initials 'FN'.

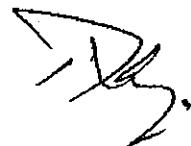


3. The Government of Fiji will grant in Fiji privileges, exemptions and benefits as listed in Annex IV to the JICA experts referred to II-1 above, which are no less favorable than those accorded to experts of third countries working in Fiji under the Colombo Plan Technical Cooperation Scheme.
4. The Government of Fiji will ensure that the Equipment referred to in II-2 above will be utilized effectively for the implementation of the Project in consultation with the JICA experts referred to in Annex II.
5. The Government of Fiji will take necessary measures to ensure that the knowledge and experience acquired by the personnel of Fiji from technical training in Japan and other countries will be utilized effectively in the implementation of the Project.
6. In accordance with the laws and regulations in force in Fiji, the Government of Fiji will take necessary measures to provide at its own expense:
  - (1) Services of the counterpart personnel of Fiji as listed in Annex V;
  - (2) Land, buildings and facilities as listed in Annex VI; and
  - (3) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare-parts and any other materials necessary for the implementation of the Project other than the Equipment provided by JICA under II-2 above.
7. In accordance with the laws and regulations in force in Fiji, the Government of Fiji will take necessary measures to meet:
  - (1) Expenses necessary for transportation within Fiji of the Equipment referred to in II-2 above as well as for the installation, operation and maintenance thereof;
  - (2) Customs duties, internal taxes and any other charges, imposed in Fiji on the Equipment referred to in II-2 above; and
  - (3) Running expenses necessary for the implementation of the Project.

#### IV. ADMINISTRATION OF THE PROJECT

1. The Director of Department of Environment, Ministry of Local Government, Urban Development & Housing, and Environment, as the Project Director, will bear overall responsibility for the administration and implementation of the Project.
2. Principal Environment Officer of Department of Environment, Ministry of Local Government, Urban Development & Housing, and Environment, as the Project Manager, will be responsible for the managerial and technical matters of the Project.
3. Director Health Services of Lautoka City Council and Head of Health Department of Nadi Town Council, as the Co-Project Managers, will be responsible for the managerial and technical matters of the Project.

31



4. The Japanese Chief Advisor will provide necessary recommendations and advice to the Project Director, the Project Manager and Co-Project Managers on any matters pertaining to the implementation of the Project.
5. The JICA experts will give necessary technical guidance and advice to the counterpart personnel of Fiji on technical matters pertaining to the implementation of the Project.
6. For the effective and successful implementation of technical cooperation for the Project, a Joint Coordinating Committee will be established whose functions and composition are described in Annex VII.

#### **V. JOINT EVALUATION**

Evaluation of the Project will be conducted jointly by the authorities concerned of the Republic of the Fiji Islands and JICA, at the middle and during the last six (6) months of the cooperation term in order to examine the level of achievement.

#### **VI. CLAIMS AGAINST JAPANESE AND OTHER COUNTRY EXPERTS**

The Government of Fiji undertakes to bear claims, if any arises, against the JICA experts engaged in technical cooperation for the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in Fiji except for those arising from the willful misconduct or gross negligence of the JICA experts.

#### **VII. MUTUAL CONSULTATION**

There will be mutual consultation between the Government of Fiji and JICA on any major issues arising from, or in connection with this Attached Document.

#### **VIII. MEASURES TO PROMOTE UNDERSTANDING OF AND SUPPORT FOR THE PROJECT**

For the purpose of promoting support for the Project among the people of Fiji, the Government of Fiji will take appropriate measures to make the Project widely known to the people of Fiji.

#### **IX. TERM OF COOPERATION**

The duration of the technical cooperation for the Project under this Attached Document will be three (3) years and six (6) months from the date when the first expert(s) is (are) dispatched.

31

*[Handwritten signatures]*

*[Handwritten mark]*

<b>ANNEX I</b>	<b>MASTER PLAN</b>
<b>ANNEX II</b>	<b>LIST OF JAPANESE AND OTHER COUNTRY EXPERTS</b>
<b>ANNEX III</b>	<b>LIST OF MACHINERY AND EQUIPMENT</b>
<b>ANNEX IV</b>	<b>PRIVILEGES, EXEMPTION AND BENEFITS FOR JAPANESE AND OTHER COUNTRY EXPERTS</b>
<b>ANNEX V</b>	<b>LIST OF COUNTERPART PERSONNEL OF FIJI</b>
<b>ANNEX VI</b>	<b>LIST OF LAND, BUILDING AND FACILITIES</b>
<b>ANNEX VII</b>	<b>JOINT COORDINATING COMMITTEE</b>

38

*[Handwritten signature]*

*[Handwritten signature]*

*[Handwritten mark]*

## ANNEX I      MASTER PLAN

### Overall Goal

3R (Reduce, Reuse, Return) is progressed in Fiji, mainly in Western Division.

### Project Purpose

Capacity of 3R (Reduce, Reuse, Return) of Department of Environment (DOE), Lautoka City and Nadi Town is increased through developing 3R model for Fiji.

### Output of the Project

1. Solid Waste Management Plans focusing on 3R are developed respectively in Lautoka City and Nadi Town respectively.
2. Lautoka City and Nadi Town obtain the capacity for proper Solid Waste Management (SWM) through the implementation of Pilot projects.
3. Lautoka City and Nadi Town obtain the capacity for 3R promotion activities at whole area of Lautoka City and Nadi Town.
4. Awareness of residents in Lautoka City and Nadi Town is raised through implementation of environmental education activities on 3R promotion.
5. 3R model for Fiji is developed and recommended.

### Activities of the Project

- 1-1 Survey the current status of SWM.
- 1-2 Conduct a field survey on Lautoka city Vunato Landfill site (Lautoka Landfill).
- 1-3 Trace the current waste flow from generation to final disposal and identify issues to be addressed.
- 1-4 Develop frameworks of SWM.
- 1-5 Build a consensus on the frameworks of SWM among stakeholders.
- 1-6 Develop draft SWM plans based on the frameworks of SWM.
- 1-7 Finalize SWM plans.
  
- 2-1 Conduct a community survey.
- 2-2 Select pilot areas on the basis of the community survey.
- 2-3 Develop a pilot project plan on 3R.
- 2-4 Develop a pilot project plan on a partial improvement of Lautoka Landfill.
- 2-5 Conduct trainings, on the job trainings, etc. for the staff of Lautoka city council and Nadi town council to implement the pilot projects.
- 2-6 Complete the Environmental Impact Assessment (EIA) process required for the pilot project on a partial improvement of Lautoka Landfill.
- 2-7 Conduct the pilot project on 3R at pilot areas.
- 2-8 Conduct the pilot project on a partial improvement of Lautoka Landfill.

2-9 Review and evaluate the pilot projects.

3-1 Develop a 3R promotion action plan at whole area of Lautoka city and Nadi town.

3-2 Conduct trainings, on the job trainings, etc. for the staff of Lautoka city council and Nadi town council to implement 3R promotion.

3-3 Implement 3R promotion.

3-4 Review and evaluate 3R promotion.

4-1 Review on environmental educational tools/programmes in Fiji, Japan and other countries.

4-2 Develop effective educational tools/programmes.

4-3 Conduct trainings, on the job trainings, etc. for the groups & personnel concerned on 3R promotion in Lautoka and Nadi.

4-4 Introduce the educational tools/programmes in the pilot project areas.

4-5 Evaluate the educational tools/programmes.

4-6 Improve the educational tools/programmes.

4-7 Implement activities to raise awareness through using the educational tools/programmes in Lautoka city and Nadi town.

5-1 Review all the process & results of the activities for 3R promotion by the project and extract findings.

5-2 Develop draft guidelines, manuals on 3R model for Fiji, etc. for its promotion.

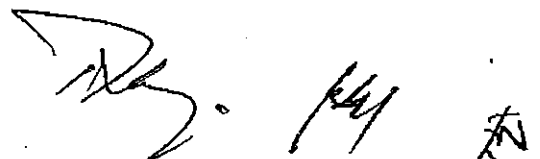
5-3 Finalize the guidelines, manuals, etc.

5-4 Conduct seminars to present other municipalities the guidelines and manuals.

**Project Area**

Lautoka city and Nadi town

28

Handwritten signatures and initials at the bottom right of the page.

**ANNEX II LIST OF JAPANESE AND OTHER COUNTRY EXPERTS**

The experts in the fields described below, will be dispatched, serving exclusively for the Project.

1. Chief Advisor
2. Solid Waste Management
3. Waste minimization and recycling
4. Solid waste education and awareness raising
5. Capacity assessment
6. Financial, institutional and organizational aspects
7. Final disposal (planning, construction and operation of sanitary landfill)
8. Collection and transportation
9. Environmental and Social Consideration
10. Project Coordinator

3/

Handwritten signatures and initials at the bottom right of the page.

**ANNEX III LIST OF MACHINERY AND EQUIPMENT**

1. Equipment for training, education and awareness raising
2. Weighbridge
3. Other machinery and equipment necessary for the effective implementation of the Project

The above mentioned equipment is limited to those necessary for the technical cooperation activities by the JICA experts. The detailed contents, specification and quantity of the above mentioned equipment will be decided within the budget allocated for the Project.

3/8

*[Handwritten signature]*

*[Handwritten signature]*

*[Handwritten signature]*

**ANNEX IV      PRIVILEGES, EXEMPTION AND BENEFITS FOR JAPANESE  
AND OTHER COUNTRY EXPERTS**

1. The Government of Fiji will grant exemptions from income tax and charges of any kind of imposed on or in connection with the living allowance remitted from abroad.
  
2. The Government of Fiji will grant exemptions from customs duties on the importation of personal effects by the JICA experts as well as on the importation of machinery and equipment related to their activities.

3/

*[Handwritten signatures and initials]*



**ANNEX V LIST OF COUNTERPART PERSONNEL OF FIJI**

**1. Project Director**

Director, Department of Environment, Ministry of Local Government, Urban Development & Housing,  
and Environment

**2. Project Manager**

Principal Environment Officer of Department of Environment, Ministry of Local Government, Urban  
Development & Housing, and Environment

**3. Co-Project Managers**

Director Health Services, Lautoka City Council  
Head of Health Department, Nadi Town Council

**4. Technical Counterpart Personnel**

Staff of Department of Environment, Ministry of Local Government, Urban Development & Housing,  
and Environment

Staff of Health Services, Lautoka City Council

Staff of Health Services, Nadi Town Council

31

Handwritten signatures and initials, including a large signature and the initials "HJ".

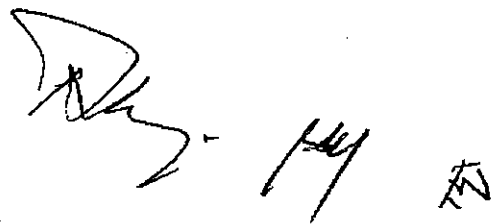
Handwritten initials.

**ANNEX VI LIST OF LAND, BUILDING AND FACILITIES**

The following will be prepared by the Government of Fiji for the implementation of the Project.

1. Project offices (JICA experts' rooms) in Lautoka City and Nadi Town
2. Furniture, electricity, telephone, water supply and air conditioning
3. Other facilities necessary for the effective implementation of the Project

38

Handwritten signatures and initials in black ink, including a large signature, the initials 'HJ', and a small mark.

## ANNEX VII JOINT COORDINATING COMMITTEE

### 1. FUNCTION

The Joint Coordinating Committee (hereinafter referred to as "JCC"), composed of members listed in 2 below, will meet at least twice a year and whenever the necessity arises. The main functions of JCC shall be as follows;

- (1) To formulate the annual operational work plan of the Project based on the Plan of Operation within the framework of the Record of Discussions.
- (2) To review the overall progress and achievements of the Project
- (3) To examine major issues arising from or in connection with the Project
- (4) To work out the modification of activities depending on the necessity

### 2. COMMITTEE COMPOSITION

#### (1) Chairperson:

Permanent Secretary for Local Government, Urban Development & Housing, and Environment,  
Ministry of Local Government, Urban Development & Housing, and Environment

#### (2) Committee Members:

##### 1) Fiji side:

Director of Environment, Ministry of Local Government, Urban Development & Housing, and Environment

Director of Local Government, Ministry of Local Government, Urban Development & Housing, and Environment

Principal Environment Officer, Ministry of Local Government, Urban Development & Housing, and Environment

Secretary, Central Board of Health, Ministry of Health

Director Health Services, Lautoka City Council

Head of Health Department, Nadi Town Council

##### 2) Japanese side:

Expert Team to be dispatched by JICA

Representative, JICA Fiji Office

Other personnel concerned to be decided and/or dispatched by JICA, if necessary

##### 3) Observer

Representative, Embassy of Japan in Fiji

フィジー国廃棄物減量化・資源化促進プロジェクト

Minutes of Meeting 26 November, 2007

**MINUTES OF MEETINGS  
BETWEEN  
THE JAPANESE PREPARATORY STUDY TEAM AND  
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF  
THE REPUBLIC OF THE FIJI ISLANDS  
ON JAPANESE TECHNICAL COOPERATION  
FOR WASTE MINIMIZATION AND RECYCLING PROMOTION PROJECT**

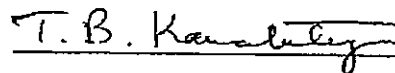
The Japanese Preparatory Study Team (hereinafter referred to as "the Team"), organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Kazuya Suzuki, visited the Republic of the Fiji Islands (hereinafter referred to as "Fiji") from November 11 to November 26, 2007, for the purpose of formulating the technical cooperation regarding the Waste Minimization and Recycling Promotion Project (hereinafter referred to as "the Project").

The Team exchanged views and had a series of discussions with the authorities concerned of the Government of Fiji (hereinafter referred to as "the Fiji side"). As a result of the discussions, both the Fiji side and the Team agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

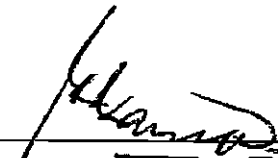
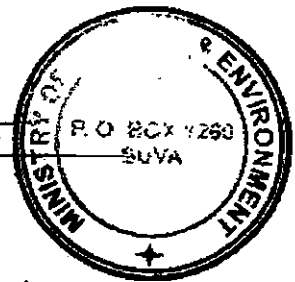
Suva, November 26, 2007



Mr. Kazuya SUZUKI  
Leader  
Japanese Preparatory Study Team  
Japan International Cooperation Agency



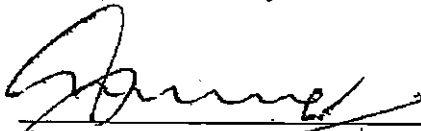
Mrs. Banuve Kaumaitotoya  
Permanent Secretary for Tourism  
and Environment  
Ministry of Tourism and Environment  
The Republic of the Fiji Islands



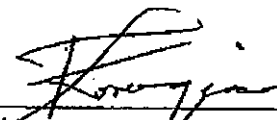
Mr. Mosese Kama  
Director of Local Government  
Ministry of Local Government,  
Urban Development & Public Utilities  
The Republic of the Fiji Islands



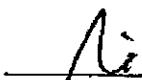
Mr. Epeli Nasome  
Director of Environment  
Ministry of Tourism and Environment  
The Republic of the Fiji Islands



Mr. Rohit Kumar  
Mayor  
Lautoka City Council



Mr. Timoci Korotiqica  
Mayor  
Nadi Town Council



Mr. Pusp Raj  
Town Clerk/CEO  
Lautoka City Council



Mr. Robin K. Ali  
Town Clerk/CEO  
Nadi Town Council

## THE ATTACHED DOCUMENT

### I. TITLE OF THE PROJECT

Both the Fiji side and the Team agreed that the title of the Project is "Waste Minimization and Recycling Promotion Project".

### II. RECORD OF DISCUSSIONS

The draft of the Record of Discussions (hereinafter referred to as "the R/D"), which stipulates the framework of the Project, will be finalized and signed by the representative of the Government of Fiji and JICA Fiji Office after notification of approval of implementation of the Project by JICA Headquarters. Both sides agreed that it is desirable that the R/D be signed as soon as possible after the signing of these Minutes of Meetings.

Both sides agreed on the draft R/D shown as Appendix I.

### III. PROJECT DESIGN MATRIX

Both the Fiji side and the Team had a series of discussions and agreed on the tentative Project Design Matrix (hereinafter referred to as "the PDM") shown in Appendix II. The PDM is to be flexibly amended in view of the process and achievements of the Project based upon agreement between the Fiji side and JICA.

### IV. PLAN OF OPERATION

The tentative Plan of Operation (hereinafter referred to as "the PO") for the whole project period is shown in Appendix III. The activities of the Project are subject to change within the scope of the R/D with mutual consultation when necessity arises in the course of implementation of the Project.

### V. TERMS OF COOPERATION

The duration of the technical cooperation for the Project will be three (3) years and six (6) months.

### VI. BUDGET FOR THE PROJECT

Both the Fiji side and the Team agreed that the local cost of the Project, including counterpart staff salary, transportation, equipment, office facilities, will be borne by the Fiji side. JICA will afford the cost of secretaries, drivers, a part of pilot project activities, and workshops/seminars within the allocation of the budget for the project.


*Handwritten signatures and initials:*  
A large signature on the left, possibly "Bank".  
A signature in the middle.  
A signature on the right.  
A small number "1" is written below the signature on the right.






## VII. COUNTERPART PERSONNEL OF FIJI

Both the Fiji side and the Team agreed that the Fiji side will assign the necessary counterpart personnel by the beginning of the Project.

## VIII. OTHERS

Both the Fiji side and the Team agreed that the land issue might cause a negative impact on the Project activities. Therefore the Fiji side will solve any land issue.

APPENDIX I	DRAFT RECORD OF DISCUSSIONS (R/D) (including its attached M/M)
APPENDIX II	TENTATIVE PROJECT DESIGN MATRIX (PDM)
APPENDIX III	TENTATIVE PLAN OF OPERATION (PO) 

     2

**DRAFT RECORD OF DISCUSSIONS  
BETWEEN  
JAPAN INTERNATIONAL COOPERATION AGENCY AND  
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF  
THE REPUBLIC OF THE FIJI ISLANDS  
ON JAPANESE TECHNICAL COOPERATION FOR  
WASTE MINIMIZATION AND RECYCLING PROMOTION PROJECT**

Japan International Cooperation Agency (hereinafter referred to as "JICA") exchanged views and had a series of discussions with the authorities concerned of the Republic of the Fiji Islands with respect to desirable measures to be taken by JICA and the Government of the Republic of the Fiji Islands (hereinafter referred to as "the Government of Fiji") for the successful implementation of the above-mentioned Project.

As a result of the discussions, the authorities concerned of the Republic of the Fiji Islands and JICA agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Suva, XXXXXXXX, 2008

---

Mr. Teiji TAKESHITA  
Resident Representative  
JICA Fiji Office

---

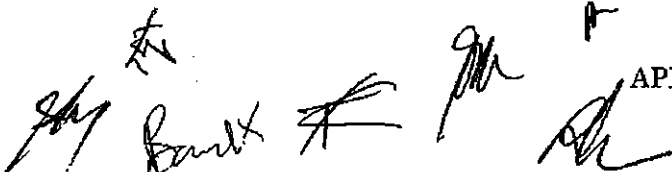
Mrs. Banuve Kaumaitotoya  
Permanent Secretary for Tourism and  
Environment  
Ministry of Tourism and Environment  
The Republic of the Fiji Islands

---

Mr. Mosese Kama  
Director of Local Government  
Ministry of Local Government, Urban  
Development & Public Utilities  
The Republic of the Fiji Islands

---

Mr. Epeli Nasome  
Director of Environment  
Ministry of Tourism and Environment  
The Republic of the Fiji Islands





## THE ATTACHED DOCUMENT

**I. COOPERATION BETWEEN JICA AND THE GOVERNMENT OF FIJI**

1. The Government of Fiji will implement Waste Minimization and Recycling Promotion Project (hereinafter referred to as "the Project") in cooperation with JICA.
2. The Project will be implemented in accordance with the Master Plan which is given in Annex I.

PDM

**II. MEASURES TO BE TAKEN BY JICA**

In accordance with the laws and regulations in force in Japan, JICA will take, as its own expense, the following measures according to the normal procedures under the Colombo Plan Technical Cooperation Scheme.

**1. DISPATCH OF JAPANESE AND OTHER COUNTRY EXPERTS**

JICA will provide the services of the Japanese and other country experts (hereinafter referred to as "the JICA experts") as listed in Annex II.

**2. PROVISION OF MACHINERY AND EQUIPMENT**

JICA will provide such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Annex III. The Equipment will become the property of the Government of Fiji upon being delivered C.I.F. (cost, insurance and freight) to the Government of Fiji at the ports and/or airports of disembarkation.

**3. TRAINING OF PERSONNEL OF THE GOVERNMENT OF FIJI**

JICA will receive and/or dispatch the personnel of the Government of Fiji connected with the Project for technical training in Japan and/or other countries.

**III. MEASURES TO BE TAKEN BY THE GOVERNMENT OF FIJI**

1. The Government of Fiji will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of Japanese technical cooperation, through full and active involvement in the Project by all related authorities and institutions.
2. The Government of Fiji will ensure that the technologies and knowledge acquired by the people of Fiji as a result of Japanese technical cooperation will contribute to the economic and social development of Fiji.

3. The Government of Fiji will grant in Fiji privileges, exemptions and benefits as listed in Annex IV to the JICA experts referred to II-1 above, which are no less favorable than those accorded to experts of third countries working in Fiji under the Colombo Plan Technical Cooperation Scheme.
4. The Government of Fiji will ensure that the Equipment referred to in II-2 above will be utilized effectively for the implementation of the Project in consultation with the JICA experts referred to in Annex II.
5. The Government of Fiji will take necessary measures to ensure that the knowledge and experience acquired by the personnel of Fiji from technical training in Japan and other countries will be utilized effectively in the implementation of the Project.
6. In accordance with the laws and regulations in force in Fiji, the Government of Fiji will take necessary measures to provide at its own expense:
  - (1) Services of the counterpart personnel of Fiji as listed in Annex V;
  - (2) Land, buildings and facilities as listed in Annex VI; and
  - (3) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare-parts and any other materials necessary for the implementation of the Project other than the Equipment provided by JICA under II-2 above.
7. In accordance with the laws and regulations in force in Fiji, the Government of Fiji will take necessary measures to meet:
  - (1) Expenses necessary for transportation within Fiji of the Equipment referred to in II-2 above as well as for the installation, operation and maintenance thereof;
  - (2) Customs duties, internal taxes and any other charges, imposed in Fiji on the Equipment referred to in II-2 above; and
  - (3) Running expenses necessary for the implementation of the Project.

**IV. ADMINISTRATION OF THE PROJECT**

1. The Director of Department of Environment, Ministry of Tourism and Environment, as the Project Director, will bear overall responsibility for the administration and implementation of the Project.
2. Principal Environment Officer of Department of Environment, Ministry of Tourism and Environment, as the Project Manager, will be responsible for the managerial and technical matters of the Project.
3. Director Health Services of Lautoka City Council and Head of Health Department of Nadi Town Council, as the Co-Project Managers, will be responsible for the managerial and technical matters of the Project.
4. The Japanese Chief Advisor will provide necessary recommendations and advice to the Project Director, the Project Manager and Co-Project Managers on any matters pertaining to the

*Handwritten signatures and initials:*  
 1. *Handwritten signature: "Benith"*  
 2. *Handwritten signature: "AM"*  
 3. *Handwritten signature: "AL"*  
 4. *Handwritten signature: "or"*

implementation of the Project.

5. The JICA experts will give necessary technical guidance and advice to the counterpart personnel of Fiji on technical matters pertaining to the implementation of the Project.
6. For the effective and successful implementation of technical cooperation for the Project, a Joint Coordinating Committee will be established whose functions and composition are described in Annex VII.

#### V. JOINT EVALUATION

Evaluation of the Project will be conducted jointly by the authorities concerned of the Republic of the Fiji Islands and JICA, at the middle and during the last six (6) months of the cooperation term in order to examine the level of achievement.

#### VI. CLAIMS AGAINST JAPANESE AND OTHER COUNTRY EXPERTS

The Government of Fiji undertakes to bear claims, if any arises, against the JICA experts engaged in technical cooperation for the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in Fiji except for those arising from the willful misconduct or gross negligence of the JICA experts.

#### VII. MUTUAL CONSULTATION

There will be mutual consultation between the Government of Fiji and JICA on any major issues arising from, or in connection with this Attached Document.

#### VIII. MEASURES TO PROMOTE UNDERSTANDING OF AND SUPPORT FOR THE PROJECT

For the purpose of promoting support for the Project among the people of Fiji, the Government of Fiji will take appropriate measures to make the Project widely known to the people of Fiji.

#### IX. TERM OF COOPERATION

The duration of the technical cooperation for the Project under this Attached Document will be three (3) years and six (6) months from the date when the first expert(s) is (are) dispatched.

*HO*

*to* *My* *Banks* *R* *MM* *RL* *pr*

ANNEX I	MASTER PLAN
ANNEX II	LIST OF JAPANESE AND OTHER COUNTRY EXPERTS
ANNEX III	LIST OF MACHINERY AND EQUIPMENT
ANNEX IV	PRIVILEGES, EXEMPTION AND BENEFITS FOR JAPANESE AND OTHER COUNTRY EXPERTS
ANNEX V	LIST OF COUNTERPAT PERSONNEL OF FIJI
ANNEX VI	LIST OF LAND, BUILDING AND FACILITIES
ANNEX VII	JOINT COORDINATING COMMITTEE <i>90</i>

## ANNEX I      MASTER PLAN

**Overall Goal**

3R (Reduce, Reuse, Return) is progressed in Fiji, mainly in Western Division.

**Project Purpose**

Capacity of 3R (Reduce, Reuse, Return) of Department of Environment (DOE), Lautoka City and Nadi Town is increased through developing 3R model for Fiji.

**Output of the Project**

1. Solid Waste Management Plans focusing on 3R are developed respectively in Lautoka City and Nadi Town.
2. Pilot projects are implemented.
3. 3R is implemented at whole area of Lautoka City and Nadi Town.
4. Awareness of residents in Lautoka City and Nadi Town is raised through implementation of environmental education activities on 3R promotion.
5. 3R model for Fiji is developed and recommended.

**Activities of the Project**

- 1-1 Survey the current status of Solid Waste Management (SWM).
- 1-2 Conduct a field survey on Lautoka city Vunato Landfill site (Lautoka Landfill).
- 1-3 Trace the current waste flow from generation to final disposal and identify issues to be addressed.
- 1-4 Develop frameworks of SWM.
- 1-5 Build a consensus on the frameworks of SWM among stakeholders.
- 1-6 Develop draft SWM plans based on the frameworks of SWM.
- 1-7 Finalize SWM plans.
  
- 2-1 Conduct a community survey.
- 2-2 Select pilot areas on the basis of the community survey.
- 2-3 Develop a pilot project plan on 3R.
- 2-4 Develop a pilot project plan on a partial improvement of Lautoka Landfill.
- 2-5 Conduct trainings, on the job trainings, etc. for the staff of Lautoka city council and Nadi town council to implement the pilot projects.
- 2-6 Complete the Environmental Impact Assessment (EIA) process required for the pilot project on a partial improvement of Lautoka Landfill.
- 2-7 Conduct the pilot project on 3R at pilot areas.
- 2-8 Conduct the pilot project on a partial improvement of Lautoka Landfill.
- 2-9 Review and evaluate the pilot projects. *20*

*for*  
*Jody Bennett* *R* *M* *A* *a*

- 3-1 Develop a 3R promotion action plan at whole area of Lautoka city and Nadi town.
- 3-2 Conduct trainings, on the job trainings, etc. for the staff of Lautoka city council and Nadi town council to implement 3R promotion.
- 3-3 Implement 3R promotion.
- 3-4 Review and evaluate 3R promotion.
  
- 4-1 Review on environmental educational tools/programmes in Fiji, Japan and other countries.
- 4-2 Develop effective educational tools/programmes.
- 4-3 Conduct trainings, on the job trainings, etc. for the groups & personnel concerned on 3R promotion in Lautoka and Nadi.
- 4-4 Introduce the educational tools/programmes in the pilot project areas.
- 4-5 Evaluate the educational tools/programmes.
- 4-6 Improve the educational tools/programmes.
- 4-7 Implement activities to raise awareness through using the educational tools/programmes in Lautoka city and Nadi town.
  
- 5-1 Review all the process & results of the activities for 3R promotion by the project and extract findings.
- 5-2 Develop draft guidelines, manuals on 3R model for Fiji, etc. for its promotion.
- 5-3 Finalize the guidelines, manuals, etc.
- 5-4 Conduct seminars to present other municipalities the guidelines and manuals.

**Project Area**

Lautoka city and Nadi town *JS*

*JS*  
*JS* *Bant* *R* *JS* *JS* *JS*

## ANNEX II LIST OF JAPANESE AND OTHER COUNTRY EXPERTS

The experts in the fields described below, will be dispatched, serving exclusively for the Project.

1. Chief Advisor
2. Solid Waste Management
3. Waste minimization and recycling
4. Solid waste education and awareness raising
5. Capacity assessment
6. Financial, institutional and organizational aspects
7. Final disposal (planning, construction and operation of sanitary landfill)
8. Collection and transportation
9. Environmental and Social Consideration
10. Project Coordinator *Q*

**ANNEX III LIST OF MACHINERY AND EQUIPMENT**

1. Equipment for training, education and awareness raising
2. Weighbridge
3. Other machinery and equipment necessary for the effective implementation of the Project

The above mentioned equipment is limited to those necessary for the technical cooperation activities by the JICA experts. The detailed contents, specification and quantity of the above mentioned equipment will be decided within the budget allocated for the Project. *JY*

*Handwritten signatures and initials:*  
A large signature on the left, followed by "Bank", and several other initials and signatures to the right.



**ANNEX IV      PRIVILEGES, EXEMPTION AND BENEFITS FOR JAPANESE  
AND OTHER COUNTRY EXPERTS**

1. The Government of Fiji will grant exemptions from income tax and charges of any kind of imposed on or in connection with the living allowance remitted from abroad.
  
2. The Government of Fiji will grant exemptions from customs duties on the importation of personal effects by the JICA experts as well as on the importation of machinery and equipment related to their activities. *PS*

*PS*  
*My Bant*    *MR*  
*TR*    *Rh*    *or*

ANNEX V LIST OF COUNTERPART PERSONNEL OF FIJI

1. Project Director  
Director, Department of Environment, Ministry of Tourism and Environment
  
2. Project Manager  
Principal Environment Officer of Department of Environment, Ministry of Tourism and Environment
  
3. Co-Project Managers  
Director Health Services, Lautoka City Council  
Head of Health Department, Nadi Town Council
  
4. Technical Counterpart Personnel  
Staff of Department of Environment, Ministry of Tourism and Environment  
Staff of Health Services, Lautoka City Council  
Staff of Health Services, Nadi Town Council *JS*

*JS*  
*Bank* *R* *RL* *R*

## ANNEX VI LIST OF LAND, BUILDING AND FACILITIES

The following will be prepared by the Government of Fiji for the implementation of the Project.

1. Project offices (JICA experts' rooms) in Lautoka City and Nadi Town
2. Furniture, electricity, telephone, water supply and air conditioning
3. Other facilities necessary for the effective implementation of the Project *JK*

## ANNEX VII JOINT COORDINATING COMMITTEE

## 1. FUNCTION

The Joint Coordinating Committee (hereinafter referred to as "JCC"), composed of members listed in 2 below, will meet at least twice a year and whenever the necessity arises. The main functions of JCC shall be as follows;

- (1) To formulate the annual operational work plan of the Project based on the Plan of Operation within the framework of the Record of Discussions.
- (2) To review the overall progress and achievements of the Project
- (3) To examine major issues arising from or in connection with the Project
- (4) To work out the modification of activities depending on the necessity

## 2. COMMITTEE COMPOSITION

## (1) Chairperson:

Permanent Secretary for Tourism and Environment, Ministry of Tourism and Environment

## (2) Committee Members:

## 1) Fiji side:

Director of Environment, Ministry of Tourism and Environment

Director of Local Government, Ministry of Local Government, Urban Development & Public Utilities

Principal Environment Officer, Ministry of Tourism and Environment

Secretary, Central Board of Health, Ministry of Health

Director Health Services, Lautoka City Council

Head of Health Department, Nadi Town Council

## 2) Japanese side:

Expert Team to be dispatched by JICA

Representative, JICA Fiji Office

Representative, Embassy of Japan in Fiji

Other personnel concerned to be decided and/or dispatched by JICA, if necessary *JS*

**DRAFT MINUTES OF MEETINGS  
BETWEEN  
JAPAN INTERNATIONAL COOPERATION AGENCY AND  
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF  
THE REPUBLIC OF THE FIJI ISLANDS  
ON JAPANESE TECHNICAL COOPERATION FOR  
WASTE MINIMIZATION AND RECYCLING PROMOTION PROJECT**

Japan International Cooperation Agency (hereinafter referred to as "JICA") had a series of discussions through Resident Representative of JICA Fiji Office with the authorities concerned of the Republic of the Fiji Islands (hereinafter referred to as "the Fiji side") on the implementation of Japanese technical cooperation regarding the Waste Minimization and Recycling Promotion Project (hereinafter referred to as "the Project").

As a result of the discussions, the Fiji side and JICA agreed to summarize the matters referred to in the document attached hereto as a supplement to the Record of Discussions (hereinafter referred to as "the R/D").

Suva, XXXXXXXXX, 2008

---

Mr. Teiji TAKESHITA  
Resident Representative  
JICA Fiji Office

---

Mrs. Banuve Kaumaitotoya  
Permanent Secretary for Tourism and  
Environment  
Ministry of Tourism and Environment  
The Republic of the Fiji Islands

---

Mr. Mosese Kama  
Director of Local Government  
Ministry of Local Government, Urban  
Development & Public Utilities  
The Republic of the Fiji Islands

---

Mr. Epeli Nasome  
Director of Environment  
Ministry of Tourism and Environment  
The Republic of the Fiji Islands

## THE ATTACHED DOCUMENT

This document has been prepared for the better understanding of the R/D agreed upon between the Fiji side and JICA on the date of signing. The main items that had been discussed and agreed upon by both sides are summarized as follows.

**I. Project Design Matrix and Plan of Operation**

JICA explained that the Project Design Matrix (hereinafter referred to as "the PDM") is to be introduced for the efficient and effective management and evaluation of the Project. Both sides agreed the PDM to the Project as shown in ANNEX I. Plan of Operation (hereinafter referred to as "the PO") based on the PDM is shown in ANNEX II. The PDM and the PO will be reviewed and revised if necessity arises. Especially, Objectively Verifiable Indicators and Means of Verification of the PDM will be determined within one year after starting the Project.

**II. Definition of 3R (3R for SIDS)**

In general, 3R is known as the acronym of "Reduce, Reuse and Recycle" which illustrates the principle of minimizing waste. The 3R also indicates the three preferred options from the top of the waste management hierarchy (reduce, reuse, recycle, and dispose). According to the 3R concept, minimization of waste could be efficiently achieved by focusing at first on "reduce," followed by "reuse" and then "recycle." The residual waste should then be disposed of properly.

People of the Small Islands Developing States (SIDS) in the Pacific region including Fiji are heavily dependent on goods and materials imported from industrialized countries. It is however very difficult to recycle those materials and goods within their respective countries because of the geographical isolation and uneconomically small size of the recycle market. The imported goods and materials consumed in SIDS can be recycled only by returning to the market places in industrialized or large countries. Therefore, the Project proposes a new interpretation of 3R as "Reduce, Reuse and Return" for a small island country like Fiji.

**III. A partial improvement of Lautoka Landfill**

Both the Fiji side and JICA agreed that the focus of the Project is to develop a model of waste minimization for Fiji based on the 3R concept and that the Project includes a pilot project in order to demonstrate proper waste disposal using a small section of Lautoka Landfill. Expected components of the pilot project include the following:

- (1) Conduct a field survey and site investigation at Lautoka Landfill (Activity 1-2)
- (2) Develop a pilot project plan as well as overall management plan for the Lautoka Landfill site.

*[Handwritten signatures and initials]*  
 The  
 Barry  
 [Signature]  
 [Signature]  
 [Signature]

- (Activity 2-4)
- (3) Develop a draft Environment Management Plan and follow the EIA procedure for the pilot project.  
(Activity 2-6)
- (4) Demonstrate physical improvements to a small section (several acres) of Lautoka Landfill that include construction of dikes, installation of pipes, etc. (Activity 2-8)
- (5) Demonstrate day-to-day landfill operation and maintenance. (Activities 2-5 and 2-8)
- (6) Improve access from the main road to tipping faces, as required. (Activities 2-5 and 2-8)
- (7) Carry out site preparation and other work for composting facilities. (Activity 2-8)
- (8) Install a weighbridge system and auxiliary facility. (Activity 2-8)
- (9) Conduct trainings on record-keeping, data collection and analysis, including the financial aspect.  
(Activities 2-5 and 2-8)
- (10) Develop a landfill operation manual. (Activities 2-8 and 2-9)

The components (4), (5) and (6) above shall be continued by the Lautoka City Council at its own expense in accordance with the landfill operation manual, to be developed under component (10), after the pilot project implementation. Operation of the composting facilities is considered to be included in the Activities 2-3 and 3-3.

Data management operation after the trainings in relation to the component (9) above shall be continued by the Lautoka City Council at its own expense after the pilot project implementation.

In addition to the above, it is suggested and agreed in principle that consideration be given to the people who collect and sell recyclables at Lautoka Landfill for their living since the introduction and promotion of 3R activities will reduce to a great extent or even deprive of their opportunity for waste-picking at the landfill site.

**IV. Pilot Project Areas**

Joint Coordinating Committee will approve the Pilot project areas to be selected from Lautoka City and Nadi Town.

**V. Environmental and Social Considerations**

JICA explained JICA guidelines for environmental and social considerations, and that it would be applied to the Project. The Fiji side understood the policy of the JICA guidelines and agreed in principle to the followings;

- (1) Lautoka City Council will follow EIA regulations in Fiji for project activities at Lautoka city (Vunato) Landfill site and take appropriate measures, if necessary. The expert team will provide the technical support for the Fiji side to do it.
- (2) The information disclosure such as opening the study report to public shall be made in order to ensure the participation and dialogues with various stakeholders, in order to achieve appropriate

*Handwritten signatures and initials:*  
 A large handwritten signature on the left side, possibly "A. Bant".  
 Several other initials and signatures in the center and right, including "M", "K", "B", and "W".

environmental and social considerations.

- (3) In the course of implementation of the Project, public consultation with communities and stakeholders shall be included if necessary.

In view of the Project purpose, both sides agreed the Project to follow the laws and regulations in force in Fiji and the JICA guidelines.

- ANNEX I PROJECT DESIGN MATRIX (PDM) (omitted)
- ANNEX II PLAN OF OPERATION (PO) (omitted) *JK*

*JK*  
*JK* Bank *JK* *JK* *JK*



Appendix II Tentative Project Design Matrix (PDM)

Project Title: Waste Minimization and Recycling Promotion Project  
 Duration: 2008- 2011 (3.5 years)

Project Area: Lautoka City and Nadi Town

Target Group: The staff of Department of Environment, the staff of Lautoka City and Nadi Town Councils and their residents

PDM Version 0

Overall Goal	Project Purpose	Outputs	Activities	Indicators
3R (Reduce, Reuse, Return) is progressed in Fiji, mainly in Western Division.	Capacity on 3R of Department of Environment (DOE), Lautoka city and Nadi town is increased through developing 3R model for Fiji.	1. Solid Waste Management Plans focusing on 3R are developed respectively in Lautoka City and Nadi Town. 2. Pilot projects are implemented. 3. 3R is implemented at whole area of Lautoka City and Nadi Town. 4. Awareness of residents in Lautoka City and Nadi Town is raised through implementation of environmental education activities on 3R promotion. 5. 3R model for Fiji is developed and recommended.	1 Other municipalities mainly in Western Division introduce the 3R model for Fiji. 1 At least XX seminars/workshops on 3R promotion are organized by DOE. 2 Action plan for 3R promotion is drafted by DOE. 3 Policy and budget for 3R promotion is secured within DOE. 4 Amount of waste disposal is decreased by XX% in Lautoka city and Nadi town. 5 National strategy on 3R is drafted. 6 By-laws on 3R are drafted.	1 National waste management policy is still in line with 3R. 1 Awareness is not spoiled by opening new landfills mainly in Western Division. 2 SWM policy of other municipalities mainly in Western Division is not dramatically changed. 3 Market situation of recyclable products is not dramatically changed.
			1 Report on the seminars 2 3R promotion action plan 3 Relevant documents to verify the status of policy and budget of DOE. 4 The survey report on current situations of SWM and the evaluation report on 3R project 5 National strategy on 3R 6 By-laws on 3R	
			1 Solid Waste Management Plans 2-1 The survey report on current situations of SWM and the pilot project evaluation report 2-2 Landfill operational manuals 3 The evaluation report on 3R promotion 4 The survey report on current situations of SWM and the evaluation report on 3R promotion 5-1 Guidelines, manuals, etc. 5-2 Report on the seminars	
			1 Solid Waste Management Plans 2-1 Evaluation reports on Pilot projects 2-2 The improved area of Lautoka Landfill by the pilot project is operated as planned. 3-1 XX% of households in Lautoka city and Nadi town participate seminars and/or trainings on 3R. 3-2 XX% of households in Lautoka city and Nadi town conduct 3R. 3-3 At least one segregation stations is established per XX households. 3-4 Reports on 3R promotion project 4 Awareness of XX% of households in Lautoka city and Nadi town is improved. 5-1 Guideline, manuals, etc. are developed. 5-2 Seminars to present the guideline and manuals are conducted to more than half of other municipalities which conduct waste collection.	
				1 Counterpart personnel keep working in the field of SWM. 2 Political disorder does not occur in Fiji.

*[Handwritten signatures and initials]*

*[Handwritten initials]*

*Handwritten signatures and initials:*  
 Jdy  
 Bant R  
 M  
 R  
 R

Activities	Input	Input	Input
<p>1-1 Survey the current status of Solid Waste Management (SWM).            1-2 Conduct a field survey on Lautoka city Vunato Landfill site (Lautoka Landfill).            1-3 Trace the current waste flow from generation to final disposal and identify issues to be addressed.            1-4 Develop frameworks of SWM.            1-5 Build a consensus on the frameworks of SWM among stakeholders.            1-6 Develop draft SWM plans based on the frameworks of SWM.            1-7 Finalize SWM plans.</p>	<p><b>Input</b>            Japanese side            a) Personnel            1. Chief advisor            2. Solid Waste Management            3. Waste minimization and recycling            4. Solid waste education and awareness raising            5. Capacity assessment            6. Financial, institutional and organizational aspects            7. Final disposal (planning, construction and operation of sanitary landfill)            8. Collection and transportation            9. Environmental and Social Consideration            10. Project Coordinator            b) Counterpart training            c) Machinery, equipment and materials</p>	<p><b>Fiji side</b>            a) Personnel            -Assign necessary number of counterpart personnel at Lautoka city council and Nadi town council            b) Office spaces and facilities            -Office spaces and facilities            c) Machinery, equipment and materials            d) Administrative and operational cost            e) Others            -Provision of necessary data, information, etc.</p>	<p>Precondition</p>
<p>2-1 Conduct a community survey.            2-2 Select pilot areas on the basis of the community survey.            2-3 Develop a pilot project plan on 3R.            2-4 Develop a pilot project plan on a partial improvement of Lautoka Landfill.            2-5 Conduct trainings, on the job trainings, etc. for the staff of Lautoka city council and Nadi town council to implement pilot projects.            2-6 Complete the Environmental Impact Assessment (EIA) process required for the pilot project on a partial improvement of Lautoka Landfill.            2-7 Conduct the pilot project on 3R at pilot areas.            2-8 Conduct the pilot project on a partial improvement of Lautoka Landfill.            2-9 Review and evaluate the pilot projects.            3-1 Develop a 3R promotion action plan at whole area of Lautoka city and Nadi town.            3-2 Conduct trainings, on the job trainings, etc. for the staff of Lautoka city council and Nadi town council to implement 3R promotion.            3-3 Implement 3R promotion.            3-4 Review and evaluate 3R promotion.</p>			
<p>4-1 Review on environmental education tools/programs in Japan and other countries            4-2 Develop effective educational tools/programmes            4-3 Conduct trainings, on the job trainings, etc. for the groups and personnel concerned on 3R promotion in Lautoka and Nadi            4-4 Introduce the educational tools/programmes in the pilot project areas            4-5 Evaluate the educational tools/programmes            4-6 Improve the educational tools/programmes            4-7 Implement activities to raise awareness through using tools/programmes in Lautoka city and Nadi town.            5-1 Review all the process and results of the activities for 3R promotion by the project and extract findings.            5-2 Develop draft guidelines, manuals on 3R model for Fiji, etc. for its promotion.            5-3 Finalize the guidelines, manuals, etc.            5-4 Conduct seminars to present other municipalities the guidelines and manuals.</p>			

*Handwritten initials:* R

Appendix III Tentative Plan of Operation (PO)

Name of Project: Waste Minimization and Recycling Promotion Project	2008												2009												2010												2011												2012	
	1Q			2Q			3Q			4Q			1Q			2Q			3Q			4Q			1Q			2Q			3Q			4Q			1Q	2Q												
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2
Term of Cooperation: Three years and six months	Period of the Project																																																	
Project Area: Lautoka City and Nadi Town	JCC																																																	
Target Group: Department of Environment, Municipal Governments and Communities in Lautoka City and Nadi Town	Joint Evaluation																																																	
Outputs and Activities	JICA Experts Counterpart Personnel																																																	
Results of Activities																																																		
Output 1: Solid Waste Management Plans focusing on 3R are developed respectively in Lautoka City and Nadi Town.																																																		
1-1 Survey the current status of Solid Waste Management (SWM).																																																		
1-1-1 Results of baseline survey -Waste survey -Capacity assessment -etc.																																																		
1-2 Conduct a field survey on Lautoka City Yavito Landfill site (Lautoka Landfill).																																																		
1-2-1 Trace the current waste flow from generation to final disposal and identify issues to be addressed.																																																		
1-2-2 Survey report on Lautoka Landfill Waste flow, Waste analysis report																																																		
1-4 Develop frameworks of SWM.																																																		
1-4-1 Framework document of SWM																																																		
1-5 Build a consensus on the frameworks of SWM among stakeholders.																																																		
1-5-1 IAM of stakeholder meetings																																																		
1-6 Develop draft SWM plans based on the frameworks of SWM.																																																		
1-6-1 Draft SWM plans																																																		
1-7 Finalize SWM plans.																																																		
1-7-1 SWM plans																																																		
Output 2: Pilot projects are implemented.																																																		
2-1 Conduct a community survey.																																																		
2-1-1 Community survey report																																																		
2-2 Select pilot areas on the basis of the community survey																																																		
2-2-1 Map for pilot project areas																																																		
2-3 Develop a pilot project plan on 3R.																																																		
2-3-1 Pilot project plan on 3R																																																		
2-4 Develop a pilot project plan on a partial improvement of Lautoka Landfill.																																																		
2-4-1 Pilot project plan on a partial improvement of Lautoka Landfill Conduct trainings, on the job trainings, etc. for the staff of Lautoka city council and Nadi town council to implement pilot project.																																																		
2-5 Complete the Environmental Impact Assessment (EIA) proposal required for the pilot project on a partial improvement of Lautoka Landfill.																																																		
2-5-1 Materials for capacity development necessary documents for work process Drafting, etc. for EIA Documents, etc.																																																		
2-7 Conduct the pilot project on 3R & pilot areas.																																																		
2-7-1 Progress reports																																																		
2-8 Conduct the pilot project on a partial improvement of Lautoka Landfill																																																		
2-8-1 Progress reports																																																		
2-9 Review and evaluate the pilot projects.																																																		
2-9-1 Evaluation reports																																																		
Output 3: 3R is implemented in whole area of Lautoka City and Nadi Town.																																																		
3-1 Develop a 3R promotion action plan in whole area of Lautoka city and Nadi town.																																																		
3-1-1 3R promotion action plans																																																		
3-2 Conduct trainings, on the job trainings, etc. for the staff of Lautoka city council and Nadi town council to implement 3R promotion.																																																		
3-2-1 Materials for capacity development																																																		
3-3 Implement 3R promotion.																																																		
3-3-1 Progress reports																																																		
3-4 Review and evaluate 3R promotion.																																																		
3-4-1 Evaluation reports																																																		
Output 4: Awareness of resident in Lautoka City and Nadi Town raised through implementation of environmental education activities on 3R promotion.																																																		
4-1 Review an environmental education tools/programs in Japan and other countries																																																		
4-1-1 Review report																																																		
4-2 Develop effective educational tools/programmes																																																		
4-2-1 Educational tools/programmes																																																		
4-3 Conduct trainings, on the job trainings, etc. for the groups and personnel concerned on 3R promotion in Lautoka and Nadi																																																		
4-3-1 Training reports																																																		
4-4 Introduce the educational tools/programmes in the pilot project areas																																																		
4-4-1 Progress reports																																																		
4-5 Evaluate the educational tools/programmes																																																		
4-5-1 Evaluation reports																																																		
4-6 Improve the educational tools/programmes																																																		
4-6-1 Improved educational tools/programmes																																																		
4-7 Implement activities to raise awareness through using tools/programmes in Lautoka City and Nadi town.																																																		
4-7-1 Progress reports																																																		
Output 5: 3R model for Fiji is developed and recommended.																																																		
5-1 Review all the process and results of the activities for 3R promotion by the project and extract findings.																																																		
5-1-1 Outputs review report																																																		
5-2 Develop draft guidelines, manuals on 3R model for Fiji, etc. for its promotion																																																		
5-2-1 Draft guidelines, manuals, etc.																																																		
5-3 Finalize the guidelines, manuals, etc.																																																		
5-3-1 Guidelines, manuals, etc.																																																		
5-4 Conduct seminars to present other municipalities the guidelines and manuals																																																		
5-4-1 Seminar reports																																																		

*[Handwritten signatures and initials at the bottom of the page]*