



Centre for Environment
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Science



THE COMMONWEALTH LITTER PROGRAMME: FINAL REPORT – BEST PRACTICES FOR VANUATU

Author(s): Nicole T Garofano, Mike Webster (WasteAid UK)

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Project Manager:	Julia Baker (Project Manager), Thomas Maes (Principle Investigator)
Report compiled by:	Nicole T Garofano
Quality control by:	Bryony Meakins
Approved by and date:	
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Executive Summary

This is the final report for the Best Practices element of the Commonwealth Litter Programme (CLiP) field work conducted in Vanuatu in February 2019. The purpose of the report is to identify opportunities for community-led initiatives reducing leakage of solid waste, in particular plastic, into the marine environment.

The sub-contractor presenting this report is WasteAid UK. As an organisation, WasteAid focuses on solid waste management at the grassroots level in lower income countries. The organisation's operational priorities reflect this focus. Therefore, data collected for this project represents the community-based approaches to solid waste management which could reduce or remove litter otherwise flowing into the surrounding marine environments.

To implement the project, WasteAid used a five-stage methodology including:

1. Mobilisation
2. Literature review report
3. Stakeholder consultation
4. Stakeholder workshop and action planning
5. Reporting

This report is the final deliverable of the project and focuses on Stages 2, 3 and 4.

Key findings from the literature review revealed several conclusions from the data which assisted in the design of the project. These conclusions identified: a lack of resourcing; urbanisation threatens waste services; a lack of rural waste collection; dependence on international funding and support; limited access to secondary materials markets; lack of waste law/legislation enforcement; there are changes to consumption patterns; and a dependence on civil society for education and some services. The gaps in the literature identified the need for greater focus on capturing the sentiment and reality of community behaviours since the introduction of the Vanuatu 'Plastic Ban' (Republic of Vanuatu 2018); the impact of plastic to the terrestrial environments in Vanuatu; lack of consistent data; what data does exist is very Port Vila focused; and there is opportunity to build waste management programming into existing civil society activities as a development priority.

For the stakeholder consultation conducted in Stage 3, one WasteAid Consultant conducted field work over 16 days, participating in 37 activities during this time. Three themes emerged from the field work:

1. There is a need to change behaviour around dumping and littering;
2. There is limited access to formal collection and disposal; and
3. There is a need to consider development of markets for recyclable materials.

The overarching findings focused on a lack of education in communities of the impacts of mismanagement of solid waste, including illegal dumping and littering. Outside of the main urban centres of Port Vila and Luganville, waste collection and disposal services are at best

limited, and at worst, non-existent, leaving open dumping, burying or burning the only alternatives. However, many communities were interested in learning more about what they could do for themselves in these areas, with guidance.

Despite limited collaboration in separation of 'market ready' secondary materials to build economies of scale, communities were willing to learn more of how they could be more proactive in reducing waste discarded in informal dumps, or sent to landfill, particularly if there were livelihood opportunities for local communities. Options included composting, small plastic reprocessing businesses, aluminum can smelting, and the creation of briquettes to use in fires as a replacement for plastic bags used to start fires. There are basic needs in urban centres to capture greater amounts of waste including increasing staffing numbers and access to vehicles (also assisting in enforcement of laws), as well as delivering what are called locally 'awarenesses' or public education events.

Key players and relationships within each of these three themes were identified, as were training and capacity building needs. From the analysis of the fieldwork data, there were five overarching recommendations:

1. Design and implement solid waste management knowledge hubs in areas of larger population, but with information applicable and shareable with communities outside the immediate vicinity of the hubs;
2. Develop community waste management capacity;
3. Generate interest in composting through training;
4. Identify plastic waste business opportunities; and
5. Advocate for policy change to consider the application of extended producer responsibility models for specific materials and explore subsidised domestic shipping for recyclable material.

A draft action plan is presented in Section 8, developed from the findings, and from one-on-one discussion with the Luganville Municipal Council. These suggested actions have not been reviewed by local stakeholders to date. Despite best planning efforts, the arrival of Cyclone Oma to Vanuatu in the second week of fieldwork forced the cancellation of the planned multi-stakeholder Action Planning workshop which would have more fully developed the concepts presented. It is recommended that a Northern Vanuatu Action Planning workshop be held to ensure there is recognition of the challenges faced in the Sanma Province (and areas outside urban centres) are recognised in a National Vanuatu Litter Action Plan.

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Acronyms

APW	Azure Pure Water
CBO	Community-based organisation
Cefas	Centre for Environment, Fisheries & Aquaculture Science (UK)
CLiP	Commonwealth Litter Programme
CSO	Civil society organisation
HDPE	High Density Polyethylene (plastics code 2 – uses include bottles, some shopping bags)
LDPE	Low Density Polyethylene (plastics code 4 – uses include food wrap films, other plastic bags)
LMC	Luganville Municipal Council
NGO	Non-governmental organisation
PET	Polyethylene Terephthalate (plastics code 1– uses include bottles, food trays)
PP	Polypropylene (plastics code 5 – uses include bottles, food tubs, plant pots)
PS	Polystyrene (plastics code 6 – uses include food trays, takeaway food boxes)
PVMC	Port Vila Municipal Council
RC	RecycleCorp
SIDS	Small Island Developing State
SWM	Solid Waste Management
VU	Vanuatu

1 Introduction

This is the final report for the Best Practices element of the Commonwealth Litter Programme (CLiP) field work conducted in Vanuatu. The purpose of this report is to identify the opportunities which exist for community-led initiatives reducing leakage of solid waste, and in particular, plastic, before these materials become marine litter. It will also:

- Identify the key players and their inter-relationships, existing options, approaches and recommendations established throughout the project life cycle.
- Identify key needs for each area in relation to training and capacity building that would enable local partners to take actions forward after the projects' lifetime.
- Identify existing pilot and full-scale activities which could be evaluated, as well as any opportunities to scale up where appropriate, documenting best practices in the local context where possible.
- Present data on the gaps and opportunities identified in the fieldwork.
- Present opportunities to set up community-based demonstration and pilot projects with a range of simple, low-cost or no-cost processes to prevent plastic leaking into the environment or to clean up polluted areas, as identified by stakeholders.

1.1 Background to the project

The United Kingdom Department for Environment, Farming and Rural Affairs (Defra) has funded CLiP, implemented through the Centre for Environment Fisheries and Aquaculture Science (Cefas). The programme is supporting projects in selected developing countries across the Commonwealth, including small island developing states such as Vanuatu, the focus of this report, to develop national litter action plans, to assist in controlling marine litter, including plastics.

CLiP is a collaborative programme working with partners across the Commonwealth to share expertise and find solutions to environmental and socio-economic problems caused by litter in the marine environment. Working alongside existing local, regional and international stakeholders and conventions, and aiming to develop a network of specialist advisors, CLiP's main objectives are to:

- prevent and reduce marine litter and its impact on the marine environment, public health and safety;
- reduce the knock-on impact of marine litter on economies and communities, including vital industries, such as tourism and fisheries;
- remove litter from the marine environment where practical;
- enhance knowledge and understanding of marine litter, both in terms of distribution as well as impacts;
- support Commonwealth countries in the development, implementation and coordination of programmes for marine litter reduction; and
- develop management approaches to marine litter that are consistent with international best practice

CLiP activities fall under five themes:

- Actions to combat sea-based sources
- Actions to combat land-based sources
- Removal actions
- Education and Science
- Outreach

The actions presented in this report fall under the second theme for CLiP – *‘actions to combat land-based sources’* as well as *‘outreach’*. The actions will also contribute to the development and implementation of national litter action plans, including a package of measures to reduce the quantity of waste entering the marine environment from Commonwealth countries.

1.2 Background to Vanuatu

Vanuatu is an archipelagic nation with 83 islands, 62 of them inhabited, spread almost vertically over a length of almost 800 kilometres (Figure 1). The greatest agglomeration of population resides within the capital city, Port Vila. Port Vila is one of two areas classed as ‘urban’ on the census; the other is Luganville (VNSO 2017). Of the total national population of 272,459 (2016), 50,944 residents live in the Port Vila Municipal Council (PVMC) area, located on the island of Efate (VNSO 2017). As the capital, Port Vila has experienced increasing rates of urbanisation between 2004 and 2009 through internal migration (VNSO 2009).

The next highest urban population agglomeration is located within the Luganville Municipal Council (LMC) area, with 15,865 residents (2016) (VNSO 2017), located on Espiritu Santo, or ‘Santo’ as it’s known by the locals. Santo is the largest island in the north of the country. The population of Luganville increased during 2018 due to the relocation of residents of nearby island, Ambae, after volcanic eruptions resulted in extensive evacuations (BBC 2018). Between 5000 and 8000 residents have been added to the official 2016 Luganville population during this time, though some Ambae residents have chosen to return. Combined, Port Vila and Luganville municipal areas represent 25% of the country’s population, revealing 75% identified as ‘rural’ residents (VNSO 2017).

In terms of geography, these two urban centres are roughly 300 kilometres apart (see Figure 1). To travel this distance, one can take a 24-hour ferry service, or if joining domestic cargo vessels, one must allow up to a week from Port Vila to Luganville. This information is important as it helps inform (or remind) the reader of the distance between the two main urban centres of Vanuatu, which must be considered when reviewing the findings in Section 4.

As described by Jayaraman (2004) Vanuatu has no direct taxation to individuals or companies. It is ironically economically reliant on the importation of goods to earn import tax, and on the circulation of goods in the economy, generating value added tax. The circulation of funds is centred around urban centres, leaving the remainder of the country reliant on the subsistence or “traditional economy” (Regenvanu 2010, p.30). The country receives 16.5% of gross national income from international aid (UNDP 2018). In 2016, the country received USD130.3million

(GBP98.6million) in foreign aid (OECD 2018), delivering infrastructure and many services such as education and health.

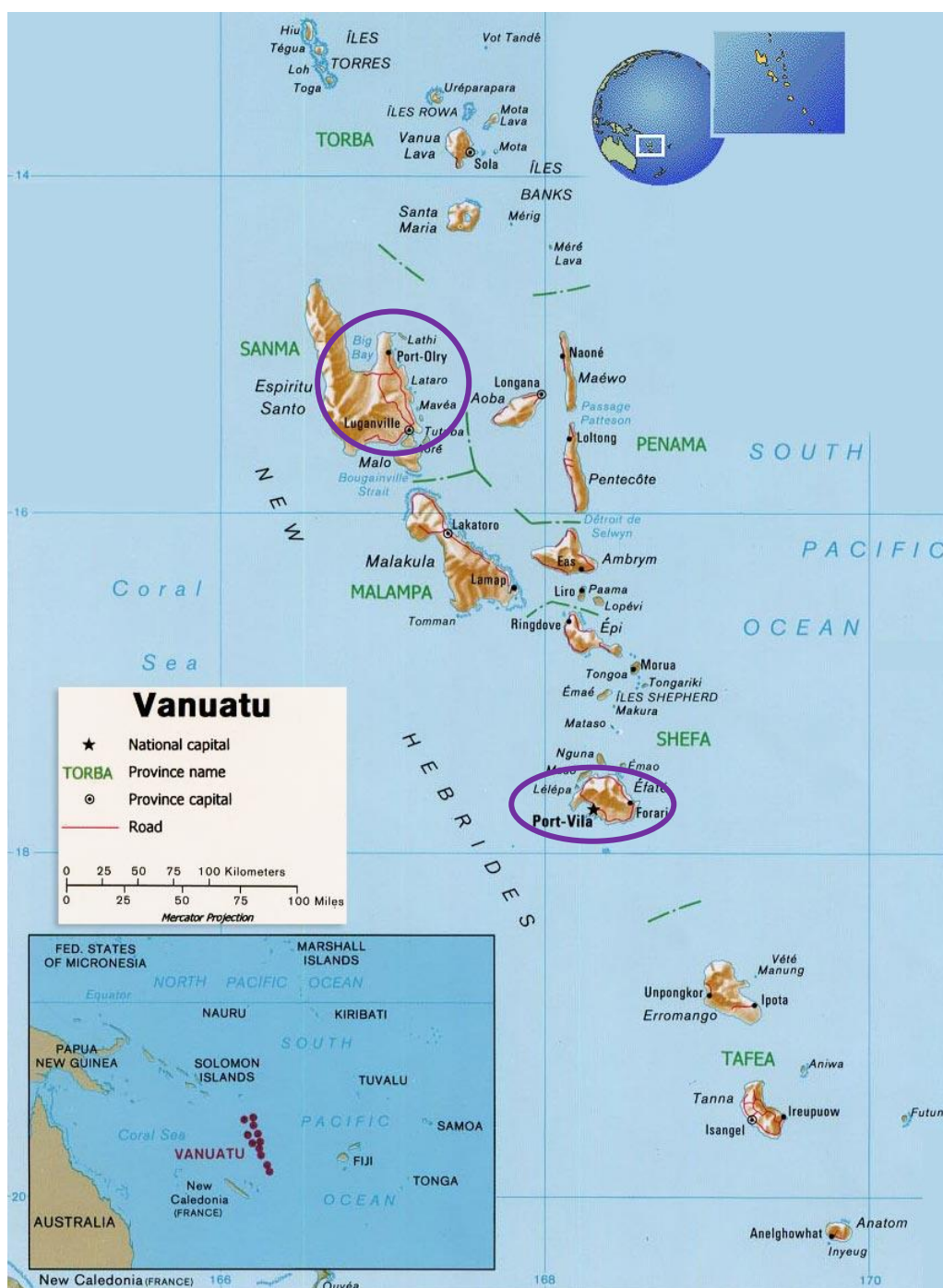


Figure 1: Map of Vanuatu
(indicating Efate and Port Vila and Santo and Luganville in circles as the areas of focus for this report)
(geographicguide.com, 2019)

2 Methodology

2.1 WasteAid approach

As an organisation, WasteAid focuses on solid waste management at the grassroots level in lower income countries. Our operational priorities reflect this focus and are as follows:

1. Understand the composition and trends for existing solid waste;
2. Identify strong local partners who are interested in becoming key players within delivering and advocating for improved solid waste management;
3. Identify potential end markets for recycled goods locally, regionally and internationally;
4. Understand the legislative environment, interest and flexibility of government in enabling community waste management; and
5. Work with local partners to develop a participatory action plan.

Therefore, the methodology used for this project centres on gathering data which represents the community-based approaches to managing waste which could reduce or remove the amount of litter otherwise flowing into marine environments.

2.2 Project Approach

The project was divided into five phases. These are presented below:

1. Mobilisation
2. Literature review report
3. Stakeholder consultation
4. Stakeholder workshop and action planning
5. Reporting

2.2.1 Mobilisation

Phase 1 was achieved and concluded with the submission of the Inception Report (Appendix A), delivered by email to Thomas Maes, Principle Investigator, and a Skype mobilisation meeting. The Skype meeting included Mr Maes, WasteAid CEO, Mr Mike Webster and WasteAid Associate, Ms Nicole T Garofano (The Consultant), the latter being responsible for the Vanuatu in-country fieldwork, as well as other contractors.

A list outlining possible contacts for the field work was provided to Mr Maes and Cefas Project Officer, Ms Bryony Meakins by the Consultant following the Skype meeting. This list was developed from Mr Maes's contacts in collaboration with other CLiP subcontractors. The list was supplemented by contacts identified from the Consultant's 2018 field work undertaken for her PhD. As more contacts were gathered throughout the fieldwork, the original list was updated and submitted to Mr Maes (Confidential Appendix I). The list and the discussion on protocol represented the communication strategy used in the project.

There was no requirement to establish a formal working group for the Vanuatu project, with all reporting to be submitted to Mr Maes for his review.

A timeline and approach was agreed to in the days following the mobilisation meeting, with project coordination meetings held in-country on arrival to finalise the consultation plan. The timeline representing the project development work (and summary in-country schedule) is presented in Appendix B.

2.2.2 Literature review report

A comprehensive literature review report was submitted to Mr Maes to fulfill Phase 2 of the methodology. The report included a thorough review of developing country contexts as it relates to solid waste management (SWM) as well as possible innovations as identified in the global literature to reduce plastic impacts. A link is available in Appendix C.

2.2.3 Stakeholder consultation

Comprising the most significant component of the project, in Phase 3 in-country field work was undertaken across two islands in Vanuatu - Efate and Santo. In Efate, field work was conducted in Port Vila (under the jurisdiction of the PVMC), and East, North and West coast areas (under the jurisdiction of the Shefa Provincial Government Council). In Santo the focus was on Luganville (under the LMC) and peri-urban areas as well as areas north of Luganville (under the jurisdiction of the Sanma Provincial Government Council).

The Consultant was instructed to conduct interviews, community discussions, and field visits. The Consultant collected data over sixteen (16) field work days, including one day attending and presenting at the CLIP Regional Conference at the request of Mr Maes. Table 1 represents the number of coordination meetings, interviews, discussion groups, and field tours undertaken for the Vanuatu field work represented by stakeholder grouping.

Table 1: Stakeholder groups consulted in Vanuatu field work

Vanuatu activities (n=38)	Non-Government			Government	
	Communities	NGOs	Private sector	UK	Vanuatu
Coordination meetings	1	2		1	
Interviews	4	5	4	2	5
Discussion groups	10	1			
Workshop	1				
Field tours				1	1

Appendix D provides a comprehensive list of stakeholders engaged with in the field work, as well as the number of activities. Table 2 represents a summary of the number of activities aligned to CLIP deliverables advised by Bryony Meakins and the methods used. These methods are indicated by video presentation (VP) or Consultant presentation (CP). For some activities, the Consultant used video to deliver what was noted in the WasteAid Inception report as *'technical demonstrations of best practices for local communities'*. To align to CLIP deliverables,

these video presentations are included in Table 2 as ‘individuals provided with knowledge and capacity’. Video presentations (VP) (available in Appendix E) were incorporated as part of ‘Consultant presentations’ where the Consultant ‘*worked with communities to highlight where their practice could be improved*’, including the use of the WasteAid Toolkit (Lenkiewicz & Webster 2017) (Appendix F) and the Cefas Community video presentation provided by Bryony Meakins (Appendix G). There was one workshop delivered over several afternoons directing six women and 4 children on the art of ‘Twistie package purse making’, held in Luganville (see 4.3 for details).

Table 2: Project deliverables from stakeholder consultation

Deliverable	Total	Method used
Community discussions	11	11 (CP) including 4 (VP)
Individuals provided with knowledge and capacity	150	19 (CP) including 9 (VP)
Stakeholders engaged with workshops and training	10	Tuition
Schools requesting information/presentations	2	2 (CP)

In order to gather the most representative data from the stakeholder consultation, there was a need to engage local translators/research assistants. Local language, Bislama, is the most popularly spoken language in Vanuatu (74% of the population) with English the next most popular (64%) and other local languages next (50%) (VNSO 2009). French is also common, particularly in the northern areas of Santo.

The plan to ‘*evaluate existing pilot and full-scale activities*’ as outlined in the inception report was limited due to the availability of stakeholders in Port Vila, and the cyclone in Luganville. There was, however, informal evaluations conducted as part of the Community Discussions in Eastern and North Efate. Best practice case studies for specific communities were documented in North Efate, with other individuals offering examples of good practice across the two islands. Case studies are presented in Section 4.

Interviews and community discussions were informed by a semi structured interview guide developed and submitted to Mr Maes (Appendix H). Notes recorded from interviews and community discussions are included in Confidential Appendix II.

2.2.4 Demonstrating best practices

A variety of best practices were demonstrated to the community groups visited. A summary of the community presentations and information shared is presented in Table 3.

Table 3: Summary of community presentations

Date	Best practices discussed
01/02/19	<i>Tagabe Anglican Church:</i> I accompanied Bryony Meakins to this presentation to learn the format that Cefas has been using for its community presentations. Best practices were shared by Bryony in the form of how to reduce waste going to the sea.
05/02/19	<i>Mele Village Presbyterian Church:</i> Discussion of plastic best practices, including separation, reduction of littering, household inspections, purse making. Shared best practices: community collaboration to raise economy of scale; the need for separation; composting options; APW and RecycleCorp programmes for plastic and tins. Discussed a wider Mele Village, all church, workshop for 20 February. <i>Sector 2 Teouma Seventh Day Adventist Church:</i> The Church requested training for the members on the impacts of plastic and marine debris, as well as a presentation from Thomas Maes if time permits before he departs. Shared best practices: community collaboration to raise economy of scale; the need for separation; composting options; APW and RecycleCorp programmes for plastic and tins.
06/02/19	<i>Epau Presbyterian Church:</i> Shared best practices: community collaboration to raise economy of scale; the need for separation; composting options; APW and RecycleCorp programmes for plastic and tins. <i>Onesua Presbyterian College:</i> Discussed the new biogas digester recently installed to increase use of organic matter and manure from the school. Learned of the lack of presence of waste in the Secondary school curriculum. Shared best practice: the need for separation; composting options (outside of the school grounds); options for APW and RecycleCorp programmes for plastic and tins if school collaborated with wider community.
07/02/19	<i>Emua Youth Discussion Group:</i> Shared best practices: community collaboration to raise economy of scale; the need for separation; composting options; APW and RecycleCorp programmes for plastic and tins; options for local small business including plastic construction equipment and smelting of aluminium cans. <i>Emua Elders Discussion Group:</i> Learned of the community practice to use the pre-paid Port Vila Municipal Council yellow bags, pilot composting in 2

	households and interest in purse making. Same best practices shared as above.
08/02/19	<i>Napko Village:</i> Shared best practices: community collaboration to raise economy of scale; the need for separation; composting options; APW and RecycleCorp programmes for plastic and tins particularly collaborating with the tourism businesses on this side of Efate; plastic weaving.
09/02/19	<i>Erakor Bridge:</i> Learned of the introduction of the Pango Green Force to service this area. Shared best practices: reinforce the need for separation; explained the 1,2 and 5 plastic differences and options for APW collection.
14/2/19	<i>Community Purse Making Workshop:</i> Held over 3 days, this workshop trained 6 women and 4 children how to make 'Twistie packet purses' under the guidance of a locally sourced trainer.
15/2/19	<i>Luganville Municipal Council partner:</i> I met with a locally known engineer who has his own business in welding, creating, inventing various items. I showed him the videos and he was keen to put in practice what he saw (he created a briquette mould by the time I revisited him on February 17. <i>Coral Quays Dive Centre:</i> Provided a small presentation to the dive operators of CLIP and its objectives.
16/2/19	<i>Sector 2 Port Olry Community:</i> The group represented males in the community who were interested to learn from the videos of ways to recycle materials. They are also keen to set up their own waste disposal site, which I advised them would benefit from separation. Given the remoteness of this location, I discussed the options for separation of organics into central piles for greater mass and option for use of compost for gardens (sale); interest in melting aluminium into new products sold and used locally. There was strong interest in arranging a Twistie purse making workshop (NG organising for April through local contacts). <i>Serenity Beach Bungalows:</i> At this interview, I shared the information on the purse making workshop and the need to separate materials for composting. I left copies of the videos on a flash drive to share with the wider community met with that morning. <i>Hog Harbour Primary School (Boarding school):</i> I delivered a presentation using Bryony's Powerpoint and information on the need to reduce littering, not to burn plastic, options for making things out of waste materials and marine debris. We inspected their dump site – a ravine that has been used for many decades.

20/2/19	<i>Tanoliu community:</i> Shared best practices: community collaboration to raise economy of scale; the need for separation; composting options; APW and RecycleCorp programmes for plastic and tins.
22/2/19	<i>Wan Smol Bag:</i> I conducted a group discussion about what the youths do with their waste. I delivered a presentation using Bryony's Powerpoint. This was supplemented by the videos, and a sharing of best practices on not to burn plastic, and information on the need to reduce littering, options for making things out of waste materials and marine debris.

2.2.5 Stakeholder workshop and action planning

In an earlier iteration of the field work plan, the Consultant was scheduled to conduct an Action Planning Workshop on February 19 in Luganville to capture the Northern Provincial experience of waste management. This was changed to February 14, to allow representation of the WasteAid findings at CLIP Regional Conference in Port Vila, held over February 18 and 19.

Despite best efforts and organising the relevant stakeholders, location, catering, etc, it was unfortunate that the arrival of Cyclone Oma as a Category 2 cyclone enacted a 'Red Alert' for the Sanma Province, advised by the National Government Met Office on the evening of February 13. Therefore, the Vanuatu WasteAid Action Planning workshop planned for February 14 in Luganville had to be cancelled. The late cancellation resulted in loss of deposit on catering, and the cost of printed materials and stationery, unable to be returned for refund.

In lieu of the cancelled workshop (intended workshop PowerPoint presentation is available in Appendix I), the Consultant met with the Officer in charge of Environmental Health at LMC. In this meeting a list of projects was generated which could assist in preventing the flow of waste into the nearby marine environments. These projects are presented in Section 5 of this document.

It is recommended that the intended Action Planning Workshop be held in Luganville in the future. Inviting not only Luganville based stakeholders, but also those in the north of Santo, around Port Olry and Hog Harbour, will ensure representation across all key populated areas on the island, particularly as tourism growth in these areas is presently on the national agenda. Such an event would present a more balanced approach to a 'National Action Plan', noting the contrasting experience of managing waste in the Northern provinces to the practices in place in and around Port Vila.

2.2.6 Reporting

Reporting has been conducted via two mechanisms for this project. The first was the submission of a Midway report, ahead of CLIP Regional Conference to Mr Maes. The Midway report identified the work conducted to date, with the stakeholder visits and key observations and findings.

The second mechanism is this report, which continues herein with the presentation of key findings from the literature review, then the field work findings. A draft action plan table is included based on assumptions made by the Consultant, however this plan has not been reviewed by the full list of relevant stakeholders and is informed only by the discussions conducted in Phase 3 of the project.

Analysis of the qualitative data collected during the field work data was conducted to identify three key themes presented in Section 4 of this report.

A limitation of the report is the absence of quantitative data analysis. Quantitative data was not conducted for two reasons. First, APWC (other CLiP sub-contractor) had already conducted extensive household survey and waste audits in Port Vila and in Luganville by the time the Consultant arrived in Vanuatu. Second, time and resources available to the Consultant for the fieldwork were limited, reducing capacity to conduct waste audits and survey data in the areas visited.

3 Key findings from literature review

The literature review of SWM in Vanuatu (Appendix C) leads to a number of conclusions presented in this section.

3.1 Conclusions

3.1.1 Lack of resourcing

Waste management in Vanuatu is guided by the 'National Waste Management, Pollution Control Strategy and Implementation Plan' (DEPC 2016) which is informed by the 'Cleaner Pacific 2025: Pacific Regional Waste and Pollution Management Strategy: Implementation Plan 2016-2019' (SPREP 2016). Yet, Vanuatu, considered at the 'medium' level of development by the UNDP (UNDP 2018), lacks financing, human resources, and infrastructure which prevent the achievement of many of the strategy objectives. Two examples are a lack of equipment for landfill management and a lack of officers to enforce legislation and by-laws (JICA 2014a).

3.1.2 Urbanisation

Increasing urbanisation (VNSO 2009) is a threat to the existing challenged capacity of both Port Vila and Luganville Councils. Urbanisation adds illegal and informal communities where open dumping is common. These communities lack access to collection, due to low economic status and to limited services provided by the Councils.

3.1.3 Lack of rural waste collection

Areas outside of Port Vila and Luganville, identified as 'rural', have limited or no access to collection resulting in open dumping and/or burning of waste (PRIF 2018). Consideration of

localised waste collection, disposed of in approved community waste disposal sites, could assist in controlling open dumping and burning.

3.1.4 Dependence on international funding and support

At the national level, Vanuatu's economy is dependent upon international aid (16.5% of GNI) (UNDP 2018) to provide infrastructure and many services such as education and health, with the country receiving USD130.3million in 2016 (OECD 2018).

In the waste management sector, Japan International Cooperation Agency (JICA) supports infrastructure (landfill improvements and collection vehicles), training (both locally and internationally) and staffing (through JICA volunteers and consultants) as part of its J-PRISM Project (JICA 2016). Staff are also provided by New Zealand. Awareness raising through key civil society groups has also been supported by donor funding, from Australia and New Zealand.

One commonly cited example of staffing assistance is documented by JICA (2014a,b; 2016) where the LMC benefitted from a New Zealand 'Volunteer Services Abroad' Volunteer between 2012 and 2015. The Volunteer redesigned collection systems and developed a waste strategy for the LMC and the Sanma Province changing how waste was planned and managed across the two Councils. This was identified as being unique as a Municipality and Provincial Council worked closely to address SWM in Santo.

3.1.5 Limited access to secondary materials markets

There are questions around end markets for secondary materials. Highlighted by JICA in their Reverse Logistics feasibility study (JICA 2013), and in more recent global news documenting the impacts of China's policy decision to close its doors to many secondary materials (e.g. Brooks et al. 2018; Staub 2018), access to international markets is limited. What access does exist is costly, particularly for plastics, due to local transport charges in addition to international shipping rates.

3.1.6 Lack of enforcement

National legislation introduced in 2018 (Republic of Vanuatu 2018) seeks to control the importation and use of certain plastic waste items, as well as introducing penalties available for littering (and illegal dumping). However, with limited numbers of government employees to enforce existing legislation (JICA 2014a), the ability for the government to enforce the 2018 legislation as it pertains to littering and illegal dumping on a nationwide basis, is questioned. The likelihood for plastics and other items continuing to enter the marine environment will remain high, affecting not only urban communities, but those rural communities which depend on terrestrial and marine ecosystems for food supplies (SPREP 2018).

3.1.7 Changes to consumption patterns

As evidenced from the waste characterisation studies conducted at the Bouffa Landfill (JICA 2014) and the Luganville dumpsite (LMC 2014), there is an increase in the presence of packaging material. This increase suggests increasing disposable income to purchase packaged goods,

particularly beverages in bottles, and snack packaging, resulting in larger volumes of waste products to be managed. Furthermore, the high use of disposable diapers as documented in the characterisation studies and in data collected by APWC is of concern. However, this matter looks to be addressed in the draft legislation to ban diapers from December 2019 (Massing 2019a).

3.1.8 Dependence on civil society

As noted in the National Waste Management Strategy (DEPC 2016) and across the JICA reports (JICA 2014a,b; 2016), civil society contributes heavily to community education and awareness for solid waste management. With particular reference to Village Chiefs and Churches, the contribution of civil society to changing behaviours in the general public is not to be understated (Regenvanu 2010). Meanwhile, current projects implemented by World Vision (funded by Australia Aid) and partnering with local water bottler Azure Pure Water are generating interest in community material collections, particularly plastics.

3.2 Existing research and gaps

The gaps identified from the existing research are as follows:

- The introduction of the *Waste Management Act No.24 of 2014: Waste Management Regulations Order 15 of 2018 including Control over Certain waste (single use plastic [SUP] bags, straws and polystyrene [PS] disposable food containers); Littering offence; and Licensing of Private Waste Operators [Plastic ban]* (Republic of Vanuatu 2018), has captured the attention of many newspaper articles on the world wide web identifying Vanuatu as an early adopter of this regulatory instrument. Initially informed by data collected and collated by the Vanuatu Environmental Science Society (VESS), evidence documenting the attitudes and practices of communities, particularly in rural areas, as baseline behavioural data has not been generated. Such data would be useful in designing communication tools in Vanuatu for SUPs, as well as providing data for other small island developing states (SIDS) who wish to pursue a similar legislative pathway. It would also provide evidence at the community level of the effectiveness of the bans to change practice and what alternatives have been adopted.
- Literature documenting the presence and impact of plastic to the terrestrial and marine environments in Vanuatu and what this means to the economy is missing. Furthermore, the damage caused by plastic to individual's health in Vanuatu communities is absent.
- The practice of 'reuse' in Vanuatu of a range of plastic packaging and other materials is lacking. As JICA is the main author of literature pertinent to solid waste in Vanuatu, who maintain a technical focus on research, it is not surprising the community and individual approach to reducing plastic through reuse in the environment has not been documented as well.
- The lack of consistent data is another common problem in developing states, with SIDS such as Vanuatu no exception. With limited trained staff, systems to document,

follow up and enforce data collection, using even basic data processes on a consistent basis, could inform changes to, or develop new, policy benefiting a range of stakeholders. This would include documenting both successes and failures of projects, though the latter is rarely publicised in funded projects.

- The literature which exists is very Port Vila focused, yet with some inclusion of Luganville and less so of Lenakal. Lack of staff and consistency in knowledge (due to staff turnover), results in limited information available representing the management practices and impacts of mismanagement in areas outside of the two main urban council areas.
- Existing support from NGOs with a community development approach could consider community waste management programmes as opportunities.
- The value of conducting fieldwork as part of CLIP cannot be minimised. Lack of data and of research investment in Vanuatu in the field of community-based waste management results in limited perspectives in the existing literature – something increased fieldwork and analysis could address.

4 Key findings from Vanuatu fieldwork

This section is presented using themes revealed from analysing the shared experience of the participants. These themes are:

4. The need to change behaviour around dumping and littering
5. Access to formal collection and disposal
6. Development of markets for recyclable materials

4.1 The need to change behaviour around dumping and littering

In all interviews and community discussions, there was an expressed lack of knowledge of what one needs to do with waste and why and the impacts to communities of current practices of littering, burning, dumping or burying waste.

Communities expressed they had limited options to deal with the types of waste now being generated. Many referred back to how things were when plastic, for example, was not part of their lifestyle. They noted that they now have plastic but have not received information on what behaviours need to be adopted to best manage the materials.

Many individuals were not aware of the term ‘marine litter’. Lack of awareness results in limited connection to the impacts of their waste practices, including dumping in rivers and burying on the shoreline, on the marine ecosystem. Several participants explained they thought the practice of burying disposable nappies at the shoreline as one example, was better because they took the problem away from the immediate community: *“Some mothers bury their diapers on the beach at low tide. That way when the tide comes up, it will take the diapers out with it.”* Though comments from other participants reflected frustration as it was evident some

understood the implications of littering on the shoreline. For example: *“there is a lot of waste left on the beach. People think that if they throw it, they think it [the ocean] takes it away.”*

Discussions related to the impacts of open dumping of waste, some participants identified the increase in mosquitos and rats, and in cases of diarrhoea. However, there was more comment on the untidiness of waste in the land environment, and the unsightliness of floating debris when dumped in the sea.

There was interest in curbing littering behaviours, particularly from the LMC. The reasons suggested for littering included laziness, a lack of rubbish bins, or a lack of knowledge. Participants described the lack of knowledge stemming from the old practices of being able to ‘drop’ ‘natural packaging’ i.e. banana skins and they would decompose in the natural environment. With increased consumption of packaged goods on the street, the prevalence of packaging material in drains and in open areas such as parks is on the rise.

At the household level participants indicated that a change of behaviour was needed across all community members, but with a strong focus on women who generally manage household generated waste.

When asked of ways to avert littering, participants were interested in increased use of financial incentive as a means of changing behaviour, but also the need for more bins, particularly in urban areas. By-laws for littering were seen as relatively unhelpful as they would require enforcement, for which there is lack of capacity to implement. At the household level, locally supported recycling initiatives for separated materials could help to reduce dumping.

Education to assist in behaviour change included several instruments. Messaging from the Village Chief, through churches and through schools were all acknowledged as important. Messaging would need to include awareness of the health implications of various practices as well as opportunities for separation and locally operated business development. To share the messages, printed material in Bislama and in French were identified as useful, but as one participant explained: *“Posters are okay, but the radio is the best way to get the information to the people, or at church.”* Social media was seen as currently less effective as access to internet is limited (primarily due to cost), but it does have potential for some education as those who do have social media access on smartphones or on computers, share information verbally through wantok¹ networks.

In both Efate and Santo, dumping and littering were observed, with open dumping (without burning – Figures 2 and 3) and as piles (with burning – Figure 4) more prevalent in rural areas. Littering was observed throughout, but more prevalent in built up areas surrounding villages (see Figure 5) which is captured during heavy rains at drains sites.

¹ “Wantok is a term used to express patterns of relationships and networks that link people in families and regional localities and is it also a reference to provincial, national and sub-regional identities” (Nanau 2011, p. 32)

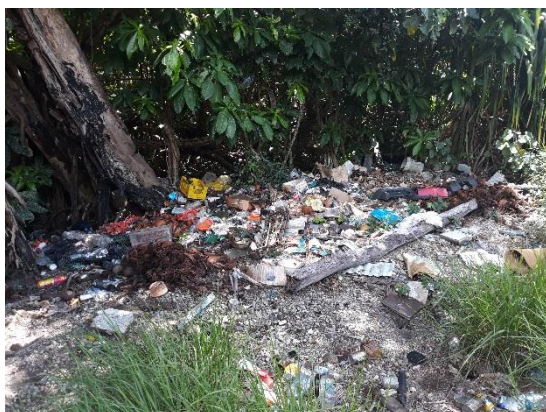


Figure 3: Open dumping on the roadside in Efate



Figure 2: Open dumping near the sea in Santo



Figure 4: Community dumping (with regular burning) in Santo

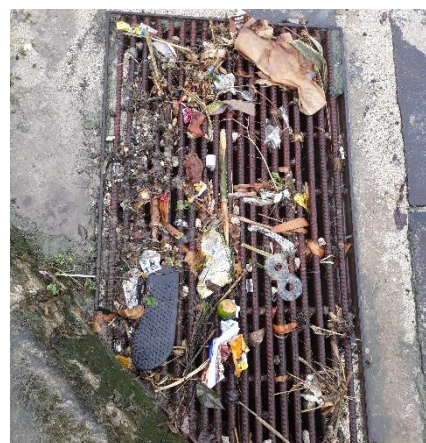


Figure 5: Litter captured at a drain in Santo

4.1.1 Key players and relationships

Changing behaviours in relation to dumping and littering can be supported by several key stakeholders depending on the location and the stakeholder type. Stakeholder groups who participated in the research are identified below and include government, civil society, private sector as well as individuals, all of whom can support these changes. The stakeholders are presented in order of Efate, then Santo, then those relevant to Vanuatu-wide activities.

Efate

Government

Port Vila Municipal Council and Shefa Provincial Government Council: Community-based participants indicated visits by both councils to provide awareness and, in the case of North Efate, to explore the introduction of a North Efate community waste disposal site. Communities would like these activities to continue, recognising the need for the Councils to increase human resources and funding to facilitate these sessions.

Civil Society

Wan Smol Bag: The Wan Smol Bag organisation, known locally for community plays and awareness raising, have been supporting education on a range of subjects for thirty years across Vanuatu from their base just outside Port Vila. They use drama (plays), community presentations, and cleanup activities to educate and raise awareness of waste impacts. See Best Practice Box 1 for more information.

Vanuatu Environmental Science Society (VESS): Through their annual clean up campaigns and other citizen participation opportunities for data collection both in marine environments and along the shoreline as well as other related awareness activities, VESS is contributing to increased knowledge on the impacts of debris, particularly plastic to the local environs.

Best Practice Box 1: Wan Smol Bag

Well established local community group, Wan Smol Bag have developed their own tools to deliver 'awarenesses' (local term for public education events) to local communities across Vanuatu.

One of the tools used by Wan Smol Bag is use of drama. Wan Smol Bag started as a small local drama troupe which has expanded and adapted over the years to develop scripts that are informative and educational while presenting the skills and acting abilities of local actors (Dorras 2016). The organisation includes waste management as one of the topics, and was most recently used for the introduction of the 'plastic ban' in 2018 (Republic of Vanuatu 2018).

Another tool is the co-published Wan Smol Bag/World Vision publication addressing solid waste management in the community, '*Bae Yumi Daonem Toti*' (Dorras 2016). '*Toti*' is Bislama for garbage. This publication was released in 2016 for use in the public theatre presentations as well as school and community events. The small booklet was designed and written in Port Vila, by Wan Smol Bag staff using Bislama as well as local photos depicting the 'dos and don'ts' of how to manage waste in daily life. This publication was presented to the Consultant during one community visit by a primary school student who proudly shared that she was aware of the way to manage her waste because of the book. To further support waste management related awareness, Wan Smol Bag has a Project Officer working full time, bringing consistency to the awareness programmes implemented on the topic.

Wan Smol Bag also started the Northern Care Youth Centre (NCYC) in Luganville as the northern arm of the organisation. The NCYC is currently under refurbishment, but in the past has offered activities for youth who have dropped out from school, cannot afford school, or generally are between employment and who might like to build other life skills in the meantime. The NCYC also implement clean-up activities as well as handicraft instruction including waste materials to make items such as 'Twistie packet purses' as shown in Figure 6.



Figure 6: Example of waste plastic woven purses

Private Sector

Azure Pure Water (APW): Through their economic incentive to collect plastic types 1, 2 and 5, APW are changing behaviours among Port Vila residents and some greater Port Vila and Efate residents. The containers accepted, including APW PET² water bottles, are being stockpiled until an economically viable outlet, market or locally implemented solution is identified.

RecycleCorp: As a self-professed metal recycler, RecycleCorp has been operating in Port Vila since 2007. They accept aluminium cans in exchange for small payment, but this is not the core of their business – car bodies and lead-acid batteries are. They have also added glass as an acceptable product (November 2018) which is to be crushed for use in sandblasting. Again, it is evident that economic incentive drives behaviour change to collect and deliver containers to RecycleCorp.

Santo

Government

Luganville Municipal Council and Sanma Provincial Government Council: Port Olry participants recalled a 2018 visit by these government bodies as helpful in understanding what types of waste are problematic and what practices need to be changed. One example was the closure of a known community informal dumping site by a river, which they learned was flowing into the sea in large rainfalls. This change of behaviour resulted in the cessation of use of that area, but other areas needed to be found – in most cases ‘in the hills’.

The LMC has developed its own waste curriculum for primary school students in Luganville. The curriculum is designed for local use, explaining waste types, management practices, and composting among other topics (Lolo 2017). This has been helpful in educating, with the intent to change behaviours.

Vanuatu wide

Government

Department of Education: The Department is currently reviewing curriculum for primary school aged children to reflect greater emphasis on solid waste management in improving the health of individuals and communities. Though for secondary schools, solid waste management appears only as an elective project for Years 11 and 12 for an ‘internal assessment design’ (Participant 3 Onesua). The Department of Education has also been in collaboration with the Cefas project team to develop and share ‘marine litter information sheets’ for primary and secondary school children.

² Polyethylene terephthalate

Department of Environmental Protection and Conservation (DEPC): As part of the National Waste Management, Pollution Control Strategy and Implementation Plan (DEPC 2016), the DEPC is working with other partners to implement ‘*Theme 7: Public Awareness*’, designed to deliver awareness and identify responsibilities for waste management.

Civil Society

World Vision: The *Waste Not Want Not* initiative being implemented with communities across Port Vila and Santo to educate and implement waste related activities. The campaign is targeted at women and youth and encourages small business development through the introduction of community collection routes and composting. This programme is scheduled to be implemented in three communities in Port Vila (Efate) and five in Luganville (Santo).

Red Cross: Known more for disaster resilience and recovery, the Red Cross also delivers waste education and organises and runs clean ups – either alone, or in collaboration with local municipal councils or with other civil society groups (such as Churches).

Churches: There are eight recorded religions on the Vanuatu Census, in addition to numerous ‘other’ newly recorded religions (VNSO 2009). There was a total of 222,385 persons, or 95% of the population recorded as indicating affiliation to a religion in 2009. Therefore, churches are a significant contributor to the sharing of knowledge which could lead to behavioural change. Participants suggested that through women’s groups, men’s fellowship, youth groups and Sunday schools, activities can be developed to inform and encourage behaviour change via these religious avenues.

Individuals

Village Chiefs: Village Chiefs are consulted by relevant municipal and provincial bodies for decision making. They are key in the delivery of information, which is informed by the relevant Government departments as identified above. Participants identified that Chiefs are the first line of communication and of influence in terms of individual behaviours in the village.

Householders: Sharing stories among each other is another way to encourage behavioural change. Though not all householders have access to technology (or social media) there are those that do who can share new information on solid waste and its impacts. Through visits to neighbouring villages, or to other islands across Vanuatu and globally (for those fortunate enough to travel), information can be shared to change behaviours, if the benefits are also explained.

4.1.2 Training and capacity building needs

Based on the data collected in the field work, there was great interest for training and awareness to build capacity and encourage changes to practice. There was also interest in the development of local business. The summary of these needs is as follows:

- *Increased human, financial, and infrastructure resources at the Municipal level.* Evident in the literature was the lack of capacity at the PVMC. This same lack of capacity was revealed in discussions with the LMC. For example, increased (trained) staff and access to vehicles would assist in enforcement of by-laws relevant to illegal dumping and littering in the LMC wards;
- *Bislama translated material*, either the WasteAid Toolkit (Lenkiewicz & Webster 2017), or other, to inform both opportunities for change of practice and the reasons why changes are needed, e.g. impacts of burning of plastic on the one hand, and small business ideas generated from locally produced material on the other;
- *Video recorded resources*, developed in Vanuatu to be locally appropriate reflecting the impacts of poorly managed solid waste on the marine environment, with specific versions for fisherfolk in rural areas;
- *Access to computer/digital projector technology* to present the relevant video resources and other content online;
- *Training on 'Twistie' packet purse making*, one workshop is planned for Port Olry in April 2019, however other communities were very interested in holding a workshop. Wan Smol Bag could be the implementing body for future training sessions;
- *Increased presence of material relevant to solid waste and its management* and environmental impacts as part of the science curriculum in *junior secondary*, and in chemistry, biology and social science in *senior secondary*;
- *Development of a national public education programme*, with relevant adaptations to rural and remote areas of Vanuatu, delivered consistently over the period of two years to reinforce habits across the generations – using news media, radio, and Facebook. Such a programme could be developed as a collaborative initiative with the DEPC, Department of Education, and relevant NGOs ensuring the material is locally appropriate and delivered in a structured manner; and
- *Faith based presentation content for marine litter* to be shared across faith groups. Material could be adapted from the presentations developed by Cefas and delivered by Mr Maes in collaboration with the Vanuatu Environmental Science Society (VESS), fisheries departments, and relevant bodies, could be enhanced and approved by the Vanuatu Council of Churches for use at specific gatherings.

4.2 Access to formal collection and disposal

4.2.1 Collection

Collection in Vanuatu can be characterised by those communities 1) located 'near to' a regulated disposal site and who have access to collection services i.e. communities within the boundaries of the PVMC and LMC; and 2) those communities 'far away' from a regulated disposal site. This section refers to these two characteristics.

‘Near to’ communities are serviced by the PVMC and the LMC through pre-paid bag collection systems – PVMC use a ‘yellow bag’³ and LMC use a ‘red bag’⁴. These systems are documented in the literature as enabling some cost recovery and facilitating a structured approach to collection routes. Both municipalities have their own trucks (though only one compactor truck and a cage truck for LMC) which are scheduled for collection routes between Monday and Friday. As identified by participants, however, not all residents in the ‘near to’ communities use the pre-paid bags.

The most commonly reported reason why people don’t use the bags in the ‘near to’ communities is because of cost. There are still many people living subsistence lifestyles with limited cash. For these people waste collection is not seen as a priority when there are other costs to consider such as food, sending children to school and transport. Furthermore, in both Council areas there are illegal settlements where residents are burning household waste, and particularly relevant for this project, in Luganville, they are dumping in the Sarakata River to avoid paying for the bags while still removing the waste from nearby the home.

Accessing ‘near to’ communities by the councils requires collection trucks, both of which have limited availability and maintenance upkeep. Though the current routes within the designated council areas should be able to manage the waste from these communities, it is the addition of extended services, into peri-urban settlements, and in the case of the PVMC, into ‘rural’ areas, which is adding additional strain to the existing trucks.

‘Far away’ communities are those located outside of the two Municipal Council jurisdictions. These communities are where the impact of lack of formal collection and disposal is most evident. Community members spoke of varying degrees of collection. For example, in Efate, communities on the East Coast had no collection from the PVMC as it was well out the jurisdiction of the PVMC. Whereas in the last six months, communities on the Northern Coast of Efate, also technically far outside the PVMC jurisdiction, had managed to arrange the use and collection of the yellow PVMC pre-paid bags. As mentioned above, the ‘yellow bags’ were designed and implemented as a pre-paid collection system for households within the PVMC area, where costs of localised transport were factored into the price of the bag. However, in this recent finding, it seems the collection of the bags from the North Efate area is not covered in the cost of the bag, as they are being sold for the same price – mostly. Herein lies an example of the ‘localisation’ of practice. For example, some bags were being sold for 120VT, while others were sold for 100VT- the latter being the price paid for bags (with collection included) within the boundaries of the PVMC.

In other areas of Efate, for example in the Shefa Province ward of Pango (which borders the PVMC boundary), a local youth-based organisation has developed its own pre-paid collection system which is documented in Best Practice Box 2.

³ PVMC has two sizes of yellow bags: 45 litre bag and a 70litre bag at a cost of 70VT (approx. GBP0.50) and 100VT respectively (approx. GBP0.70).

⁴ LMC has one size of red bag: 80litre, and is available for 80VT (approx. GBP0.55).

Best Practice Box 2: Pango Green Force

Though not interviewed individually for this project, the information gathered on the Pango Green Force from other participants and based on literature, represents a grassroots built community youth initiative which is helping to manage waste in a populated area located just outside the southern boundary of the PVMC jurisdiction.

As documented by the Vanuatu Independent, the Pango Green Force commenced operation in 2013. Youths in the Pango area developed the idea while telling stories over kava, deciding to repair an old truck with funds raised from the community to start collecting garbage from the local area for a fee. They developed the 'Pango Green Force' goals focused on improving the lives of young people in the area through job creation while also providing 'proper community waste disposal'.

The Pango Green Force developed their own pre-paid collection bags, sold initially only to the residents of Pango area (population: 2359; households 462 (VNSO 2016)). Bag sales go towards the cost of collection and delivery to the Bouffa landfill.

In February 2018, the Pango Green Force signed an agreement with the Shefa Provincial Government Council to collect waste from communities on the peri-urban fringe of the Port Vila area, but under the jurisdiction of the Shefa Province.

Based on community statements, the Pango Green Force has made its way to the Erakor Bridge Community. Erakor Bridge have used the Pango Green Force to collect a build-up of waste in November 2018 when local resident was disheartened by the level of rubbish around and no one taking it to the Bouffa Landfill. The resident contacted Minister of Foreign Affairs, Minister Ralph Regenvanu to help with arranging a truck to collect the waste and transport it to the landfill. The Pango Green Force were engaged and spent the whole day with many trips collecting the rubbish. This effort was paid for by Minister Regenvanu. Now the Pango Green Force are selling their white bags in the Erakor Bridge area for 200VT and collecting once or twice a week.

The Pango Green Force is an example of best practice as the service has been developed from within the community, by youth within the community, who identified a need to collect and dispose of garbage in an organised way, reducing impacts to the land and marine environments. They have grown from strength to strength and still appear to achieving their goal of providing employment to the youth in the area.

Sources: [Vanuatu Independent](#); [French Embassy in Vanuatu](#); Community discussions; interviews

In a second example of a 'far away' community collection in Efate, the community of Emua, in North Efate, activities for collection (and separation) were developed and are presented in Best Practice Box 3.

Best Practice Box 3: Emua Community

There are approximately 400 residents and 78 households in Emua. Two male Environment Committee members were instrumental in bringing the PVMC yellow bag collection service to the North Efate area. They worked with the PVMC to start the programme, with bags being sold at the village shop for 120VT (in Port Vila they are sold for 100VT).

The members said there is no extra charge for the collection from Emua, despite the distance back to the Bouffa landfill. They estimate that around 50% of the community use the bags, with the remaining members continuing to pile and burn (as identified above). The members suggested that those not using the bags are limited by funds to purchase the bags.

The Committee have also started a pilot household organic composting trial in two households to reduce the need for collection of organic matter. They are also keen to learn more about how collaboration with neighbouring communities can increase their collective amounts of glass, metal and plastic (Types 1,2 and 5) for sale to relevant private sector recycling organisations located near Port Vila.

This community is considered ‘best practice’, as it has taken it upon themselves to create an Environment Committee which is focused on improving the practices related to solid waste, thanks largely to the introduction of a prepaid bag system. Also their pilot study of organic composting is to be commended as a learning and sharing opportunity to reduce organic matter going to waste.

On the island of Santo, communities outside of the Luganville Municipal boundary (and currently approved peri-urban areas) have no provincial or municipal collection of solid waste. Due primarily to cost, but also access to vehicles, communities have no way of transporting waste to the regulated dumpsite just outside Luganville. In these ‘far away’ communities, transport cost and lack of access to regulated disposal sites (see Section 4.2.2) leave communities with no option but to dispose of waste “up in the bush”, “on the riverbank” or “in the sea”, or to burn or bury their waste. With so little alternative, community waste management provides the only option.

4.2.2 Disposal

Efate and Santo each have one regulated disposal site, operated by the Municipal Councils. The PVMC operates a semi-aerobic landfill, the Bouffa Landfill. The LMC has one regulated dumpsite. The Bouffa landfill was upgraded as part of the J-PRISM project but is no longer operating to its upgraded semi-aerobic capacity. The Bouffa landfill is close to capacity and will soon require a new cell to be constructed. The LMC dumpsite was, in 2014, 60-65% covered with waste, mostly due to lack of management equipment such as dozers to push, level and compact. The LMC site also needs to relocate due to an expansion of the airport in the near future.

Neither site has a weighbridge so data is lacking as to the true weight of waste being disposed. Data collected by such measures would be useful in determining cell/site fill rates, and also developing a fee schedule that is more driven by ‘user-pays’ per tonne, rather than one blanket

cost as is the case at the Bouffa landfill, or by vehicle at the LMC site. As evidenced from the literature review, however, it is clear that organic matter comprises half of all material deposited at both sites.

Outside of Port Vila and Luganville municipal areas, there are no other options than to dump, burn, bury waste or release it into rivers or the ocean. There was, however, interest from at least three communities – two in Efate and one in Santo – for a community-managed waste disposal site. Chiefs of the Efate locations are in discussion with relevant provincial councils and others to explore what would be needed to develop this concept.

4.2.3 Key players and relationships

As identified in the literature review (Appendix C), there are a series of policy instruments at the national, provincial, and municipal levels which support collection and disposal. Outside of these levels of government, some civil society and community-based organisations as well as private sector organisations deliver collection services. Furthermore, nationally represented civil society groups could be helpful in building capacity for community waste management practices as outlined in the WasteAid Toolkit (Appendix F). Those organisations participating in this research supporting these services are listed below:

Efate

Civil Society

Pango Green Force: As mentioned above, this organisation is building its collection routes in partnership with the Shefa Provincial Government Council and individual communities. This model would be considered for export to more communities, across Efate and/or other islands.

Private Sector

Private waste collection companies: As indicated in a community discussion, there are small collectors who have started to use the spotlight shining on waste as business opportunities, providing collection services in Efate. At least one collector has started their own service on the west coast of Efate servicing small communities, using their own pre-paid bag system. Harnessing these individuals could be useful in developing a more structured approach to collection.

Tusker Brewery: Partnering with local entrepreneurs, Tusker Brewery is collecting Tusker specific glass refillable containers from the environment. Five small businesses have staff who go out into the community and collect bottles under contract from Tusker, preventing them from entering landfill or being dumped in the sea. These services collect from private homes, small businesses, hotels and restaurants and some stores. The service could be expanded under a revised model of prepayment of deposits to collectors to capture more bottles.

RecycleCorp (RC): Under the current system noted in Section 4.1.1, individuals and businesses must take their metals to RC themselves to attract a payment (varying amounts per kilo – e.g. aluminium cans are paid 30VT/kilo (approx. GBP0.20). However, with volume, RC will consider collection of materials, but without any payment made. RC have also started a subscription

model of glass and metal container collection from resorts and hotels and those individuals able to afford the start-up and monthly subscription costs⁵.

Santo

Civil Society

Northern Care Youth Centre: Though currently under refurbishment, the NCYC is the northern arm of Wan Smol Bag. This centre is known in Santo as a provider of educational and support services to local Santo youth. On reopening, they are well placed to become involved in youth-driven community SWM initiatives.

Vanuatu wide

Civil Society

World Vision: As noted in Section 4.1.1, the *Waste Not Want Not* programme includes an element of collection as one business model which communities can adopt from the programme. Being only in its first year, collections are yet to commence, however, there are good levels of interest for this option when it is up and running, providing examples of how to collect and separate waste at a community level.

Churches: Although churches are not known for collection services, as identified in one community discussion, the introduction of a collection point at the church was noted. Using churches as collection points has been practiced in the Caribbean SIDS of Barbados, where any eligible funds are held by the church as a donation (Garofano 2018). Collection hubs can ease access concerns for any private sector collector providing the service, particularly in illegal settlements or areas affected by badly maintained roads.

Private sector

Tusker Brewery: Tusker also collects bottles from Santo, Tanna and Malekula via the network of five contracted collectors. With financial and/or transport support, this model could be expanded.

Individuals

Village Chiefs and Customary Landowners: Prominent in decision making surrounding the allocation of 'community' dumpsites, Village Chiefs are integral in discussions to explore the introduction of such amenities. As explained by the participants, both approval by Chiefs and Customary landowners, with payment to the latter, are required in allocating land for such use.

⁵ This service is charged at 2500VT (approx. GBP17) per month for either households or business plus a 5000VT (approx. GBP34) deposit for a 240l 'wheelie' bin.

4.2.4 Training and capacity building needs

As noted in the literature review and confirmed by participants, there are challenges with the delivery of services by both PVMC and LMC in relation to collection and disposal. High staff turnover at the PVMC combined with lack of equipment and enforcement in both the PVMC and the LMC leaves a range of opportunities for communities to develop their own practices for locally appropriate waste management. In communities outside of urban areas, the needs would focus on self-managed practice options. The WasteAid Toolkit provides an ideal structure to explore such practices, with the below training and capacity needs identified to support this:

- *Training on matters of community waste management* including:
 - Informing communities of the impacts of poorly managed solid waste, including the burning of plastic;
 - Identification of locally appropriate and economically feasible small scale recycling projects – designed to operate with small economies of scale;
 - Learning methods to support small projects financially to at least cover costs of waste collection;
 - Selecting locally appropriate locations for community waste disposal sites as a last resort;
 - Effective methods of disposal site use, including separation and removal of organics before dumping (for composting), to extend the life of the site.
- *Providing financial capacity* to develop community-based management programmes focused on rural areas, with adaptation to peri-urban areas where necessary;
- *Encourage the separation of valuable resource material* in urban areas to capture collections by entrepreneurs and/or manufacturing companies; and
- *Build financial capacity to support the development of industries* locally to process separated resource material.

4.3 Development of markets for recyclable materials

Like many SIDS, Vanuatu is dependent on imported products both for daily needs (particularly in urban areas) and for taxation income (see Section 1.2). This dependence generates the very material that becomes problematic in the terrestrial and marine environments, particularly plastic (SPREP 2018). Despite being located many hundreds of kilometres away from the nearest developed economy market (e.g. Australia or New Zealand), products arrive by ship and by air and are then distributed to some of the most rural and remote communities in Vanuatu (as in many SIDS).

However, participants confirmed the assumptions that the challenges of remoteness and small economies of scale as the most imposing characteristics determining international market entry for secondary materials generated in SIDS such as Vanuatu (JICA2013; Richards & Haynes 2014). Acknowledging these challenges, the following points raised by participants and observed in-the-field are noted:

- Brokers identified that outside Port Vila, there is not enough economy of scale of materials in one place (particularly plastics) to cover the cost of transporting the materials (even to Port Vila) to be considered for sale in global markets. This is due to high fuel costs for domestic shipping, and transport costs (i.e. local costs for transport within the two council areas, between the two council areas, *and* internationally);
- Collections of PET plastics (type 1) as well as HDPE⁶ (type 2) and PP⁴ (type 5) are currently being stockpiled by Azure Pure Water until an economically viable buyer can be located, or until an in-country processing facility can be identified;
- Local reuse of PET bottles for water storage, refilling for sale of locally made juices, and for takeaway kava is common, extending the life of these bottles, however there is still the need for eventual disposal or reprocessing. Bottles reused for kava cannot be easily reprocessed due to staining of the bottle from the product;
- Reuse of other types of plastic containers (HDPE and PP) for water or food storage, as well as glass jars and metal containers is also common, but again, all requiring eventual disposal or reprocessing;
- Aluminium cans are accepted in Port Vila by RecycleCorp, which do attract some market value from international buyers, however, greater economy of scale is needed to increase export volumes (RecycleCorp currently exports approximately 1500tonnes per year of metals (including car bodies and other machinery) in 60 x 20foot containers);
- Small scale recycling of plastic food packaging such as the 'Twistie packet purses' is being conducted at various locations across Vanuatu. They were observed in Port Vila, with the finished products being sold to tourists in the main handicraft market and independent stores, as well as in handicraft markets in Luganville.

The Consultant arranged a purse making workshop in Luganville with ten participants – 6 women and four children. The workshop showed making purses is quite time consuming, but also rewarding and a good reuse of plastic packaging. It was interesting to watch the change in perspective of the 'value' of these packaging materials which, as one participant described, *"yesterday this was toti, spread all over the place, but today, I was picking up Twistie packets from the street and around my house to make my purse!"*

In examining one small purse made by the workshop tutor, the measurements were approximately 17cm across and 10cm down. When calculated, this one purse used 0.87sqm of plastic packaging. With the number of empty plastic snack, biscuit, and rice packets readily available in Vanuatu, the adoption of this recycling innovation could potentially reduce many square metres of packaging in landfills and, importantly reduce littering into the marine environment.

- Communities are generally unaware of the amount or volume of particular materials they are generating but were interested in learning how to measure this. They were

⁶ HDPE = High-density polyethylene; PP = Polypropylene – 2 types of plastic

also interested in the principle of collaborating to increase economy of scale for collections;

- Communities were interested in identifying what could be locally remanufactured with the (relative) small amounts of material that were generated, potentially creating local businesses or at the very least, reducing the environmental and social cost of discarded, uncontrolled waste in informal dumps;
- As noted in the waste characterisation studies referred to in Section 6.3 of the literature review (Appendix C), roughly half of the waste was identified as organic matter. This is one area where domestic markets could be generated. Householders saw the application of vegetable peelings and other organic matter to crops as a way of removing the material from around the home, but were not so aware of the scientific benefits of compost as a soil conditioner and fertiliser. In urban centres, the PVMC have attempted a market green waste composting project which was unfortunately unsuccessful. In Luganville, the LMC have maintained a green waste separation and composting project at the rear of the central market with success. In this example, composted material is sold, with the Council unable to keep up with demand; and
- As observed and discussed at the Onesua Presbyterian College, and confirmed in recent news items (e.g. Massing 2019b), there is potential to develop local markets for biogas⁷ sales, generated from green waste and animal manure. Onesua College is using their gas for cooking in the school's kitchen, with the digested solids used for fertiliser for the community's gardens.

All communities visited were interested in learning of the opportunities which exist for local collection and recycling. The project initiated by World Vision in partnership with Azure Pure Water will be helpful for the removal of materials in and around Port Vila where the amount of material generated is greater, however, for other urban centres there are questions of what will be done with the material once it is collected. Communities were interested in learning more about what can be collected, the processes to make new products from the materials and where they could sell the products. However, care needs to be taken in acknowledging local reuse before enveloping all materials into recycling projects e.g. plastic bottles for water storage.

4.3.1 Key players and relationships

Prominent in developing markets are many of the same key players identified previously including Private Sector organisations such as RecycleCorp, Azure Pure Water, and Tusker Brewery in the accepting and reuse, reprocessing or sale of materials. However there are other players also necessary for the market to function. These players sit at the Vanuatu-wide level and include:

⁷ Biogas is produced from the decomposition of organic wastes in the absence of oxygen in a process called anaerobic digestion. It is a mixture of carbon dioxide and methane and other trace gases and is used as a fuel (Business Queensland 2019; Merriam-Webster 2019). The digested solids can be used as fertiliser for crops (Weiland 2010).

Government

- Department of Customs and Inland Revenue
- Vanuatu Investment Promotion Authority
- Department of Finance and Treasury
- National Trade Development Committee

Private sector

- Product importers and suppliers
- Domestic and international shipping companies
- International secondary material buyers

The relationships affecting market development centre on the economic viability of collecting and trading of materials. For this reason, specific government departments interacting with matters of trade and international investment as well as private sector brokers, shipping companies, suppliers and buyers are interlinked.

Civil society

Wan Smol Bag: Through their sites in Port Vila and in Luganville (i.e. NCYC), Wan Smol Bag has been teaching mothers how to weave packaging to make the 'Twistie packet purses'. They have provided numerous workshops to communities to share this knowledge and are well positioned to continue this training in the future.

Red Cross: Also identified as providing training in the Twistie packet purse making – in both Port Vila and Luganville.

World Vision: The Waste Not Want Not initiative is again mentioned as an important project to encourage awareness of the possibilities of secondary material markets and of composting in at least eight communities across Port Vila and Luganville.

4.3.2 Training and capacity building needs

To develop markets, training that is required is predominantly related to technical knowledge. These needs include:

- Knowledge of how to conduct waste audits;
- Knowledge of how to distinguish different materials and their properties, particularly plastic;
- Knowledge of how to separate materials for the greatest potential return;
- Understanding what can be made from inorganic materials;
- Knowledge of how to remanufacture materials using small scale projects into locally appropriate products, or products that can be sold to domestic or international markets with limited shipping costs incurred;
- Investigation into co-operatives among communities to collaborate in collection and reprocessing; and

- Mechanisms to share challenges and best practice among communities.

5 Key findings from Vanuatu workshop

In lieu of the Luganville Action Planning workshop, cancelled due to Cyclone Oma, a one-on-one interview was held with the Environmental Health Officer for the LMC. In the interview strengths and weaknesses were documented as well as possible interventions which could inform the development of the Two-Year Action Plan for Luganville. Table 3 represents the key strengths and weaknesses as documented in the discussion.

Table 4: Strengths and weaknesses of LMC waste management activities

Strengths	Weaknesses
• Prepaid waste collection 'Red bags' have been well accepted in the community; • Market composting is underway at the central market, with another green waste area allocated at the dumpsite; and • Bottle returns for Tusker beer bottles (local brewery) take place with periodic returns to Port Vila (at Tusker's expense).	• Limited capacity to increase collections due to lack of trucks; • Limited capacity to enforce bylaws for littering due to lack of officers and vehicles to move through areas; • Limited household income to increase uptake of prepaid bags (especially in illegal settlements); • Lack of equipment to effectively manage the regulated dumpsite; • Burning of plastic rice bags (or other plastic bags) as firestarters is common; • Dumpsite needs relocation; and • No at source separation; lack of end markets.

The overarching needs for the Luganville Municipal Council, captured in the literature but reinforced through this meeting with the LMC Environmental Health Officer are presented using the same 3 themes identified in Section 4:

1. The need to change behaviour
2. Access to formal collection and disposal
3. Development of markets for recyclable materials

1. The need to change behaviour

- a. Public litter bins:
 - i. Design and build bins locally – theft proof, easy to empty, protected from the weather
 - ii. Install based on foot traffic study
- b. Awareness:

- i. Create a centre for waste learning
 - ii. Engage a part-time educator to do community awareness, particularly for Ambae residents
 - iii. Update curriculum for schools
 - iv. Awareness is needed to prevent dumping or littering in drains
- c. Diapers:
 - i. Continue with the central market diaper disposal bin
 - ii. Encourage the use of 'red bag' for disposal
 - iii. Pilot community nappy bins

2. Access to formal collection and disposal

- a. Collection:
 - i. Develop collection route map
 - ii. Build new community collection areas/stands to avoid leakage from informal and illegal tenured housing areas;
 - iii. Install collection stands/areas at ports
- b. Drainage:
 - i. Maintain schedule of drainage clearing
 - ii. Install drainage covers
 - iii. Upgrade existing drainage
- c. Disposal
 - i. Fund the purchase of earth moving equipment to improve waste management at dumpsite (for spreading, compaction, and where possible, application of cover material)

3. Development of markets for recyclable materials

- a. Plastic:
 - i. Collect pallet and other LDPE wrapping for recycling into plastic pavers
 - ii. Encourage household separation
 - iii. Feasibility small scale PET recycling
- b. Metal:
 - i. Encourage separation of aluminium cans
 - ii. Smelt aluminium cans for other uses
 - iii. Pilot smelting for creating new street bins
- c. Paper and card:
 - i. Fund expanded pilot of cardboard briquette making
 - ii. Separate papers for inclusion in composting
 - iii. Encourage commercial separation
- d. Food:
 - i. Continue household separation of food waste for animals and pigs
 - ii. Peelings to be added to compost with 5 pilot sites of community composting drums
- e. Woody/green Waste

- i. Pilot small scale charcoal briquette making using mango leaves and coconut fibres
- ii. Use coconut husks with cardboard briquette to trial
- iii. Trailer for market waste

The project concepts suggested by the LMC improve the management of solid waste in the Council area, but by extension, also reduce the amount of waste which could potentially flow into the marine environments. By implementing any of these interventions, marine litter could be reduced.

6 Gaps and opportunities in existing practice

Based on the fieldwork analysis, the gaps and opportunities have been identified as follows:

6.1 Gaps

Data provided by participants and supported by literature in this project reveal several important gaps in the current management practice which could leak materials, particularly plastic, into marine environments.

The following gaps are of note:

6.1.1 Lack of awareness and education

The lack of awareness of the impacts of mismanaged solid waste and littering is a deficit that does not just impact marine environments, but endangers the physical health of individuals in communities as well as terrestrial environments. Addressing education, particularly in rural communities, could have significant benefits to public health outcomes. For example, the use of open drains as dump sites can be reduced through improved education of the impacts – both to persons and to natural environments.

6.1.2 Lack of collection and disposal options

From a need to increase litter bins in urban areas as a method of collecting urban waste while away from households, to implementing collections of waste from rural areas, the need to improve solid waste collection for Vanuatu communities is imperative to delivering improved development outcomes. There is limited capacity to expand collection routes outside of the PVMC and LMC areas due to truck, fuel, and human resource limitations. Meanwhile for disposal, lack of machinery to level and compact at both locations, as well as a new dump site needed for LMC, which due to land ownership issues and ‘not in my backyard’ (NIMBY) is proving difficult, reflect the lack of capacity at both Councils.

6.1.3 Lack of enforcement

Although there is a National waste strategy and Municipal waste by-laws which regulate solid waste management, the lack of staff and of vehicles prevents effective enforcement.

6.1.4 Limited access to markets

With remote locations not currently working collaboratively to build economies of scale, the high cost of transport, and fluctuating markets for secondary materials, any value potentially gained from material export is lost in recovering costs. Aside from reuse of selected containers, and the creation of ‘Twistie purses’ sold primarily to visitors, but with limited sales to locals, secondary materials are valueless in the current climate.

6.2 Opportunities

The current initiatives and level of interest in the communities visited in the field represent clear opportunities for improvements in practice. Supported by the level of international interest, particularly around reducing or improving management of plastic packaging, domestic projects could be generated to improve waste management while reducing marine ecosystem impacts through capturing greater percentages of waste at source. At the same time, benefits from improved land use, improvements in public health, and potentially delivering economic benefits to the communities generating the waste could be realised.

These opportunities are presented next in Recommendations.

7 Recommendations

As noted by the representative from the DEPC, *“there are big expectations from this project – we don’t just want recommendations, we want projects that are implemented that can be known as ‘that’s what CLiP did’”*.

Therefore, these recommendations are based on the following assumptions:

- i. That technical assistance and funding is available to initiate the programmes

As identified, this first phase of CLiP, ending with the submission of this report will achieve nothing more than recommendations unless there is allocated resources to implement the findings.

- i. That at least a two-year commitment is allocated to supporting the programme

Based on WasteAid’s experience, at least two years is estimated to successfully deliver the outcomes of the programme, as presented in the draft action plan.

- ii. To achieve benefits for the marine environment, acknowledgement of the complexity of the system is necessary – including the need to address social and economic elements

As noted by Webster (2019), “Poor waste management is a symptom of weak governance”. It is common in developing economies, due to lack of effective governance and inability, through lack of capacity or interest, to consider the cross-cutting themes of solid waste management. There are much broader opportunities to contribute to sustainable development objectives from improved waste management. This is commonly noted in the low-income countries where WasteAid works, hence the focus on identifying interested and capable organisations and building community capacity to improve solid waste management in this report.

The following recommendations are listed to support the delivery of the Action Plan presented in Section 8

1. Design and implement solid waste management knowledge hubs in areas of larger population, but with information applicable and shareable with communities outside the immediate vicinity of the hubs;
2. Develop community waste management capacity;
3. Generate interest in composting through training;
4. Identify plastic waste business opportunities; and
5. Advocate for policy change to consider the application of extended producer responsibility models for specific materials and explore subsidised domestic shipping for recyclable material.

These recommendations are explained in further detail next.

7.1 Design SWM Knowledge Hubs

Using existing efforts within Civil Society, such as Wan Smol Bag, World Vision, Red Cross, as well as Live and Learn (not interviewed for this work) and church groups, a system of SWM knowledge hubs can be developed to educate and raise awareness of matters related to SWM, as well as upskilling on the technical aspects of waste separation, collection and recycling and related business development. The steps in achieving this approach could be as follows:

- i. *Identify a local coordinating organisation.* In the present environment, Wan Smol Bag appears to be an obvious choice for this role, given their experience and community reach and their work in supporting the public awareness campaign in 2018 for the plastic bag ban. The exact choice of NGO would be decided by local stakeholders, where for example the Vanuatu Environmental Science Society is included, among others;
- ii. *Deliver train the trainer sessions.* Once decided on a coordinating organisation, train the trainers sessions would be held, in all major centres to develop knowledge and capacity on improved SWM through various approaches and the opportunities for livelihoods;
- iii. *Develop materials.* Learning materials would be developed in collaboration with the DEPC, Ministry of Education and Training, Vanuatu Council of Chiefs, Vanuatu Council of Churches, and the Municipal and Provincial Authorities, using the WasteAid toolkit as the basis of information. Materials would be locally appropriate, delivered in Bislama, and representative of the current practice, as well as opportunities for improved practice and business opportunities, such as ‘Twistie packet purses’. These materials would include community and school packs, as well as posters and scripts for radio public service

announcements. Short local videos, able to be viewed on phones would also be developed and shared through partnerships with Digicel and TVL;

- iv. *Identify physical location/s.* For training, operation of small scale demonstration projects, and larger community presentations, a physical location/s would be recommended, where products made from the recycling processes can be sold; and
- v. *Develop research partnerships.* Using global interest in waste materials, particularly plastic, use the Knowledge Hubs as centres of research, supported by philanthropic or aid funding to develop locally appropriate recovery and recycling solutions. Using links with Universities and Vocational training centres globally and those available locally, such as the Vanuatu Institute of Technology, ni-Vanuatu can be supported in their endeavours to use locally generated materials, on the scale available, to deliver new products.

7.2 Develop community waste management capacity

Using the WasteAid toolkit as a guide, communities interested in developing localised community waste facilities can be supported in implementing a structured programme. Steps to achieve this include:

- i. Implementation of a secure governance structure within the community/ies where roles are identified for management of the initial stages, operation, and funding;
- ii. Conduct a waste audit to identify key waste streams;
- iii. Based on the weights and volumes of the waste audit, identify projects to use specific materials, such as composting from organics, eco-bricks for soft plastics and disused PET bottles, or smelting of aluminium cans;
- iv. Estimate the approximate cost per household based on potential income from projects and nominal fees to householders for transport, and inform householders to gather consensus;
- v. Locating of a site more than 100 metres, but less than 500 metres away from the nearest dwelling where material can be transported using barrows easily for reprocessing;
- vi. Importantly, locating a disposal site for those materials deemed as non-recyclable as per the WasteAid Toolkit;
- vii. Using the Knowledge Hub and its materials, engage the beneficiary community/s to:
 - i. Raise awareness of the impact of open dumping and the need to stop;
 - ii. Instruct how to use a new collection system;
- viii. Identify community member/s to participate in paid community-based collections, reflecting the community's contribution to local employment and economic benefit. The collectors can use local knowledge and reputation to educate residents in how to use the system properly.

7.3 Generate interest in composting through training

Given the high level of compostable material in solid waste characterisation studies, there is opportunity for specific projects for composting, including the identification of economic benefits to entrepreneurs. The suggested steps for this recommendation include:

- i. *Identify a local coordinating body.* It could be the same organisation as per the Knowledge Hub, or another more specifically grounded in the agricultural arena, to generate knowledge

on the needs of soils as well as availability of specific materials to improve composts for specific crops;

- ii. *Building on existing initiatives.* Mapping the existing initiatives, including Waste Not Want Not, market composting initiatives, and small scale community projects, research what is being undertaken to gather local knowledge to share with new community projects;
- iii. *Generate pilot schemes.* Working with selected communities, deliver at least three (3) pilot projects in Efate and up to five (5) in Santo, where data is captured including the amount of waste captured, processed, sold and the yield benefits for growers to generate inspiration for other communities to adopt schemes;
- iv. *Promote training and benefits.* Working with the Knowledge Hub and partners including churches, schools, urban development groups and agricultural growers, share training to build capacity. Encourage separation of organic material for the reduction of cost of waste transport for householders; and
- v. *Identify expanded green/woody waste projects.* Through the implementation of the pilot sites, other materials and projects could be identified, such as converting woody waste to charcoal briquettes for community use or sale.

7.4 Identify plastic waste business opportunities

As plastic waste is ubiquitous in the environment, opportunities to build on existing practices such as bottle returns, Twistie purse making, and other handicrafts widely exist. These initiatives need coordination, through the Knowledge Hub, to support increased uptake of practices through widely sharing of knowledge – not just in urban areas, but in rural and inter-island locations. Building on the practices of waste auditing in Section 7.2, the following steps are recommended to achieve the maximum benefit from plastic waste business opportunities:

- i. *Deliver training.* Using the Knowledge Hubs, deliver training to communities, churches and other small NGOs, youth groups and other interested parties to highlight reuse and recycling opportunities;
- ii. *Encourage collaboration.* To improve economies of scale, the coordinating Knowledge Hub, would assist communities in developing local collection points for specific materials of value. These points would take the form of drums, cages, or other relevant containers to collect materials and keep them separated to increase value; and
- iii. *Identify possible entrepreneurs.* Work with entrepreneurs to deliver training and mentoring, and when appropriate, investment through soft loans provided by funders to develop small scale plants. Where possible, a focus on youth and women entrepreneurs will assist in generating community leaders as well as best practice examples.

7.5 Advocate for policy change

- i. *Advocate for Extended Producer Responsibility (EPR).* Either through a container deposit scheme (CDS) or a Producer Responsibility Organisation and associated legislation, the introduction of such schemes helps in gathering a critical mass of material for reprocessing. Stretching past the usual beverage containers, introducing an EPR for some food packaging will generate a wider range of materials for local remanufacture. Examples

include plastic lumber, aluminium pots, or increased glass used in sand blasting or other products.

- ii. *Advocate for subsidised shipping.* The cost of domestic transportation is currently prohibitive in encouraging collection in smaller remote communities. Subsidisation of port fees and/or shipping costs would encourage wider collections. Another alternative is to investigate and support low-fuel or solar technologies for shipping vessels to cut costs.

8 Draft Two Year Action Plan

Without the input of an Action Planning workshop, Table 4 represents the recommended activities presented in Section 7. These have in no way been reviewed or approved by the stakeholders consulted in the field work. Should this Action Plan be considered for implementation, a full Action Planning workshop is recommended, engaging with the relevant waste management and development partners in both Efate and Santo, recognising the opportunities for contributions to sustainable development from the adoption of these recommendations.

Table 5: Draft Two Year Action Plan - Vanuatu

Objective	Activities	Indicators	Responsibility	Timescale* (S,M, L)	Resources /Cost
Identify leading SWM Knowledge Hub NGO	Identify co-ordinating group Convene group and agree roles	Meetings held MOU signed and activities agreed	WasteAid; DEPC	S	Project manager and oversight Selection of coordinating body
Deliver programme of community SWM capacity building for CBOs	One day sessions on importance of community SWM Produce a community waste guide for Vanuatu and related materials	Attendance sheets Feedback sheets	WasteAid, Municipal Councils, churches, community leaders.	S	Trainer Materials
Develop range of communications materials and distributed		Final versions of materials	WasteAid; DEPC; Ministry of Education and Training;	S	Materials

			Vanuatu Council of Chiefs/ Churches; Municipal and Provincial Authorities		
Build CSO capacity - composting	Ongoing programme in Port Vila, Greater Efate, Luganville, Greater Luganville and other centres to build CSO capacity around composting	Attendance sheets Feedback sheets	WasteAid; To be advised	S	Trainer Materials
Build CSO capacity – plastics	Ongoing programme in Port Vila, Greater Efate, Luganville, Greater Luganville and other centres to build CSO capacity around plastics recycling	Attendance sheets Feedback sheets	WasteAid; Vanuatu Institute of Technology; Ministry of Education & Training	S	Trainer Materials
Identify site for SWM Knowledge Hub		Location Project plan Funder commitments	WasteAid; DEPC; Identified NGO; Planning	M	Site, equipment, materials
Identify site for community waste pilot and deliver – North Efate and Port Olry		Location, project plan, tonnages collected	WasteAid; Live and Learn; World Vision; Health Clinics	M	Site, equipment, materials
Establish research partnerships for locally appropriate recycling	Identify partners Establish MOUs Secure funding for research	MOUs signed, Research proposals, publications (open access)	WasteAid; VESS; USP; Vanuatu Institute of Tech; Department of Education	M	Site, equipment, materials

* S=short term (within 6 months); M=medium term (6-12 months); L = Long term (+12 months)

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10 Appendices

10.1 Appendix A: Inception Report

10.2 Appendix B: Timeline of activities

Dates (2019)	Location	Island
4 January	WasteAid Inception Report delivered	n/a
10 January	Skype Mobilisation Meeting held	n/a
29 January	WasteAid Literature Review Report delivered	n/a
29 January	Brisbane (interview with VU Institute of Technology/Ministry of Education Contractor)	n/a
1 February	AM: Cefas – Bryony Meakins AM: Department of Environmental Protection and Conservation – Rontexstor Mogerer PM: World Vision – Pallen Abraham PM: Attended community presentation with Bryony Meakins (Cefas)	Efate
3 February	AM: Warwick Hotel – Chef Som	Efate
4 February	AM: Tusker bottle contractor – John Terry AM: Recyclecorp – Andrew Hibgame AM: Vanuatu Environmental Science Society – Christina Shaw PM: Cefas – Dr Thomas Maes PM: University of the South Pacific – Michael Maniel, Dr Krishna Kotra	Efate
5 February	AM: Azure Pure Water – Yael Sakker AM: Mele Village Presbyterian Church – Elder Mariki and Pastor Terry PM: Community Discussion - Stage 2 Teouma Seventh Day Adventist Church	Efate
6 February	AM: Community Discussion – Epau PM: Community Discussion – Onesua Presbyterian College	Efate
7 February	AM: Community Discussion – Emua Youth PM: Community Discussion – Emua Chief and elders	Efate
8 February	AM: Community Discussion – Napko Village PM: Coordination meetings – Red Cross, Oxfam	Efate

9 February	AM: Erakor Bridge – Ken White PM: Tour around Pango area	Efate
10 February	Travel to Santo	Efate/Santo
12 February	AM: Luganville Municipal Council – Ray Vilvil AM: Northern Care Youth Centre – Jeven Nato AM: Sanma Provincial Government Council – Anecllet Philip PM: World Vision – Kenson Tari PM: Red Cross – John PM: Sanma Province Environmental Health – Keith Gasi PM: Purse making workshop with Eunice Franks	Santo
13 February	AM: Luganville Municipal Council – Ray Vilvil PM: RED ALERT advised – Cyclone Oma: Cancellation of workshop	Santo
14 February	RED ALERT AM: Luganville Municipal Council Mini-Workshop – Ray Vilvil PM: Begin purse making workshop – Eunice Franks	Santo
15 February	AM: Field visit with Luganville Municipal Council PM: Coral Quays Dive Centre PM: Continue with purse making workshop	Santo
16 February	AM/PM: Sector 2 Port Olry – Chief’s Nakamal PM: Serenity Beach Bungalows – Angelique Frank PM: Hog Harbour Primary School – School Master	Santo
17 February	AM: Finalise purse making workshop PM: Flight delays (Cyclone Oma)	Santo
18 February	AM: Flight delays (Cyclone Oma) PM: Preparation of presentation	Santo
19 February	AM: Travel to Port Vila CLiP Regional Conference	Santo/Efate
20 February	PM: Tanoliu Village – Chief Wilson PM: Wan Smol Bag – Brian Robert (Coordination)	Efate
22 February	AM: Community Discussion - Wan Smol Bag	Efate
28 February	WasteAid ‘Good Draft’ report delivered	n/a
26 March	WasteAid 2 nd draft report delivered	n/a

- 10.3 Appendix C: Full Literature Review
- 10.4 Appendix D: List of stakeholders and activities
- 10.5 Appendix E: Videos shown in community
- 10.6 Appendix F: WasteAid Toolkit
- 10.7 Appendix G: Cefas Powerpoint used in community
- 10.8 Appendix H: Semi-structured interview guide
- 10.9 Appendix I: Intended workshop PowerPoint presentation

11 Confidential Appendices

- 11.1 Confidential Appendix I: Contact list of stakeholders
- 11.2 Confidential Appendix II: Consultant Daily Diaries



Centre for Environment
Fisheries & Aquaculture
Science



wasteaid

About us

The Centre for Environment, Fisheries and Aquaculture Science is the UK's leading and most diverse centre for applied marine and freshwater science.

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Head office

Centre for Environment, Fisheries & Aquaculture
Science
Pakefield Road
Lowestoft
Suffolk
NR33 0HT
Tel: +44 (0) 1502 56 2244
Fax: +44 (0) 1502 51 3865

Weymouth office
Barrack Road
The Nothe
Weymouth
DT4 8UB

Tel: +44 (0) 1305 206600
Fax: +44 (0) 1305 206601



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