



# Introduction of Container Deposit Recycling System in RMI



Republic of Marshall Islands  
Majuro Atoll

## Successful introduction of Container Deposit Recycling in Majuro, Republic of the Marshall Islands (RMI)

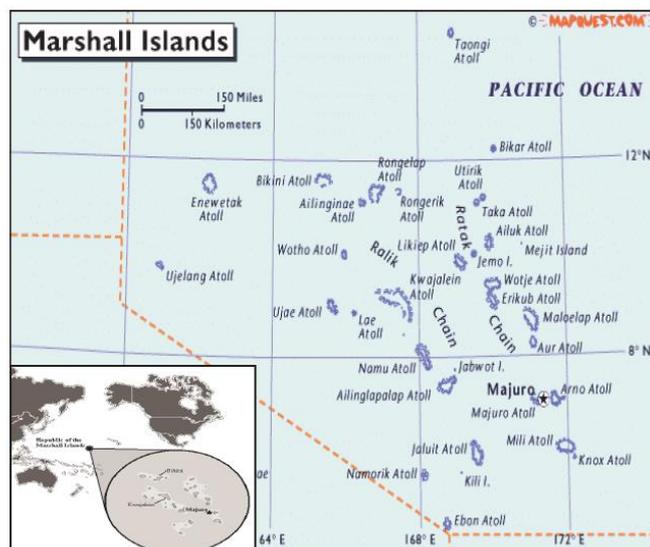
In mid 2018 the Republic of the Marshall Islands (RMI) commenced operation of a deposit/refund recycling system that operates under the Styrofoam Cups and Plates and Plastic Products Prohibition and Container Deposit Act 2016, as amended in early 2018. The system collects aluminum drink cans, PET plastic and glass drink bottles.

The recycling system Regulations came into effect at the start of July 2018 and at that time RMI Customs in Majuro started collecting 6¢ deposits on the specified beverage cans and bottles, whilst the Majuro Atoll Waste Company (MAWC) started collecting cans and bottles for recycling and paying out 5¢ refunds to the public a month later. The design and early stage implementation of the program was supported by J-PRISM II Technical Assistance from 2017 – 2019.

### Leading Agency(s)

The Marshall Islands Environmental Protection Authority (EPA) is the lead agency for the Container Deposit Recycling System, as the designated Recycling Agent under the legislation. On Majuro, MAWC is contracted by EPA to operate the recycling process, and pay out refunds, as the 'System Operator'.

### Location/ Geographical Coverage



### # KEY WORDS

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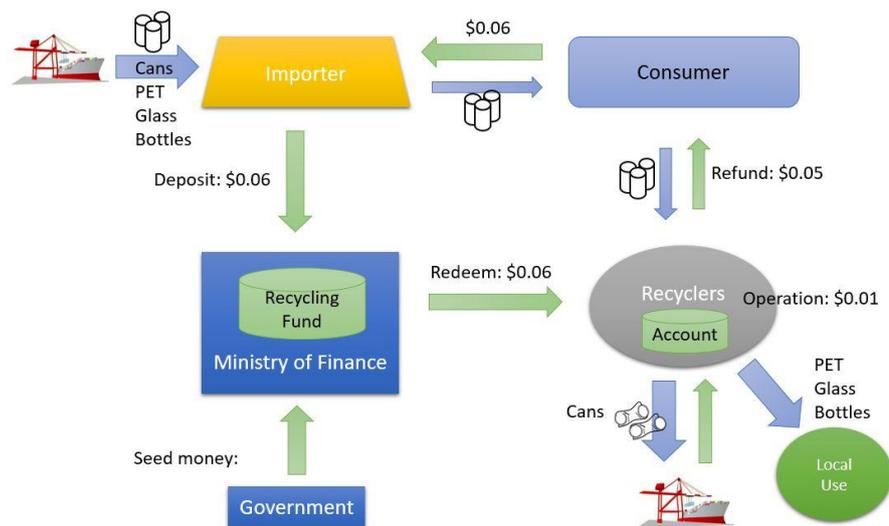
**Target Audience**  
Officials of PICs  
Donors

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## Measures/ Approach

Small Pacific Islands have struggled with litter problems and improving recycling. Collecting deposits on drink cans and bottles at import, or on local production, and paying out refunds when the items are returned for recycling has made a very significant improvement to recycling rates in other countries in the region. This approach uses Container Deposit Legislation to empower government to collect deposits and pay out refunds. The legislation typically consists of a governing Act, along with a Regulation that provides the details of the system. This approach does two things: first, it generates a financial incentive for the public to collect their cans & bottles for recycling, as they get money for each one returned; and second, with the difference between the deposit and refund comprising a 'Handling Fee', the cost of running the system can be built-in, generating a financially sustainable approach that is entirely self-funded. J-PRISM provided technical assistance to the Republic of the Marshall Islands government from 2017 to introduce such a system into the country. The system is shown in the following diagram:



The recycling system handles aluminum cans, PET plastic and glass bottles, all under 1 liter. The deposit rate is 6¢, paid at import - or at first sale in the case of the single local water bottling company - and the refund is 5¢, which is paid out to the public when a designated item is bought in to the Collection Point. A minimum number of 20 items must be presented for refund, so that payments are in round dollars, as this greatly facilitates the accounting and payment process for the public. Payment is by cash at the recycling center immediately after items are counted.

The aluminum cans are baled in a large crusher, packed into shipping containers, and exported for recycling back into cans or other aluminum products overseas. PET bottles are baled in the same machine, but market conditions have prevented their export as there is a global glut of PET bottles. These bales are used for 'clean fill' at certain locations under EPA supervision, as PET is a very tough, inert plastic. Glass bottles are low in number, and are

finely crushed and used for internal roads within the landfill where the Collection Point is located. Currently only one Collection Point exists, on Majuro, the capital, whilst a second is under preparation at Ebeye Island in Kwajalein Atoll.

J-PRISM II provided technical support to amend the legislation passed initially in 2016, which was based on a US model that did not suit Marshallese conditions. Along with the amendment, a Recycling Regulation was required. J-PRISM experts also worked alongside EPA counterparts to design the details of the system, and prepare all local actors for their various roles; in particular, the process by which the recycling system operator makes their weekly claim to the Recycling Fund, and the supporting data required to validate that claim, was an essential system to have in place prior to the system going 'live'. Good data collection is extremely important to see that the system is operating correctly, that deposits are being paid and refunds paid out, and that there is no smuggling or fraud operating within the system

## Stakeholders/ Actors

- The main government agency is **the RMI Environmental Protection Authority (EPA)**, as the EPA has oversight of the system, is the nominal 'Recycling Agent' described in the Recycling Regulations. The EPA holds a contract with the business that does the physical work of collecting and processing the cans & bottles, the 'System Operator'.
- **The Ministry of Finance** manages the Recycling Special Revenue Fund, collecting deposits at import through RMI Customs and the local manufacturer's deposits for locally produced bottled water, and pays out refunds to the 'System Operator' on a weekly basis.
- **Majuro Atoll Waste Company (MAWC** - a State Owned Enterprise) is the 'System Operator' for Majuro, taking cans & bottles from the public, processing the materials through a baling machine, exporting materials, and paying out refunds. Kwajalein Atoll Local Government (KALGOV) will be the System Operator for Ebeye Island.
- **The local business community**, largely importers, are the people who must finance the system by paying the deposits into the Special Revenue Fund before they have sold those products.
- **The public** collect the empty cans and bottles and take them to the Recycling Collection Point to get money for each item. In particular, low income people, and those members of a household who are not in formal employment, are usually the people who take the recyclables to the Collection Point as the recycling takes place during normal business hours. Some people may make a small business by buying small quantities of cans and bottles off others and aggregating materials and taking them to the recycling Collection Point.
- **The country** as a whole gains in lower landfill costs as recyclable materials

are diverted from landfill, and decreased pollution of waterways - particularly inshore coral reefs - as less rubbish is getting into the sea.

## Results/ Outputs

The first full year of operation was Financial Year 2019 (FY '19, to September 31st 2019), and during this year the scale of the program became clearer, with over 15 million items being handled. Some of these were 'legacy' items that were on island before the system started, but the number of deposits paid was for over 14 million cans & bottles, which indicates levels of consumption in the RMI. The following numbers are for FY'19:

- **Cans and bottles refunded:** 15.7 million items, being 58.5% aluminum cans, 40.5% PET bottles, and 1% glass bottles collected for recycling.
- **Deposits paid:** 14.4 million cans and bottles paid \$861,250 in deposits into the Recycling Special Revenue Fund held by the Ministry of Finance.
- **Recycling Recovery Rate:** this is not absolutely clear due to the ongoing presence of 'legacy waste' during FY'19, but appears to be of the order of 85%.
- **Refunds paid out to the public:** MAWC paid out \$785,725 to the public in 5¢ refunds, and received \$943,000 from the Ministry of Finance in claims against the Recycling Special Revenue Fund of 6¢ each for items refunded.
- **Income to MAWC:** The amount of Handling Fees that MAWC made from the recycling system was \$157,150, being 1¢ from each item collected; and the sale of the 136 tonnes of crushed aluminum cans raised an income of around \$110,000 after the cost of shipping.
- **Total expenditures by MAWC:** these are not specific in MAWCs accounts, but would be no more than a maximum of \$75,000 for electricity, labor and shipping costs for eight shipping containers of crushed aluminum cans.
- **Overall financial surplus to MAWC:** it can be expected that the system generates a surplus of around \$100,000 per year for MAWC, which helps finance some of their other waste collection activities.
- **Total number of cans collected in the first 15 months:** about 20 million cans and bottles were collected in the first 15 months of the system, and perhaps 2 million of those were existing litter 'legacy waste' cans & bottles that came in before the system started and so had not paid any deposits.

## Output

- **Reduced Landfill:** the materials collected are diverted from landfill, so saving space in a highly constrained landfill site at Batkan, which is currently the highest point in the country.
- **Reduced litter:** It is now rare to see cans & bottles as litter on Majuro, as even if they are thrown down on the ground, someone picks them up for refund.
- **Reduced Pollution:** local inshore reefs suffer greatly from can & bottle litter that blows off the land into the sea, and so new waste is less likely to get into the sea due to reduced litter on land. Unfortunately there is still a very severe problem of other wastes dumped on sea shores from households.

## Impact

The people of the Marshall Islands have benefited from the recycling system through having a cleaner environment. Some people, especially some with low incomes, have been able to make money by collecting cans & bottles and bringing them in for refunds. This increased income effect can favor unemployed women as they are the ones who usually clean up around the home, and they can turn in the cans and bottles they collect for refunds.

A very significant and clearly seen effect is that the existing litter of drink cans & bottles was cleaned up over the first few months by people keen to raise money. Refunds on these items were financed by the 'Seed Money' set aside by the Government as a start-up fund to buy up existing can and bottle litter.

A potentially negative impact is for importers, who have to find the money to pay the deposits when clearing their cargos through customs, before selling the drinks. This extra cost is passed on to consumers through slightly higher drink prices. However, on informal follow-up with businesses after a year or so of the system none of the business people spoken to a noted drop in sales of drinks. So whilst business did have to find more money at the beginning, this is a one-off effect as the drinks when sold bought that money back, making it easier to fund the next round of deposits.

## Innovation

The success of the program in tackling what is usually considered the intractable problems of waste on small islands has encouraged the government to think about new approaches to similar problems, such as waste oil, old tires and end-of-life cars. The same basic principles of Product Stewardship can be applied to these items, and the Container Deposit Recycling System has shown the way forward, and now the EPA is actively looking at new ways to deal with these long-term waste problems, particularly on Majuro.

## Success Factors

A very important advantage to the RMI was the fact that MAWC had a recycling shed, built and equipped by the support from the Japanese Government. This facility ensured that when the law came into effect, the infrastructure was in place to handle the 15 million cans and bottles - up to half a million a week sometimes - that were brought in by the public for refunds. Prior to this, MAWC had been crushing cans in the open air with a very small baling machine that was very inefficient. The new shed and large baling press provide all-weather operation and good capacity for expansion in the future.

An essential element was the strong political support provided by both the President and the Cabinet, and the institutional support from civil servants.

Key people in the government clearly understood how the Container Deposit Recycling System could deal with part of a long-standing problem in the Marshall Islands. The Minister responsible for Environment in 2016 initiated the original law, and guided it through Cabinet and the legislative process. The General Manager of the EPA, the agency charged with implementing the law, actively supported the measure and ensured that staff resources were made available to the program. Key people in the Ministry of Finance and Customs took action to put in place the financial processes and administrative procedures that are essential to make the system work. The Government Chief Secretary at the time, an economist, clearly understood the value of this economics-based approach. The President of the RMI was herself enthusiastic about the program, and the Cabinet made the crucial decision to allocate sufficient Seed Money to ensure that the program could survive the first few months, when deposits would be less than refunds due to the legacy waste problem. Finally, the local business community actively supported and cooperated with the implementation, even though they were the ones who had to initially find the money to finance the deposits, until their products were sold. This was an excellent example of how business people's appreciation of the wider public good took precedence over their immediate business requirements.

Good communication with all these stakeholders was essential to get them to participate in a positive way, and EPA acted as the central communicator and project driver, and ensured that full effort was made to keep stakeholders informed as the program rolled out, and produce public information announcements at the time of the system start.

## Constraints

A very significant challenge at the start of introducing any container deposit recycling systems is how to deal with the 'Legacy Waste', being the litter already lying around which did not pay a deposit as it arrived before the system started. However, people will go and collect these cans & bottles and seek refunds: it is not practical to determine on which date a can or bottle was imported. To pay these deposits requires additional funding - the 'Seed Money'

- that must be provided at the start of the system. How much funds are required depends on how many items that are lying around as litter and did not pay deposits, and this is something that can only be known afterwards. To determine how much 'Seed Money' may be required, analysis must be done of existing consumption, existing litter, and the likelihood of people going to significant lengths to find old cans & bottles, which is related to socio-economic factors. In the RMI, the Government set aside \$100,000, paid for an additional 1.66 million cans & bottles; it is important to remember that the Seed Money must buy items at the deposit rate, not the refund rate, as the deposit rate is the cost to the Recycling Fund for each item claimed by the System Operator.

It was essential at the outset of designing a Container Deposit Recycling System for the RMI to clearly understand the existing conditions with regard to Customs procedures, local business practices, logistical systems, and the financial systems used by the Ministry of Finance. If the existing elements that will be involved in the Container Deposit Recycling System are carefully studied and understood, then the details of the actual system itself can be developed with existing conditions in mind. The opposite approach is to pass the legislation and then work out how to make the recycling system work: this was what happened when the RMI government passed the initial Act in 2016 which legislated the recycling system, and to follow the law in practical terms was not feasible (as for example the EPA was mandated to go around every store selling drinks and collect the deposits based on sales). The challenge when J-PRISM was asked to help was to re-design the system into a practical one, but only amend the existing Act, rather than start again with a fresh sheet, which would have been easier

The business community must be very largely in agreement with the proposals, and to achieve this requires effort to genuinely consult them and listen to what they say. Businesses provide the deposits in the first instance that make the system work; the business community must see that the value to their wider society is greater than the initial constraint to their operations. Business was also very wary that the deposit money placed into the Recycling Fund would really be returned to consumers, and that the system would not become in part some kind of tax measure. If people cannot easily gain the refunds on their cans & bottles, then deposit money remains in the Recycling Fund, and the entire system can become an economic drag rather than a boon.

A significant constraint exists in the RMI because of the dispersed nature of the country. With about a quarter of the population living on outer islands, it is hard for these people to get their cans & bottles back to a Collection Point and gain their refunds. Majuro currently only has one Collection Point, and could usefully use two more, one at Laura and one at Rita, so that people have less far to travel to get their refunds, as travel costs money and typically it is low income people who seek their refunds. These Collection Points could be open

only one or two days per week, and still be effective, with materials transported back to the main site for processing. Ebeye currently has no Collection Point, but one is planned, and this lack is currently a significant constraint for the 10,000 or so people in Kwajalein who might want to seek refunds.

## Sustainability

A container deposit recycling system is a classic example of a circular economy as it has built-in sustainability, if operated correctly. The incoming deposits provide the money for the refunds and the processing of materials, and so no additional funding inputs should be required once the system has settled down. Processing costs - the 'Handling Fees' - are covered by the difference between the deposit paid at import and the refund paid to the public, as the recycling 'System Operator' claims back the full deposit amount from the Recycling Fund. If processing costs rise, the deposit can be increased, whilst the refund stays the same, so increasing the Handling Fee. Deposits can be fractions of a cent - for example 6.5¢ - as deposits are paid in single large payments into the fund when shipments of drinks clear customs (or are produced locally in the case of the local water bottler).

There are ways in which this sustainability can be upset: if refund rates are low, the cost of processing each unit is higher; low refund rates usually mean it is hard for people to get their cans & bottles refunded, such as when there are few or irregularly open Collection Points. Another problem is smuggling, where some importers do not declare cargos and the deposits are not paid: this typically involves beer and the government loses the excise tax too. As noted above, the greatest challenge is at the beginning, with the 'legacy waste' which, if not sufficiently funded, can crash the system through cash flow problems.

For the RMI, data from FY'19 indicate that the recycling recovery rate is around 85%; in a later year, where all legacy waste is clearly gone, the recycling rate is simply the difference between the number paying deposits and the number getting refunds. If the recycling rate is over 100% after two years then we can expect that some deposits are not being paid, or that miss-counting or fraud is taking place at the Collection Points. As the years go by, items that are not refunded will leave their deposits in the Recycling Fund, and these are called 'un-redeemed deposits'. This money should slowly build up over time, and ideally the legislation would allow it to be used to support the recycling infrastructure in some way.

These systems produce excellent and exact data, and it is essential that the system has an annual review, and a report is made detailing numbers of items handled and cash flows of deposits and refunds. In this way, emerging problems can be identified and addressed. For the last three months of 2019, the recycling system was collecting around 225,000 cans & bottles per week, with refund pay-outs to the public of around \$13,500 per week.

## Replicability and/or Up-scaling

It is possible to be replicated in any other remote islands if the full-scale CDL is introduced and functioning well in the main island. The essence of the extended CDL network such as how it works both in the main island and remote islands can be shared not only within the country but also among other PICs. The system is comparatively simple to replicate, but it is essential to understand that each country is slightly different, and a close study of local conditions, applying the basic principles seen in the RMI, will provide good information to ensure that a system is devised, but with nuances that suit that particular place. For example, geography plays an essential part when considering Pacific Islands: some countries are a single island, with maybe a loop road; some are vast numbers of tiny islands with low numbers of inhabitants spread over huge areas of ocean, with one urban centre with more than half of all residents. The type of currency in use, common payment methods, government financial processes and the structure of the lead agency are all key factors to consider early on. Whether a country has a significant local industry of drink bottlers may be a key factor in designing the overall method used to manage the recycling fund.

## Lessons Learnt

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### **It is essential to design the recycling system, how the money might flow, before finalizing any legislation.**

The legislation must enable the system as designed: this means that much work must be done prior to developing the detail of the legislation. It must be clear in principal and outline what the legislation will cover so as to generate the political support required for the government to direct that the legislation should be drafted, but it is essential that the legal framework does not become a constraint to the operational practicalities of the recycling system.

The legislation ideally will be drafted so that an Act sets out the key elements, and provides powers to regulate those general approaches and materials; the Regulations under that Act can contain the detail about particular items that are covered. However, if the Act contains specifics, for example the rates of deposit and refund and specifies what materials or products are covered, it can be a significant constraint on modifying the system where this is needed. In the RMI, the initial legislation was based on a model from individual States of the USA (typically called a 'Bottle Bill') that does not suit RMI conditions, and as initially passed was unworkable for the RMI. But the drafters had acted in good faith by taking an existing piece of legislation as a model for the RMI. Well drafted legislation will allow other recyclable materials to be easily added at a later date if the government wishes to do so, thus expanding the existing system but still using the underlying principals and approach.

## Conclusion

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### This example illustrates the potential of CDL systems beyond expectations

The recycling system has been operating for two years now. The effect on can and bottle litter in Majuro is very clear, and widely noted. The system is not only self-financing, but provides additional income to help finance some of MAWC's other activities of collecting general household waste. But the most important thing is perhaps that the introduction of this system has shown many people that new ideas can work, and that consultation with key participants in the design phase meant that everyone was on board as the system rolled out. Work still needs to be done, however, to set up the Collection Point at Ebeye, and also, make it easier for Majuro residents to collect refunds by having perhaps two more Collection Points on Majuro.

This is also an excellent example of how donor Technical Assistance can provide the help required to get a system up and running, but then step back as the system settles in, local people run things, and the experts are no longer required, having done their job. The J-PRISM approach makes a commitment to partners to see a project through, working alongside local counterparts, so that governments know they have that support when taking the initial legislative steps.

There can be no doubt that the recycling system is a success, with 14 million items a year processed, and a recovery rate with only one Collection Point of around 85%. Both the public and the government have seen the advantages of recycling as a way to reduce waste, and so it should be easier to now move on to tackling some of the harder to deal with items such as e-waste, white ware, waste oils, and dead vehicles.



#### Contributions to SDGs

This highly contributes to the **Target 12.5** *By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse of* the **Goal 12 Responsible consumption and production**.

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J-PRISM: The Project for Promotion of Regional Initiative Solid Waste Management, JICA: Japan International Cooperation Agency

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