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Science



Best Practice & Removal Actions in relation to the Commonwealth Litter Programme

Final Report

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1 Executive Summary

Marine litter is a growing problem in the Pacific, with Pacific Island nations seeking cost effective solutions to address the issue. Marine litter is defined as any solid material that has been deliberately discarded or unintentionally blown or washed into the ocean. Over 90% of it is plastic originating from land and seabased sources (SPREP 2018, UNEP, 2009). Globally, around 6.4 million tonnes of marine litter enters the oceans each year – that is about 8 million items every day (UNEP 2005; McIlgorm, A, *et al.* 2008).

Marine litter threatens human health and impacts on marine wildlife. Entanglement or ingestion by wildlife can often be fatal. While information is still emerging, ingestion of micro-plastics by fish may also be a pathway for transport of harmful chemicals into the food web and the food we eat. At the heart of the issue is the need for behavioural change and improvements to land based waste management to prevent plastic pollution from entering waterways and becoming marine litter. Marine litter is everyone's responsibility to reduce, reuse and recycle.

This project sought to develop, support and foster innovative best practice approaches and demonstration projects in relation to community driven waste management and marine litter solutions in Vanuatu and Solomon Islands. Our focus was on strengthening and scaling removal activities in coastal waters, ports, rivers and estuaries and clean-ups of sensitive or heavily polluted areas, as well as waste management solutions. Our aim was to help strengthen commitment and empower those within communities to overcome the key barriers impacting on long term sustainable community driven reduction and removal of waste in each country.

For marine litter and waste to be managed successfully in Pacific island nations like Vanuatu and Solomon Islands, proactive community engagement is fundamental to national solutions.

This project took a multifaceted approach:

- Identifying key factors that enable successful and best practice community driven initiatives, examples of best practice;
- Empowering and support the scaling of a number of demonstration projects for community driven waste management and removal activities; and
- Identifying key lessons learned as well as training and capacity needs.

It is clear that understanding community perceptions and barriers as well as community priorities is a first step towards changing behaviours and attitudes. Also important is investing in addressing community priorities, building capacity in soft skills like financial and business skills and where donors are involved, having clear exit strategies that will promote self sustaining programs within communities. Short-term projects that “parachute in and out” do not provide strong outcomes and do not empower or build capacity for long term adoption and impact within communities to manage waste and marine litter.

TierraMar has delivered the project in partnership with our onground partners, WWF Solomon Islands and the Vanuatu Environmental Science Society (VESS). TierraMar and its onground partners have committed to continue working with those communities and projects we supported through the CLiP program to build capacity and address training needs to ensure continued scaling and effectiveness. Our conclusions and recommendations are provided in Section 5.

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2 Methodology

2.1 Objective

This project sought to develop, support and foster innovative best practice approaches and demonstration projects in relation to community driven waste management and marine litter solutions in Vanuatu and Solomon Islands. Our focus has been on strengthening and building capacity to scale economically sustainable community driven removal activities in coastal waters, ports, rivers and estuaries and clean-ups of sensitive or heavily polluted areas, as well as waste management solutions. The aim has been to help strengthen commitment and empower those within communities to overcome the key barriers impacting on long term sustainable community driven reduction and removal of waste in each country.

2.2 Scope

The project focused on the following activities as per the Terms of Reference found in Annex 6.11.

- 1) Undertake a stakeholder analysis to map relevant actors and providers;
- 2) Produce a literature review of the current situation;
- 3) Develop a comprehensive and full schedule of interviews and discussions to maximise the value of the fieldwork in collaboration with the customer;
- 4) Setup qualitative and quantitative data system in collaboration with the customer and third parties to take forward and follow progress of task(s) e.g. composition and volumes of waste streams, removal approaches and effectiveness, attitudes and uptake;
- 5) Take an inclusive approach, be aware of sensitivities, consider existing legislative frameworks and (in)formal approaches, including those delivered by NGOs, government, the private and public sector;
- 6) Finalise a report identifying key players for each task and their inter-relationships, existing options, approaches and recommendations in advance of a participatory planning workshop;
- 7) Prioritise activities in agreement with Customer prior to workshop;
- 8) Setup a participatory planning workshop to develop a draft action plan;
- 9) Identify key needs for each area in relation to training and capacity building that would enable local partners to take forward actions after the projects lifetime;
- 10) Evaluate existing pilot and full-scale activities, and scale up where appropriate;
- 11) Develop and disseminate case studies of best practices and training;
- 12) Setup demonstration and pilot projects with a range of simple, low-cost or no-cost technologies/processes to prevent plastic leaking into the environment or to clean up polluted areas; and
- 13) Raise awareness during the project lifetime.

2.3 Approach

A three-phased approach was adopted to delivering the activities required in the terms of reference.

Phase 1 – Mobilising and Planning

The first phase of the project was to rapidly plan and mobilise the teams to commence activities. The rapid response required was as a result of the contract for TierraMar to deliver the project being signed only on 23 November 2019. An Inception Report with a workplan was developed and provided to CEFAS for review and comment. This formed the basis for the approach taken to deliver the various activities outlined in the terms of reference.

A literature review was undertaken focused on best practice approaches to sustain community driven solutions at scale in small island nations. Exit strategies where projects are NGO based, sustainable financing and scaling are three most critical components in any community driven project, if it is to have significant ongoing benefit. Refer to Section 2.2 for the literature review.

Preliminary discussions were undertaken, using our collective, extensive networks in each country and regionally-based partners to identify relevant key actors (community leaders, church leaders, community groups, women groups, local NGOs, youth groups, provincial and national government) and community driven initiatives within each country, and the potential each had to support the objectives of the project. High level mapping of stakeholders was undertaken based on interest and influence on the desired outcomes and this was used as the basis of the consultation and to identify and assess potential community projects that could be supported to pilot or scale activities or demonstrate community driven removal, remediation and management solutions. Our geographic focus was on those locations where we had existing capacity on ground to support project activities in each country (Port Vila/Efate in Vanuatu and Gizo/Western Province and Honiara in Solomon Islands).

A series of qualitative, structured interviews were then planned with priority stakeholders identified, using standard and tailored questionnaires prepared for community, and government or other stakeholders such as NGOs. Consideration was given to sensitivities, cultural aspects and existing legislative frameworks and approaches being used in each country in the development of the questionnaires, noting our extensive on ground experience in engaging in each country. Questionnaires used are found in Annex 6.3 and a list of stakeholders consulted in Annex 6.4. A standard template for recording the findings from the consultation was used to provide the basis for analysis of removal approaches and effectiveness, attitudes and barriers to uptake as well as capacity gaps and training needs and lessons learned (refer Annex 6.5). A standard template provided by CEFAS was also used to record best practice approaches identified during the process (refer Annex 6.8).

Communication protocols with CEFAS were also established at this time to ensure regular updates and communication between the project team and CEFAS.

Phase 2 – Implementation

The second phase of the project focused on rolling out the consultation process with key stakeholders identified at our focus locations – Gizo/Western Province and Honiara in Solomon Islands and Port Vila/Efate in Vanuatu. The objective of the consultation with priority stakeholders identified was to understand attitudes, values and perceptions as well as identify how waste/marine litter is being addressed and any best practice approaches to sustain

community driven solutions from which to learn. Information collected was analysed and summarised to highlight findings, identify capacity and training needs and make recommendations. Consultation to a lesser extent was also undertaken in other provinces (taking advantage of staff being present to undertake another project) so as to compare findings from communities on key challenges and solutions. A key objective was also to work with these stakeholders to identify a suitable focus for and undertake action planning workshops in each country, noting that it was important to help build capacity, add value and focus on addressing existing gaps. Community demonstration projects selected in Phase 1 were subcontracted, implemented on the ground and then evaluated to determine effectiveness. Action plan workshops were conducted in each country, focused on key priorities identified by community and government stakeholders, with follow up activities undertaken.

Phase 3 – Reporting

The key findings and outcomes from all activities undertaken were then incorporated into this final report. Additional presentations of findings and to showcase activities were provided at the policy workshops in each country as well as the CLiP conference at the request of CEFAS.

3 Project Findings

3.1 Progress against workplan

A workplan was developed and included in the Inception Report provided to CEFAS for this project. Progress against the workplan is not on track in terms of project deliverables due mainly to weather interruptions. It is summarised in Annex 6.1.

3.2 Literature review

A literature review was undertaken for this project to inform our thinking about the work undertaken. Give the focus on community driven solutions, it focused on understanding best practice approaches to sustain community driven solutions at scale in small island nations. Exit strategies where projects are NGO based, sustainable financing and scaling are three most critical components in any community driven project, if it is to have significant ongoing benefit. The literature review is found in Annex 6.2.

3.3 Community perceptions of waste in the environment and at home

What drives a community to develop and implement their own solutions for waste management and marine litter is key to understanding how it can be fostered, and scaled across other communities. It was important therefore to understand attitudes, values and perceptions as well as identify how waste/marine litter is being addressed. A total of 14 community members in Vanuatu and 33 in Solomon Islands were engaged in the consultation process regarding perceptions of waste. Table 1 provides a summary of the number and location of communities engaged.

Table 1 Summary of communities engaged

Vanuatu	Solomon Islands
Consultation was undertaken with 14 community members on Efate Island, Shefa Province.	Consultation was undertaken with 33 community representatives from both rural and urban areas across the country with 13 being female, 14 being male and 6 anonymous.
5 Erakor Village	
5 Ifira Island	Choiseul – Sasamunga (6) and Taro (6)
2 Erakor Bridge	Makira – Kirakira (1), Ulawa (1)
2 Freshwota1	Malaita – Ngalisagore (1), Talakali (1), Uluga (1), Langalanga (1), Auki (3), West AreAre (1)
9 were females and 5 were men.	Renbel - Hutuna, Rennell Is (1), Bellona (1)
	Western - Nusatuva-Kolombangara (1), Gizo (5)
	Isabel - Buala (3)

Community members were interviewed and asked questions about their perceptions of the type of plastic in the environment versus what they generate at home. They were asked to list what they saw/generated then which components of waste comprised the 'most' seen or produced. Each participant listed all the types of plastic they saw. The percentage bar charts represent the number of times a category was mentioned, with most survey respondents mentioning multiple categories.

While there are inherent biases in the data, it is useful to have a qualitative measure of perception of waste to compare to systematic waste audits, because how people see themselves responsible for production of waste, often differs from the reality. This is important for waste managers to understand, because it reveals patterns of behaviour and understanding that can be addressed in waste management campaigns.

The data have been put into percentage graphs. Some adjustments were made to make mentioned categories of waste consistent. For example, all plastic wrappers, bags and boxes were put in the 'plastic packaging' category. The 'other' category comprises all waste types mentioned only once. Respondents were also asked to estimate as percentages, the composition of waste. These results are presented as minimum to maximum percentage ranges.

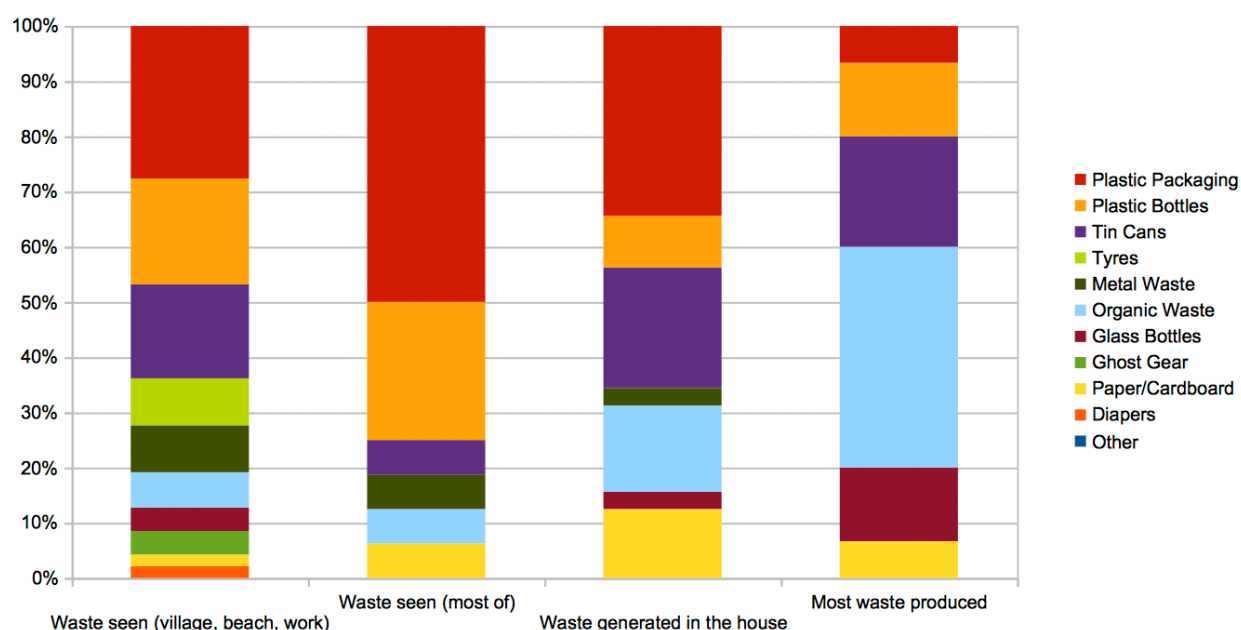
3.3.1 Results - Vanuatu

Table 2: Percentages of times different waste categories were mentioned by survey participants in Vanuatu

CATEGORIES	Waste seen (village, beach, work)	Waste seen (most of)	Waste generated in the house	Most waste produced
Other	18.97%	23.81%	11.11%	25.00%
Diapers	1.72%	0.00%	0.00%	0.00%
Paper/ Cardboard	1.72%	4.76%	11.11%	5.00%
Ghost Gear	3.45%	0.00%	0.00%	0.00%
Glass Bottles	3.45%	0.00%	2.78%	10.00%
Organic Waste	5.17%	4.76%	13.89%	30.00%
Metal Waste	6.90%	4.76%	2.78%	0.00%
Tyres	6.90%	0.00%	0.00%	0.00%
Tin Cans	13.79%	4.76%	19.44%	15.00%
Plastic Bottles	15.52%	19.05%	8.33%	10.00%
Plastic Packaging	22.41%	38.10%	30.56%	5.00%

Other = bottle lids; cases from ships; cigarette filters; diapers; dispensary waste; Flip flops; Kava Makas; ship oil; straws; waste pools e.g. chemicals; wood; bicycles; ice box; Kava Makas; wheel barrow.

Figure 1: Percentage bar chart of different waste categories mentioned by survey participants in Vanuatu (excludes the 'other' category)



Percentage of waste types estimated by survey participants

Participants were asked for their estimate of the % of different categories of waste they observe (Table 3):

Table 3: Estimates of percentage of waste seen by survey participants in the environment and at home in Vanuatu

CATEGORIES	Waste seen in environment		Waste produced at home	
Cigarette filters	10%	(n=1)	-	
Kava makas	20%	(n=1)	-	
Organic waste	10%	(n=2)	5-50%	(n=6)
Other waste	15-20%	(n=3)	10-15%	(n=4)
Plastic Bottles	30-60%	(n=3)	1-20%	(n=2)
Plastic Packaging	25-40%	(n=3)	50%	(n=2)
Paper and cardboard	35%	(n=1)	10%	(n=1)
Tin cans	10%	(n=1)	1-50%	(n=3)
Tyres	5%	(n=1)	-	
Glass bottles	-		5-10%	(n=2)

3.3.2 Results - Solomon Islands

Table 4: Percentages of times different waste categories were mentioned by survey participants in the Solomon Islands

CATEGORIES	Waste seen (village, beach, work)	Waste seen (most of)	Waste generated in the house
Other	21.88%	26.32%	7.50%
Diapers	0.00%	10.53%	5.00%
Paper/Cardboard	3.13%	0.00%	5.00%
Ghost Gear	4.69%	0.00%	0.00%
Glass Bottles	0.00%	0.00%	0.00%
Organic Waste	9.38%	0.00%	30.00%
Metal Waste	0.00%	0.00%	0.00%
Tyres	0.00%	0.00%	0.00%
Tin Cans	21.88%	10.53%	20.00%
Plastic Bottles	14.06%	21.05%	10.00%
Plastic Packaging	25.00%	31.58%	22.50%

Figure 2: Percentage bar chart of different waste categories mentioned by survey participants in the Solomon Islands (excludes the 'other' category). The 'most' waste generated in the household category was not collected for Solomon Islands.

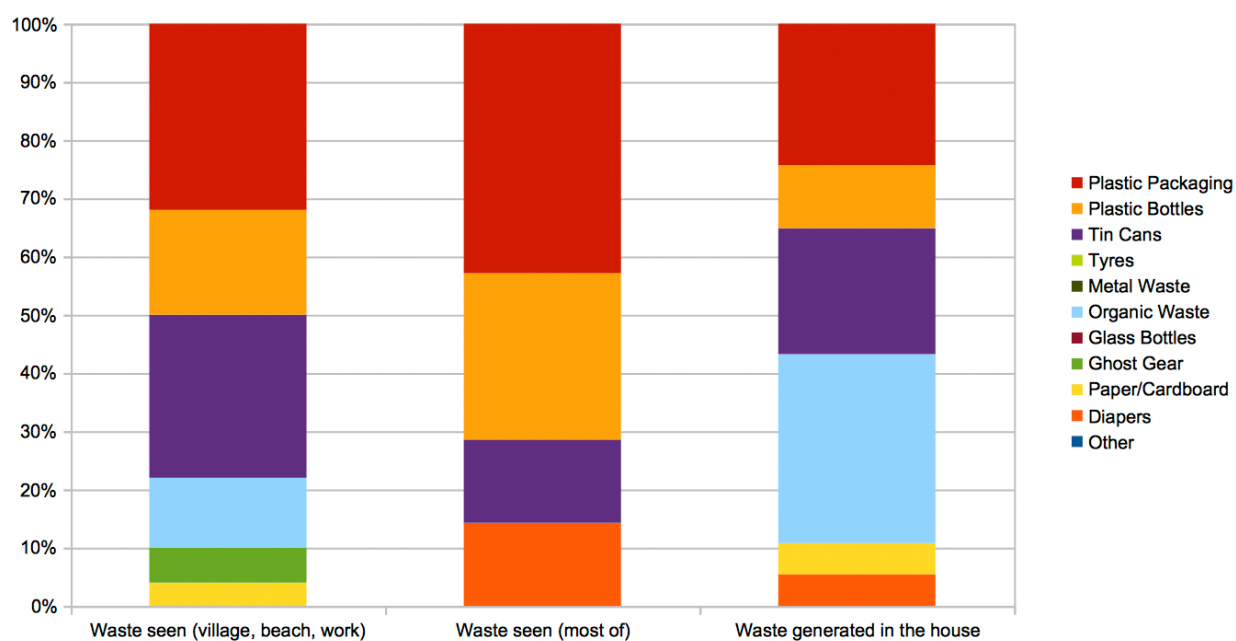


Table 5: Estimates of percentage of waste seen by survey participants in the environment and at home in the Solomon Islands. Data for percentage of waste seen in the environment were not collected.

CATEGORIES	Waste produced at home	
Diapers	5-10%	(n=2)
Organic waste	5-70%	(n=6)
Other waste	5%	(n=2)
Plastic Bottles	5-50%	(n=4)
Plastic Packaging	20-85%	(n=14)
Tin cans	3-40%	(n=12)

3.3.3 Discussion

Plastic packaging and bottles dominate perceptions of waste in the environment in Vanuatu, with the most seen (Table 2, Figure 1) being plastic packaging (38%) and plastic bottles (19%). In the home, respondents mentioned plastic packaging and bottles combined, only 20% of the time as ‘most waste produced’. However, when asked to estimate percentages, they identified plastic bottles (up to 20%) and plastic packaging (50%) as major percentages, along with tin cans (1-50%) and organic waste (Table 3). Organic waste is a significant component across all sections of the survey, mentioned as a component of household waste production 30% of the time but considered by participants to comprise 5-50% of household waste and be present in the environment as about 10% of waste.

In the Solomon Islands, plastic packaging and bottles also dominate perceptions of waste in the environment, with the most seen (Table 4, Figure 2) being plastic packaging (32%) and plastic bottles (21%), similar to quantities in Vanuatu. In Solomon Island homes, respondents mentioned plastic packaging and bottles combined, 30% of the time but they were not asked which categories were ‘most’ of their waste. However, they identified plastic bottles (up to 50%) and plastic packaging (up to 85%) of waste produced at home.

These figures were higher than the estimates in Vanuatu, particularly water bottles that were only considered up to 20% of their home-produced plastic waste in Vanuatu. Though in both countries, plastic bottles were only mentioned 10% of the time as components of household waste. Given the environmental waste estimates in both countries were similar, the home production estimates could reflect a real situation (e.g. Vanuatu residents use fewer bottles) or it could be perception bias. Or it could be that bottles in the environment are coming from external sources, or concentrating on beaches on tides.

As in Vanuatu, organic waste is a significant component across all sections of the survey, mentioned as a component of household waste production 30% of the time with about 10% present in the environment (same as the Vanuatu figure) but considered by participants to comprise up to 70% of household waste produced.

Of note, diapers were considered about 5-10% of waste produced in the home in the Solomon Islands, not dissimilar to the 10.53% of times they were mentioned as components of waste in the environment. Diapers were hardly mentioned by Vanuatu respondents. They were not mentioned at all in household waste surveys and only mentioned in 1.7% of responses for waste in the environment.

3.3.4 Conclusions

Studying people's perceptions about their own waste production by asking questions is an ideal way to trigger a conversation about their own behaviour and will lead to them thinking more critically about marine litter as a problem they can help solve.

Stakeholder surveys across both countries advocate more awareness-raising and campaigns about marine litter, which has been shown (Willis et al 2017) to be an effective component in creating a waste management culture, along with infrastructure development.

The main conclusions are:

- Plastic bottles and plastic packaging combined comprised the majority of environmental waste mentioned, at similar levels in Vanuatu (plastic packaging 38%; plastic bottles 19%); and in the Solomon Islands (plastic packaging 32%; plastic bottles 21%).
- Plastic bottles were nonetheless perceived as a far less significant component of plastic waste in the home in Vanuatu (20%) compared to the Solomon Islands (50%). Given participants mentioned plastic bottles as environmental waste in both countries similarly, it's not clear whether Vanuatu households really do use fewer plastic bottles, if it is a perception bias or if the bottles in the environment are originating from elsewhere or concentrating on beaches.
- Diapers in Vanuatu are hardly mentioned in environmental waste and most notably, not mentioned at all as a factor in household waste, which could mean they are not being considered by most residents yet as a problem.

The survey results, while coarse-scale, do provide some useful insights that will be important to compare to systematic waste audits, because perceptions/behaviour and reality can differ and this may help create more informed waste management strategies.

3.4 Best practice and capacity needs

Community driven solutions are more likely to be sustained due purely to the commitment of the community, however often once a community starts, as their knowledge and experience grows so does their need to continue to build capacity to move things forward. It was important therefore to understand any best practice approaches to sustain community driven solutions and the success factors from which to learn as well as the capacity gaps. Qualitative consultation was undertaken in Port Vila, around Efate, Honiara and Gizo, (and other provinces in Solomon Islands to allow for comparison of findings), with key stakeholders identified (refer Annex 6.4 for stakeholders consulted and raw data in Annex 6.5). The stakeholders consulted were based on the results of stakeholder mapping undertaken to identify those most knowledgeable and experienced in developing, supporting, implementing or wanting community driven solutions for marine litter and waste management.

A total of 14 community members and 33 stakeholders in Vanuatu and 33 community members and 32 stakeholders in Solomon Islands were engaged in the consultation process. Table 6 provides a summary of the number and type of stakeholders engaged.

Table 6 Stakeholder engaged in consultation

	Vanuatu	Solomon Islands
Community	<p>Consultation was undertaken with 14 community members on Efate Island Shefa Province.</p> <p>5 Erakor Village</p> <p>5 Ifira Island</p> <p>2 Erakor Bridge</p> <p>2 Freshwota1</p> <p>9 were females and 5 were men.</p>	<p>Consultation was undertaken with 33 community representatives from both rural and urban areas across the country with 13 being female, 14 being male and 6 anonymous.</p> <p>Choiseul – Sasamungga (6) and Taro (6)</p> <p>Makira – Kirakira (1), Ulawa (1)</p> <p>Malaita – Ngalisagore (1), Talakali (1), Uluga (1), Langalanga (1), Auki (3), West AreAre (1)</p> <p>Renbel - Hutuna, Rennell Is (1), Bellona (1)</p> <p>Western - Nusatuva-Kolombangara (1), Gizo (5)</p> <p>Isabel - Buala (3)</p>
Other stakeholders	<p>Consultation was undertaken with 33 stakeholder representatives from the following stakeholder groups:</p> <p>5 NGOs</p> <p>1 university</p> <p>3 Sporting clubs</p> <p>4 Private sector</p> <p>2 Government Ministries</p> <p>2 Regional Organisations</p>	<p>Consultation was undertaken with 32 stakeholder representatives from both rural and urban areas across the country with 8 being female, 18 being male and 4 anonymous. Stakeholder groups</p> <p>4 NGOs</p> <p>16 Government Ministries/Councils</p> <p>1 Donors</p> <p>4 Private</p> <p>1 Church</p> <p>1 Regional Organisation</p>

3.4.1 Results - Vanuatu

Community members

Community members consulted were from four villages (Erakor village, Erakor Bridge, Ifira Island and Freshwota1) within the area where a waste collection service, whether the yellow bin system or another one is in operation. Most indicated they tend to burn their waste, particularly biodegradable waste, and then put whatever cannot be burned into the yellow bag system.

Most of the communities engaged had engaged in clean ups at some point - either annual ones organised by NGOs and government departments, or regular ones organised by the Chiefs and community leaders. All indicated that these clean ups were good and resulted in cleaner streets and yards and the yellow bin system or equivalent did seem to make things cleaner. All had been involved in externally funded projects previously to set up recycling or sorting, but indicated these were temporary solutions providing only short term improvements, with no change to the majority of attitudes and habits being that of “not caring” and throwing small rubbish on the ground, knowing that someone else will clean it up. The key people generally driving improvements in waste management tended to be Chiefs, schools, churches and youth groups. A number of those interviewed had previously asked of government, local councils and NGOs for more bins, cages for recycling and more affordable disposal options but these had either not been provided, or insufficiently so.

Many suggestions for further improving capacity for managing or removing waste within communities related to providing communities with receptacles for recycling and storage of waste and training in what does not have to go to landfill and how to reuse those items as well as composting and instilling a sense of volunteerism in youths.

Other stakeholders

Other stakeholders consulted included INGO and local NGO, universities, big business with recycling schemes, water based tourism companies (diving, kayaking, waterfalls), sporting associations, micro-eco-businesses, and regional organisations. Most groups identified littering of single-use plastic items as a prevalent issue across the country, and a major challenge to address.

Social responsibility - Participants surveyed highlighted an ongoing challenge with communities (urban and rural) of ignorance and a lack of understanding about the impacts of plastic and what could be recycled or composted. It was generally agreed there is a lack of social responsibility for waste management because traditionally, food wrapping was biodegradable. Litter is discarded along roadsides and in the ocean and there should be more done to create awareness and campaign for disposing of waste respectfully. Nonetheless, there is a history of beach cleanups in some areas and evidence that this year’s Cefas project has had an impact e.g. on the campus of one of the Universities there is more motivation, where previously there was little awareness.

Education and awareness - Education needs to start within the schools as a part of curriculums and education materials be in Bislama for awareness raising and more relatable to people, making use of social media and community networks. Awareness-raising campaigns work to a point but then needs reinforcing and can stop once key people leave to take other jobs. Nonetheless, there is the feeling that fewer questions are being asked in forums now and that people’s overall awareness is growing. More needs to be done to educate youth as even students were generally unmotivated to recycle.

Many organisations have led clean ups with good short-term results. Most believe the exposure to litter issues through clean ups is slowly building awareness and small changes in behaviour. Most participants however, reported attitudes across Port Vila seem to have changed very little with people littering constantly.

Holistic approaches - An important point was the need to take a holistic approach to the development of solutions, considering not just solutions relating to plastic use but also in the context of family planning, poverty alleviation and improving community livelihoods etc. Community involvement is important and there are some champions doing good work,

helping identify the health and other issues. Most leaders and chiefs, however, despite wanting to be involved, are not aware enough of issues with plastic, so tend not to implement practice. Bans and legislation are also showing some signs of creating an interest and changing behaviour. This can also be effective when combined with campaigns about clean villages and environment, which is part of maintaining a tourism economy.

Sustainability and financing - Communities get engaged in short term projects but it does not lead to long-term change. Sustainability and self-financing as a part of project design is crucial but rarely considered. Community expectations increase when a project comes to their village. When it ends they get disengaged. Communities are very focused on receiving money/being paid to participate and expect hand-outs of equipment to be able to turn waste in something profitable. In this context, there is an on-going need for awareness and education within communities, using local champions to have more impact and work with the Chiefs to establish governance frameworks and solutions to address the issue at the village levels.

Management - While the plastic bag ban has been successful, primarily due to government enforcement, it has also lead to an attitude of “we will just wait for them to ban something else”. The bans do not empower communities to be proactive. Banning plastics in the short term is not addressing all the issues, so Vanuatu still needs ways to dispose of waste. Current collection systems are not readily accessible to everyone and without segregation, organic waste and plastic waste are still combined for disposal.

Burying waste rather than burning is considered optimal, though this can result in unregulated ground disposal. There is still a reluctance to stop burning, which is widespread. Separation of organic waste and composting would be best and could be used for other purposes such as gardening. Separation of waste is uncommon and greater effort is required to encourage this, with infrastructure at the back-end available to be able to recycle cost effectively. Suggestions were made to adopt the use of multiple colour bags to encourage separation as occurs in other Pacific countries. Lack of receptacles was also highlighted as a problem in common areas, with a major source of plastic pollution being cheap items (mostly food packaging) from stores who do not provide waste collection options for the public.

Government - A consistent message was the need for improved capacity, regulation and enforcement from government. When addressing litter regionally, there is the need to have different urban and rural solutions, tailored to communities. Also important was the need to be exploring “real” solutions for reuse and recycling, not just art/handicraft based solutions. Giving community business skills and financial literacy and making projects more sustainable and profitable can help motivate other groups to be involved. To get lasting change, the social problems in the poorest of villages need to be addressed first. Projects have to use champions and be self-designed and funded. For example, the Tagabe River Project in its early stages, is focusing on riverbank erosion and invasive species. Waste is an indirect factor.

Current projects - World Vision (WV) waste-focussed projects are still in the early stages but they have considered engagement issues from previous programs and included many partners and invested time finding the right people to work with to maximise the sustainability of the projects. Having champions from communities are hard to find but very helpful. The plastic bottle and metal can rebate schemes in Port Vila are mostly working with commercial businesses (e.g. hotels) as well as some schools at the moment with hopefully more community level engagement for the plastic collection with WVs help to come.

There is local production of closed cycle plastic-alternative products by Vanuablue. They are in the early stages, have had a lot of interest and they are carefully planning a sustainable model.

Overall the evidence is that outright bans and legislation can work but there is still rubbish everywhere and the message or enforcement does not reach the remote outer islands.

3.4.2 Results - Solomon Islands

Community members

Thirty-three community members were consulted in 15 communities across the country.

A majority of those interviewed from urban areas indicated they burn their biodegradable wastes, with the remainder to landfills or garbage bins. In rural communities, most disposed of their waste in mangrove areas, along the beaches, in the ocean or anywhere they found convenient. Some mentioned burning household inorganic wastes, including plastics, while others used an informal community dumpsite, some of which have grown organically and are unmanaged, creating runoff and in some cases overflowing into rivers. Many respondents were not concerned about the marine litter on beaches. There appeared to be little regard from those interviewed for the environment and many indicated the ocean to be a dumpsite that carries their waste away. When doing clean ups in their community, it was common for garbage to be thrown in the ocean. Generally, people interviewed showed little interest in managing their waste although some were aware of the impacts of plastic in the ocean. A lot of those consulted also indicated there is an ignorance about the need to manage waste.

Based on the data gathered, women's groups, a few community elders, and church leaders, apart from health workers seem to be the main groups who encourage people to put effort into clean-ups in their communities. In contrary, a vast majority of those interviewed mentioned that there is lack of enthusiasm to participate in cleaning up in their communities as no group is committed to take the lead in such initiative and they need to be paid to do it.

To reduce waste, more than 75% of those interviewed highlighted the need for education and awareness on ways to manage waste, including schools. There is a need to build knowledge about how plastic affects fish, shellfish, turtles etc and potentially humans through the food chain, to encourage people to change their behaviour. Those interviewed indicated people need to be made aware of the negative impacts of solid waste on the environment. A reoccurring theme was a strong desire for greater incentives (payments) for groups to do cleanups.

Almost all respondents revealed that there had been no externally funded projects at the community level to oversee and act on waste management issues, especially in capacity building in their local communities. Also they highlighted the need for closer collaboration with NGOs, provincial, and national government to combat waste issue in the Solomon Islands

Other stakeholders

The main challenges raised by stakeholders consulted were around the lack of awareness about litter and its impacts. There was a general view that not enough had been done to grow nationwide pride and the need for a grassroots culture of change regarding waste. Some of this has to do with the gradual movement of people into cities and the fact almost everything is now packaged in plastic and there is no effective waste collection and waste segregation for recycling. Outcomes require a collaborative effort and commitment of all government and community sectors. Communities need to take ownership of projects and all relevant stakeholders need to be committed to carry out their role.

Government - At the government level, respondents indicated a need for better and wider infrastructure and waste collection, including in regional areas, and more multilateral work between departments (e.g. tourism and environment offices) as everyone is affected. Waste management, particularly collection by government should be more accessible to everyone.

Women and youth - Ideas to solve the challenges included skills transfer and setting up leadership exchanges (e.g. in schools, church groups and communities), the engagement of women and youth groups, involving the right people (e.g. trusted local ambassadors), and fostering proper commitment and monitoring from responsible organisations (otherwise the impetus can run out). However, it was emphasised this has to be done in accordance with local cultural sensitivities (even in urban areas, different sectors need to be approached in different ways) and local dialects. For example, for community leaders, this is a new challenge and some have put in place their own rules for people residing along the Mataniko River.

Being home managers in particular, women tend to set the rules at home and children follow practice. The women's group Plastic Wise give out brochures and provide training to women in how to manage waste. They go to churches and teach them how to recycle plastic as products for sale and to earn an income. They also promote organic waste composting. Many respondents indicated there is a need for more knowledge about how waste can be more effectively used, as well as ways to utilise waste to energy or other forms of monetisation of waste.

Formal education - There was a general call for more campaigns and incentives (similar to the Cefas CLiP project), to keep reigniting the cause and that communities were generally supportive of efforts to clean up and manage waste. It was recommended that the Ministry of Education should include elements in their curriculum at all levels to discuss issues and solutions.

Appropriate management - Digging waste pits was a theme at both community and household level [but this would not seem to be a reliable solution given the pollution issues that may arise] but there was also mention of illegal dumps being created on account of there not being enough accessible and government-approved rubbish collection or disposal points, particularly in rural areas.

Similarly, paying into recycling schemes can be frowned upon, as there is a lack of trust around the transparency of such projects. For example, the Panatina community waste segregation pilot project apparently stopped being effective once the financial incentives dried up.

Long term commitment and sustainability - The Environmental Health Division created the Healthy Village Setting Program within the Makira Ulawa Provincial Government (MUPG). This

worked in the short term, was planned well and involved effective communication and motivation amongst stakeholders. Longer-term it was only voluntary and has not persisted. Scalability was also mentioned as a constraint.

As for project continuity, it was noted that “99% of projects initiated in communities tend to cease after the project timeframe and lesser involvement by project implementer”. Almost every respondent stated that the only successful projects were ones where community has some ownership in the creation, implementation and outcomes.

Communication - Often awareness and dissemination of information only reaches a minority of people or for too short a period to reinforce the need, which can only really create an outcome if there is also consistent and reliable waste collection.

Continuous reinforcement and support is needed, involving key parts of the community, especially schools and women’s groups (the latter tending to more quickly grasp the significance in terms of health as well).

3.4.3 Discussion

Community responses from Vanuatu did not seem as structured or focused on solutions as in the Solomon Islands. Despite proactive questioning, the focus was more on problems. Fewer suggestions were made regarding successes, what could be done and training needs. This may indicate a difference in how advanced the country is overall in addressing waste management or biases could be at play.

Overall, responses - particularly in the Solomon Islands - validate understanding of both the challenges and solutions for addressing waste management. Where respondents in the Solomon Islands had substantial experience of project implementation, they were focused on long-term financial sustainability, exit strategies and scaling of projects. These are all essential key factors identified in our literature review (Refer Section 2.2).

For project implementation, it was agreed this needed to be community-led and that many of the failures of past projects were due to lack of ownership in the outcomes. Communities that are engaged early and part of the solution tend to be more involved and committed long-term. It was also widely considered, in both Solomon Islands and Vanuatu that more needs to be done to engage and teach upcoming generations.

Overall there was a sense of optimism in both countries that progress was being made and that campaigns to raise awareness have begun to make a difference and should continue, so the message can be reinforced to build on progress to date.

3.4.4 Conclusion

Key best practice approaches and success factors highlighted from the consultation included having:

- People taking ownership of the project (community commitment and cooperation);
- Appropriate distribution of responsibilities and project benefits to in the community;
- Showing tangibility of project benefits within a short timeframe;
- Setting up good governance structures and committees to manage long-term after project has ended;
- A sense of ownership;
- Setting realistic expectations. Simple short processes and logistics;

- Cooperation and inclusiveness in communities;
- Engaging with key community leaders who have power to make decisions;
- Continuous community engagement - building the right attitude;
- Starting with children in school;
- Involving women and other minority groups and youth;
- Providing people in communities with the right technical training. Utilising learning exchanges (local, regional and overseas);
- Realistic and sustainable finance. Not relying entirely on public funding and services;
- Training before and after the project to ensure communities can continue the project;
- Incentives provided that are not just monetary but also other rewards which can drive communities to keep working on a project. Avoiding cash handouts for engaging in activities;
- Working in partnership with government authorities, key stakeholders and community people including churches, community leaders, all business sectors, private citizens and government. NGO's partnering with Ward committees and Members of the Provincial Assembly;
- Consistent support from government (despite change of governments);
- Empowerment and enforcement of legislation;
- Proper support for garbage workers (financial and logistical);
- Waste bins and consistency in garbage collection by the authorities; and
- Reducing import of plastic packaged products.

The key training and capacity building priorities to enhance community driven solutions identified included:

- Disseminating information to all stakeholders including the local communities on best success cases and stories of best practice;
- Regular awareness raising and education to build knowledge and capacity;
- Providing training on:
 - how to handle different forms of wastes and their properties and its impact on the environment and human health;
 - Cleanest ways for households to dispose of rubbish if recycling is not available;
 - Best technologies available e.g. incinerators;
 - Data collection and waste monitoring;
 - Utilisation of plastic for other benefits;
 - How to recycle;
 - new technologies and innovations for using or replacing plastics;
- Training of community trainers;
- Support to build a proper strategic plan for waste management;

- Capacity building for government officers on developing policies;
- A labour force for locally made technologies, reducing demand on imported machinery and expertise; and
- Knowledge sharing and learning exchanges from organisations who know more about the issues of plastic waste.

3.5 Action planning and focus groups

During the consultation, several priority areas were identified where requests for support were made from the community and government for action planning to help strengthen or build the strategy for enhancing community driven solutions in Solomon Islands and Vanuatu. The action planning or strategic discussions were all undertaken with owners to take forward the action plans or priority strategies beyond the CEFAS project.

With the focus at the national level by CEFAS on developing a National Marine Litter Action Plan, the action planning done at the community level sought to align with and deliver on national priorities.

3.5.1 Solomon Islands

Mataniko River

The focus of the action plan in Solomon Islands was on developing the first draft of a *Mataniko River Solid Waste Management Action Plan – working together to clean up our river*. This was at the specific request of the MECDM and Ridge2Reef program officers to support the programs of work they are both involved with to manage waste and clean up the river. It was also to address immediate needs highlighted by community members along the river with respect to how to better work together. The list of stakeholders at the workshop is in Annex 6.3 and the action plan is provided in Annex 6.6. The action plan identifies key strategies to encourage a collaborative approach for managing and removing solid waste in the Mataniko River in Honiara. It seeks to provide direction for river communities wanting to work together to clean up and manage waste along the River. It also provides a framework for government and NGO stakeholders for providing support and resources to address capacity needs.

Following consultation with key stakeholders involved in the MECDM and Ridge2Reef programs, a workshop was held with 24 stakeholders representing government, community and other stakeholders involved in the two key programs on 29 January 2019 in Honiara. The objectives of the workshop were to: provide participants with an understanding of the various programs and their focus; identify the key barriers that reduce the effectiveness of stakeholders working together to ensure a cleaner and healthier Mataniko River; identify priority solutions to overcome the barriers; and the short term and medium term actions and resources required to implement those solutions. The results of this workshop formed the basis for the action plan, which following approval by CEFAS has been forwarded to the MECDM who will be the owners of the plan.

Western Province Focus Group

While action planning had been proposed for Gizo/Munda, due to time constraints and so as to allow TierraMar to present at the Solomon Islands Policy Workshop, it was agreed with CEFAS to adjust the approach to a focus group instead. Previously the action-planning workshop had been proposed to be the same days as the Policy Workshop.

A focus group was held in Gizo on 30 January 2019 with key people driving waste management initiatives across Western Province (refer Annex 6.3 for list of participants), exploring the following questions (with a summary of the discussion included):

What is working/not working (barriers) at the community level regarding waste management now? Why?

- Passionate, committed, proud and organized community – Western Province Network for a Sustainable Environment (WPNSE)
- Western Province is proposing a plastic bag ban.
- Many examples of good things happening across Western Province where the community is driving change:
 - Ongoing awareness and clean up campaigns – 3Rs
 - Village pride competitions with ongoing monitoring
 - Plasticwise Gizo – starting with the home and engaging mothers, youth and children and through the CLiP program, now rolling out a Train-the-Trainer program across Western Province and into Isabel Province.
 - Sombo Island - the first organically certified island in the Solomon Islands
 - Logha Island – eliminating plastic – aiming for an island in harmony with the local population and the environment
 - Aluminium can recycling
 - Love our lagoon and Ke Ke Hei Youth Group outreach and clean ups being scaled through the CLiP program
 - Self managed landfill site (SolTuna)
- The Provincial Government has a focus on tourism, with environment taking a lessor priority. There is a clear lack of understanding within the Provincial Government of the links between tourism and environment.
- The biggest challenge continues to be people's attitudes
- Most activities to date have been event based – eg 1 day activities that does not create a sense of sustainability.
- Composting is not practical – small spaces and people do not have the time.
- There is no monitoring or segregation of waste at the landfill sites and no recycling relating to organics, e-waste, metals or batteries

Short and medium term priorities

- The white paper for the plastic bag ban has been written however a fulltime lawyer is needed to work on the ordinance.
- Engage the youth, using Friends of the City
- Establishment of a learning centre building where Plasticwise ladies can sell their reused waste products and use it as an education and learning facility.
- Segregation/ recycling facilities at landfill sites for Gizo and Munda so that education to the public makes sense

- A secretariat position for the WPNSE.
- Garbage collection service for Munda and surrounding villages
- Engaging businesses in Munda and Gizo

Knowledge and capacity gaps and resource needs

- More education, awareness and knowledge – exploring innovative ways and practice solutions to manage waste.
- Promotion of segregation at home
- Signboards and posters, education materials for adults and schools at all levels so as to get messages out there across the province
- More equipment for ghost net art activities
- A small bailing machine in Munda for aluminium cans
- Access to the WasteAid UK training. Note this was arranged by TierraMar after seeking permission from CEFAS and delivered by WasteAid UK in mid February under the CLiP project. This had not been a proposed activity by WasteAid under their CEFAS contract.

There are strong drivers for establishing Gizo/ Munda to be a learning site for Solomon Islands and other small island developing nations in the Pacific on community driven waste management solutions, including:

- Tourism
- Family health
- Strong leadership and champions
- Engaged local council (Gizo)
- A need to engage youth and business
- Empowered women and men with vision

From discussions with the focus group participants it was agreed that this would be a great outcome for them and would help to highlight and promote their efforts to date as well as provide a way to continue to support the implementation of their ongoing vision for their communities. Subsequent discussions have been held with SPREP and TierraMar is committed to working with the WPNSE and SPREP to develop the concept further and implement it.

3.5.2 Vanuatu

A late change occurred to refocus the action planning for Vanuatu from exploring community driven solutions for communities around Port Vila to developing community models for managing waste near and far from landfill sites. This meant that the consultation undertaken was not focused specifically on the community models etc, however it is still relevant and provides useful background information. This change was at the request of Toney Tevi, Head of Maritime and Oceans Affairs Division, Ministry of Foreign Affairs at the Vanuatu Policy Workshop in mid February.

A number of communities in Vanuatu are seeking solutions to manage locally generated solid waste and reduce marine litter. These communities have developed their own waste management solutions to suit their location, situation and conditions. The approaches

adopted provide potentially useful models for other communities across the country to implement. The Government of Vanuatu requested an action plan to support the rollout of a number of suitable models to assist communities to address solid waste management across Vanuatu, under the National Waste Management and Pollution Control Strategy and Implementation Plan 2016-2020. The focus of the action plan therefore, undertaken in Vanuatu was on developing suitable models for community driven solutions for waste management that could be rolled out across Efate and potentially to other islands across Vanuatu.

In mid January, it was identified that two other consultants had been engaged by CEFAS to also conduct activities relating to the best practice project. One of them, WasteAid UK were engaged to also work with communities. To ensure maximisation of outcomes and reduce risks of overlap, TierraMar and WasteAid held a number of discussions to align activities and ensure complementarity. It was important to ensure all activities undertaken would add value to the priorities indicated to us by the governments in both countries for action planning. To that end, it was agreed that they would also focus on action planning in Vanuatu around developing community models for waste management focused around Santo and we would focus on Efate.

A workshop was held on 14 February 2019 with stakeholders from three communities Emua, Erakor Bridge and Pango, as well as other stakeholder groups. This workshop sought to capture learnings from leading communities to develop an action plan for rolling out suitable models for community driven waste management across Vanuatu, with a focus on Efate communities. In particular, this workshop sought to develop two models for managing waste by communities: for those communities close to a landfill site; and for those communities far from a landfill site.

The objectives of the workshop were to: 1) Understand the context for community driven waste management in Efate; 2) Understand how selected communities are managing their solid waste to reduce marine litter; 3) Develop suitable models for community driven waste management solutions in Efate; and 4) Identify actions and resources required to potentially, roll out these models across the country. The results of the workshop formed the basis of draft Action Plan found in Annex 6.7 and provided a first step in developing community driven models for waste management in Vanuatu, both close to and far away from a landfill site.

3.6 Best practice case studies

During the consultations with community and other stakeholders in Vanuatu and Solomon Islands, a number of best practice examples were identified that collectively provide useful insight into what makes a successful community driven solution. Identifying best practice considered whether the activity was community driven, had buy-in and support from the community through providing real benefit, was well governed, had access to technical support and had the potential to be self funding and therefore sustainable.

An analysis of all the best practice examples identified during the course of the project as well as through the various activities conducted revealed a number of similarities or “must haves” needed in community waste management initiatives for it to be considered “best practice”:

- Commitment and ownership within communities, acknowledging “Toti emi business blo Yumi everi wan – our waste is our responsibility”
- Solutions are driven and wanted by the community

- A love for community as the first priority/driver, not money
- An effective custom governance system
- Transparency and patience
- Prior to taking action, there is a good understanding of a community – it's demographics and culture, priorities, drivers, challenges
- Tailored solutions that empower and build capacity to find practical, locally-determined, economically viable and sustainable solutions that address community priorities
- Transparency and patience
- Show the benefits, “what’s in it for me” and an approach centred around overcoming barriers to sustained take-up within communities
- Consideration of sustainable financing and long term actions as a part of the planning and design- Recognition that single actions do not make change
- Capacity building in financial literacy, governance and business planning and practices to support profitable and self-sustaining ventures
- Access to technical support, training and learning exchanges
- Engagement with those active in the community - women, youth, children

The collection of best practice case studies is being combined into a toolkit type summary document targeted at donors and those wishing to engage in and support waste management activities at the community level, potentially anywhere, but most importantly within the two focus countries (refer Annex 6.8). It will provide a number of important considerations and guidance to influence the design of a funding program, as well as disseminate lessons learned.

Due to the time constraints with the project, completion and rollout of the toolkit has not been possible, however will be provided to CEFAS to use in other CLiP regions upon completion.

3.7 Demonstration and pilot projects

Two types of demonstration projects, focused on supporting and helping to scale community driven initiatives were undertaken in each country, as follows:

1) Community based demonstration projects in relation to waste management and/or marine litter demonstrated through the *Plasticwise Gizo train the trainer to scale efforts across Solomon Islands*.

2) Community litter public awareness campaigns and clean ups demonstrated through:

- *Mataniko River Clean Up, Honiara, Solomon Islands;*
- *Love our Lagoon, Munda Western Province, Solomon Islands;*
- *PKK - Clean it, count it, keep it clean campaign, Port Vila, Vanuatu;*
- *Iririki Island Cyclone debris clean up, Vanuatu; and*
- *Campaign for island traders, Vanuatu.*

Project Reports for each project are found in Annex 6.9 and discussed below.

Through the Contest CEFAS project that TierraMar delivered, 3 Ghostnet Art workshops were also conducted to provide a demonstration with women and youth in both countries to develop high quality art products from ghost nets and marine litter, build their business skills and help them access market opportunities to sell to tourists locally as well as internationally. Please refer to the Contest Final Report for details on these projects. The training provided by these workshops provided new skills and created opportunity for artists to supplement their income with marine litter based art products.

All community projects were identified during the course of preliminary consultation in the preparation of this project as providing opportunity to create lasting change at scale with some assistance. All had strong track records of delivering outcomes at a small scale. They also demonstrated what is possible when communities take charge of addressing a problem without waiting for funding or projects to come into their area. This proactiveness demonstrated strong leadership and commitment and a willingness to develop ways to engage their community to work together. It was for these reasons that they were selected for CLiP funding support so that scaling could begin and lessons learned shared with others embarking on a similar journey. They also provided useful examples of best practice (refer Annex 6.10), with the findings to be included within the Best Practice Toolkit to be prepared.

3.7.1 Solomon Islands community projects

Plasticwise Gizo provides an effective demonstration of the potential that exists within communities, particularly by women to drive change at scale. The Plasticwise group, established in May 2017 is a “club” with over 100 members (mostly women) that focuses on driving change with respect to waste management and marine litter in Western Province. The group undertakes street cleanups, school projects on waste disposal, radio programs on proper waste separation, compost- and plastics-handicraft workshops and markets, where the creative recycling products are sold. This group has grown exponentially over the last 2 years, operating with very little funding and relying on community fundraising events. Their target audience is mothers as it believes it is in the home that waste management starts to ensure healthy families. The demand for the group to expand and scale their activities has been growing. Through the CLiP program, the group has been able to start their journey of scaling through the development of a train the trainer program that is being rolled out to women in other communities across Western Province and Isabel Province. This program has the potential to transform communities, as is being seen within Gizo through the level of awareness and participation in waste management activities underway. Unfortunately, the timeframe for this project was too short to see the outcomes within the communities who participated in the training. This work is ongoing over the next 12 months and the group will be monitoring performance and reporting back to TierraMar as progress is made. Key lessons learned, as reported by the Plasticwise group included:

- Women always will be concerned for anything that impacts on the health of their family. Understanding how looking after the environment will also protect their family’s health instils a sense of duty within the women.
- Women in church groups see living in a clean home as a holy practice and part of their Christian belief.
- Women have a strong voice in the home to lead their children and share with their husband about how to make a better change in the home. While it can take time for the change to come into fruition, they will not give up until it becomes normal behaviour.

The Mataniko River and Love our Lagoon projects demonstrated community driven solutions both of which have been volunteer programs to instil pride and ownership within communities and a responsibility to look after that which is most precious to them, their environment. The Mataniko River clean up demonstrated the first implementation activity within the Action Plan developed for the Mataniko River focused on communities along with the river working together (refer Section 2.5). Working with Friends of the City, this project has instilled great pride and enthusiasm within the communities along with Mataniko River that were engaged. It provided the first opportunity for a scaled event to clean up the River where a number of communities from upstream as well as at the river mouth participated. Love our Lagoon is an example of a small isolated outer island community taking charge of the situation where there is on local council support to manage waste. The Love our Lagoon Committee, overseeing the program brings strong leadership and commitment to clean up and manage waste in their area, and drive transformation within the communities. Starting off small, with a small clean up event at World Oceans Day in 2017, through the CLiP program Love our Lagoon has been able to implement their scaling activities to work with schools, youth and villages to drive change. For the first time they have good data about the make up of waste in their community that provides guidance for management into the future. Both projects have provided effective awareness raising and opportunity for community empowerment, as well as useful data on the types of litter found and in what quantities that will assist in tracking change over time as the activities within both communities come into play.

Key lessons learned reported by the project teams included:

- Engaging children and young adults (youth) can be a powerful means of both getting data on the state of a resource/issue as well as being a useful awareness vehicle
- When organising activities (i.e awareness sessions or clean-up drives) it is helpful if refreshments can be provided.
- Proper advertising of the upcoming activities is important to ensure the message gets out.
- It is important to have a part-time coordinator who is paid a salary to drive this project forward.

3.7.2 Vanuatu community projects

The three projects, as outlined above demonstrated clean-up and awareness raising of three different sources of marine litter. The PKK campaign targeted the land-based litter, Ifiria Point the sea-based litter and the Iririki clean-up, litter as a result of a natural disaster.

The PKK and Ifira Point demonstrations successfully engaged the communities, all of whom were not used to collecting data, but found it beneficial. Generally we found that data collection helps to identify problem areas and these activities appear to have increased awareness and generated information that can be useful for community and national decisions around waste management.

These projects were an up scaling of ongoing activities in Vanuatu, but the timeframe for them was too short to establish if they led to changes in community behaviour or national policy.

Littering is an ongoing issue in Vanuatu, and we have identified needs for:

- increased awareness, especially around the environmental and health detriments resulting from plastic pollution;
- funding for activities to continue; and
- litter problems following disasters to be addressed more quickly and receive appropriate financial assistance.

Overall the community demonstration projects have achieved the aim of up-scaling removal and awareness activities in Port Vila and generated useful data to inform decision making around litter at the community level as well as feeding into the body of evidence for national level policy.

4 Conclusion

For marine litter and waste to be managed successfully in Pacific island nations like Vanuatu and Solomon Islands proactive community engagement is fundamental to national solutions.

Through the work undertaken by TierraMar and its onground team, this project successfully delivered a multifaceted approach to:

- identify key factors that enable successful and best practice community driven initiatives, examples of best practice; and
- empower and support the scaling of a number of demonstration projects for community driven waste management and removal activities.
- Identify key lessons learned as well as training and capacity needs.

A number of key factors were continually reinforced through all activities undertaken during the project, as well as from the lessons learned in the community demonstration projects as being critical success factors for any community driven solution towards waste management and marine litter, regardless of the country. These included:

- Commitment and ownership within communities, acknowledging *“Toti emi business blo Yumi everi wan – our waste is our responsibility”*
- Solutions are driven and wanted by the community
- A love for community as the first priority/driver, not money
- An effective custom governance system
- Transparency and patience
- Prior to taking action, there is a good understanding of a community – it’s demographics and culture, priorities, drivers, challenges
- Tailored solutions that empower and build capacity to find practical, locally-determined, economically viable and sustainable solutions that address community priorities
- Transparency and patience
- Show the benefits, “what’s in it for me” and an approach centred around overcoming barriers to sustained take-up within communities
- Consideration of sustainable financing and long term actions as a part of the planning and design- Recognition that single actions do not make change
- Capacity building in financial literacy, governance and business planning and practices to support profitable and self-sustaining ventures
- Access to technical support, training and learning exchanges

Engagement with those active in the community - women, youth, children

It is clear that understanding community perceptions and barriers as well as community priorities is a first step towards changing behaviours and attitudes. Also important is investing in addressing community priorities, building capacity in soft skills like financial and business skills and where donors are involved, having clear exist strategies that will promote self sustaining programs within communities. Short term projects that “parachute in and out” do not provide strong outcomes and do not empower or build capacity for long term adoption and impact within communities to manage waste and marine litter.

TierraMar and its onground partners have committed to continue working with those communities and projects we supported through the CLiP program to build capacity and address training needs to ensure continued scaling and effectiveness.

A number of capacity building and training needs were identified and reinforced throughout the various activities of the project as being:

- Disseminating information to all stakeholders including the local communities on best success cases and stories of best practice;
- Regular awareness raising and education to build knowledge and capacity, including signboards and posters, education materials for adults and schools at all levels so as to get messages out there across provinces.
- Providing training on:
 - How to handle different forms of wastes and their properties and its impact on the environment and human health;
 - Cleanest ways for households to dispose of rubbish if recycling is not available;
 - Exploring innovative ways and practice solutions to manage waste.
 - Best technologies available e.g. incinerators;
 - Data collection and waste monitoring;
 - Utilisation of plastic for other benefits, including new technologies and innovations for using or replacing plastics; and
 - How to recycle.
- Training of community trainers;
- Support to build a proper strategic plan at the community level for waste management;
- Capacity building for government officers on developing policies;
- A labour force for locally made technologies, reducing demand on imported machinery and expertise; and
- Knowledge sharing and learning exchanges from organisations who know more about the issues of plastic waste.

The Financial Report for this project is found in Annex 6.10.

4.1 Recommendations

1. Learning Centre for small island community driven waste management - Consideration should be given to establishing the Gizo/Munda area in Western Province, Solomon Islands as a learning site small island developing nations in the Pacific on community driven waste management solutions. The communities in this area have shown strong leadership and champions, have an engaged local council, are engaging youth and business as well as have very empowered women and men with vision to proactively drive change and it is working. The key drivers – tourism, family health and wellbeing and environmental protection are relevant anywhere across the Pacific and the challenges and barriers faced here reflect those of all small islands and their communities face in dealing with marine litter and waste. Local stakeholders believe this would be a great outcome for them and would help to highlight and

promote their efforts to date as well as provide a way to continue to support the implementation of their ongoing vision for their communities. It would also provide a unique opportunity for Solomon Islands to showcase the good work that has happened here to the region, but more importantly use it as a catalyst to move the rest of the country forward with respect to waste management and marine litter.

Subsequent discussions have been held between SPREP and TierraMar about this and TierraMar has committed to working with the Western Province Network for a Sustainable Environment and SPREP to develop the concept further and implement it.

2. Strengthening community capacity – Consideration should be given by governments, donors and NGOs in Solomon Islands and Vanuatu to addressing priority capacity building and training needs identified above.

3. CLiP engagement with communities - For future CLiP programs in other regions where community engagement is sought, consideration should be given to provide more time to allow communities to participate in activities and enact their projects. This will enhance the outcomes and effectiveness of the investment from the program into the target countries.

Any further CLiP investment into the Pacific should give consideration to supporting the rollout of community driven initiatives and empowering those groups to build capacity and scale for effect.

5 References

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6 Annexes

6.1 Progress against Workplan

Activity Description	Timing	Milestones	Status
Phase 1 - Planning			
1. Undertake a stakeholder analysis to map relevant actors and providers.	Early- Mid December	Stakeholder mapping completed	Completed with results cumulating into the consultation results provided in Sections 2.3 and 2.4.
2. Produce a literature review of the current situation	Mid January	Literature review completed	Completed and provided in Section 2.2
3. Develop a comprehensive and full schedule of interviews and discussions to maximise the value of the fieldwork in collaboration with the customer	Week of 10 December December /January for interviews to be held.	Consultation list developed. Interviews completed by 21 January.	Completed and stakeholders consulted provided in Annex 6.3
4. Setup qualitative and quantitative data system in collaboration with the customer and third parties to take forward and follow progress of task(s) e.g. composition and volumes of waste streams, removal approaches and effectiveness, attitudes and uptake	Mid December, based on information provided by Umberto.	System in place, noting that the other consultants have already set this up for industry and household level waste.	Completed. Findings summarised in Section 2.3 and 2.4 and raw data provided in Annex 6.4
5. Take an inclusive approach, be aware of sensitivities, consider existing legislative frameworks and (in)formal approaches, including those delivered by NGOs, government, the private and public sector.	N/A	Noted. NGOs undertaking consultation with communities and onground stakeholder groups and are aware of sensitivities	Noted and done as a part of activity 3

Activity Description	Timing	Milestones	Status
Phase 2 - Implementation			
6. Finalise a report identifying key players for each task and their inter-relationships, existing options, approaches and recommendations in advance of a participatory planning workshop	21 – 25 January	Draft report summarising findings from consultation prepared by 25 January	<p>Not completed as per activity as not required with approach taken. However summary of key findings from the consultation was prepared and is found in Sections 2.3 and 2.4.</p> <p>Approach taken was modified in consultation with CEFAS. During extensive consultation undertaken with identified stakeholders it became clear that it would be more effective to focus action planning on immediate needs of the community or government to add value to existing programs of work. Action planning requested by the government and community did not require a background report as outlined in the Activity 6 to be prepared. The findings from the consultation did however inform our planning for the workshops.</p>
7. Prioritise activities in agreement with Customer prior to workshop. Workshops will focus on developing an action plan for Community Driven Solutions for Marine Litter in Vila/ Honiara/Gizo.	Mid January	Draft agenda for workshops agreed	<p>Completed. As per comments for Activity 6 above.</p> <p>Due to conflicting priorities as a result of the change of date for the Solomon Islands Policy workshop, action planning was not undertaken in Gizo. Rather a ½ day focus group was conducted to identify community priorities, their plans, capacity gaps and needs and explore</p>

Activity Description	Timing	Milestones	Status
			opportunities for next steps.
8) Setup a participatory planning workshop to develop a draft action plan.	Vanuatu week of 11 February. Solomon Islands Week of 28 January (Honiara 28-29, Gizo 30/1-1/2)	Workshops completed	Completed. Action Plans provided in Section 2.5 and Annex 6.5 and 6.6. Summary of outcomes from Focus Group provided in Section 2.5.
9) Identify key needs for each area in relation to training and capacity building that would enable local partners to take forward actions after the projects lifetime	To be undertaken during the workshop	Key capacity and training needs identified.	Completed. Key findings and recommendations are provided in Sections 2.3 and 2.4 as well as in Annex 6.5 and 6.6 within Action Plans
10) Evaluate existing pilot and full-scale activities, and scale up where appropriate	To be undertaken during the workshop	Summaries provided at workshops	Part completed with modification. With the changes to the action planning workshops summaries were not required at workshops. Existing activities were assessed as a part of the consultation process.
11) Develop and disseminate case studies of best practices and training	Being collected during consultation – by 21 January.	Disseminated during workshops and as case studies to the action plans.	Completed. Best practice case studies identified have been prepared and are found in Annex 6.7 and discussed in Section 2.4. Those relevant for the workshops were invited to present at workshops.
12) Setup demonstration and pilot projects with a range of simple, low-cost or no-cost technologies/processes to prevent plastic leaking into the environment or to clean up polluted areas	Contracts issued December through mid January.	Project reports provided prior to CLiP conference	Completed. Findings summarised in Section 2.5 and project reports provided in Annex 6.8.

Activity Description	Timing	Milestones	Status
Phase 3 - Reporting			
13) Raise awareness during the project lifetime	Project life	Noted.	Completed. Presentations provided at both policy workshops and the CLiP conference.
Policy workshops – provide updates where possible:			Key findings are summarised in this report.
Solomon Islands National Policy Workshop: 31/1 – 1/2 2019			
Vanuatu National Policy Workshop: 22- 23rd Jan 2019			

A midway report was not provided to CEFAS. This was as a result of misunderstanding on the part of TierraMar who thought this referred to the draft final report. It was agreed with Peter Kohler, CEFAS that this report would not be required given the tight timing of the project.

6.2 Literature Review

Key Factors for Successful community driven solutions in small island nations

Context

Marine litter is a growing problem in the Pacific. Marine litter is defined as any solid material that has been deliberately discarded or unintentionally blown or washed into the ocean, with over 90% of it being plastics originating from land and sea-based sources (SPREP 2018, UNEP, 2009; Ospar). Globally, around 6.4 million tonnes of marine litter enters the oceans each year – that is about 8 million items every day (UNEP 2005; McIlgorm, A., et al. 2008). It threatens human health and impacts on marine wildlife. Entanglement or ingestion by wildlife will often be fatal. Ingestion of micro-plastics by fish may also be a pathway for transport of harmful chemicals into the food web and eventually humans. At the heart of the issue is the need for behavioural change and improvements to waste management to prevent plastic pollution from entering waterways. Marine litter is everyone's responsibility to reduce, reuse and recycle.

The Pacific Ocean is synonymous with some of the world's worst marine plastic conditions. The well-documented Pacific Subtropical Gyre is an accumulation zone for plastic much of which originates from land-based sources, including major sources being China and Indonesia (Jambeck *et al.* 2015).

Distribution of pollution is determined by the same factors that drive ecosystems. Processes that traditionally concentrated nutrients, wildlife and nurtured human settlement - that drive critical biodiversity life-support functions - overlap with plastic distribution. This means plastic often settles in some of the most naturally critical areas for biodiversity and human populations.

The volume of plastic pollution reaching any destination is determined by local source (e.g. major cities), topography and hydrology (rivers, creeks and local ocean currents) and climate (rainfall and wind direction). Even relatively small volumes can have significant impacts if they accumulate in the wrong places that, for example, are critical habitats for protected, threatened and endangered species such as turtles and marine mammals highly susceptible to entanglement, ingestion of marine litter.

There is increasing evidence plastic pollution already directly and indirectly affects human health (Sheavly & Register, 2007), significantly increasing the risk to coral reefs of disease (Lamb *et al* 2018), impacting on the resilience of these sensitive ecosystems in terms of climate change. These impacts could quickly lead to food security problems for Pacific island nations, dependent on marine resources.

Addressing plastic pollution reaching or emanating from Pacific Island countries is an urgent need but a complex one requiring cost effective and generally in-country solutions for removal (of existing plastic), reduction (of plastic dependency) and management of remaining waste from small islands, many with minimal infrastructure, capacity and resources.

A first step is to understand the priorities of communities in dealing with waste and marine litter challenges and then empower and build their capacity to find practical, locally determined and economically viable and sustainable solutions. Continual "parachuting in" of donors with donor driven agendas and projects does little towards finding lasting and sustainable solutions that provide self-determination to communities to make decisions and implement workable solutions that addresses their priorities, regardless of the issue.

The biggest challenge is therefore, to create a sustainable interest and economy in overall waste management in Pacific Island countries that isn't dependent on long-term aid or philanthropy.

There are hundreds of studies and projects that analyse the extent of the problem and its effects but relatively few projects that publish successful approaches and processes that have lead to sustainable community driven waste management solutions. Recently, there have been some reviews e.g. Willis *et al.* (2017) done that have

shed light on high impact community approaches in places such as Australia (where efforts have been very successful in the past). There is very little literature on successful approaches however for small island communities to date.

This literature review focuses on best practice approaches to sustain community driven solutions at scale in small island nations. Exit strategies where projects are NGO based, sustainable financing and scaling are three most critical components in any community project, if it is to have significant ongoing benefit.

Introduction

Exit strategies, sustainable finance and scaling are the three most critical components in any project, because they underpin long-term viability and growth. Project funding and time will always be limited. Donors and NGOs must use the money like any startup and focus on longer-term initiatives, otherwise projects risk becoming little more than studies into potential. To address marine litter in the Pacific requires practical and immediate action that can only be achieved by directing funds to projects that last and can be scaled widely.

This literature review provides a basis for identifying opportunities to support scaling and a focus on sustainability of community driven solutions. Donors and recipients need to understand their investment will work better if these three elements are meticulously planned and underpin projects from the very start:

Exit Strategies are essential to ensuring projects succeed and have outcomes long after startup. Planning an exit must begin at start of the project because it's necessary to know who is going to take it over. It's necessary to plan an agreeable and workable handover strategy. This means the parties' involvement from the start, to seek their input (ensuring the approach is consistent with their processes and governance), train staff and having enough time to allocate money and resources before the project ends.

Sustainable finance underpins long-term project viability because key personnel need to be paid, to manage and maintain aspects of the project long-term. Connecting the community with markets and private sector creates economic improvement that can be sustained but this requires robust business plans and training (including robust exit Strategies and identification of barriers to Scaling). Increased income is often the key driver for engagement in the first place but a livelihood, linked to sustainable practice, is what creates the outcomes and ensures project longevity.

Scaling is essential because otherwise projects are just pilots. Pilot programs are okay as long as they are used to identify how to scale and make appropriate follow-up recommendations. To scale an initiative means understanding demographics, commodities, existing markets, potential markets and community priorities. It may require budget allocation, strong inter-governmental agency support, technical assistance and the training of assistants, community business champions, local government extension officers and the development of learning centres and exchange visits.

There are reams of scientific studies and conservation projects that report on the existence of plastic, its quantity, or attempts to involve community in its clean up. There are comparatively few that measurably report short or long-term success, reveal the process behind exit strategies or the potential for roll out at scale. The principles described above are a familiar part of any business strategy. See WWF (2017) for more information.

As Pasang (2007) states:

"... numerous problems and constraints that hinder the application of more sustainable MSW [Municipal Solid Waste] management ... are not so much related to financial and technical aspects, but rather to vision, commitment and policy initiatives such as long-term planning, revenue collection, sharing disposal facilities, level of stockholder participation, and transparency in decision-making.

In 1996, the *Urban Waste Experience Program* (UWEP) produced a thorough and comprehensive literature review (Anschütz, 1996) identifying five problem categories and sub-categories for community-led waste

management (see Box 1). Many of these factors can be addressed by focusing on the principles of exit strategies, sustainable finance and scaling.

Box 1: Five problem categories and subcategories for community-led waste management, from Anschütz, J (1996).

1. Low participation of households
 - a. Low community priority for solid waste management
 - b. Low willingness to participate in collection and recycling
 - c. Low willingness to keep public spaces clean
 - d. Low willingness to pay
2. Management problems
 - a. Low willingness to manage
 - b. Lack of accountability to the community
 - c. Unrepresentative management
3. Social operation problems
 - a. Low salary of operators
 - b. Low status and bad working conditions
 - c. Unreliable service
 - d. Competition from private entrepreneurs
 - e. Space problems
4. Financial problems
 - a. Cost recovery problems
 - b. Inadequate fee collection
 - c. Low ability to pay
5. Failing cooperation with municipalities
 - a. Direct obstruction of community-based solid waste management
 - b. Lack of assistance from the municipality
 - c. Overview of cooperation problems with municipalities

The challenges of dealing with plastic waste have, therefore, been very well known for decades. Similarly, the World Bank's criteria for funding captures these (Box 2) but solutions remain in short supply when many projects proceed without proper consideration of the key factors for long-term sustainability.

Box 2: Objectives that guide the Bank's solid waste management projects

<http://www.worldbank.org/en/topic/urbandevelopment/brief/solid-waste-management>

Infrastructure: The World Bank provides capital investments to build or upgrade waste sorting and treatment facilities, close dumps, construct or refurbish landfills, and provide bins, dumpsters, trucks, and transfer stations.

Legal structures and institutions: Projects advise on sound policy measures and coordinated institutions for the municipal waste management sector.

Financial sustainability: Through the design of taxes and fee structures, and long-term planning, projects help governments improve waste cost containment and recovery.

Citizen engagement: Behaviour change and public participation is key to a functional waste system. The World Bank supports designing incentives and awareness systems to motivate waste reduction, source-separation and reuse.

Social inclusion: Resource recovery in most developing countries relies heavily on informal workers, who collect, sort, and recycle 15%–20% of generated waste. Projects address waste picker livelihoods through strategies such as integration into the formal system, as well as the provision of safe working conditions, social safety nets, child labor restrictions, and education.

Climate change and the environment: Projects promote environmentally sound waste disposal. They support greenhouse gas mitigation through food loss and waste reduction, organic waste diversion, and the adoption of disposal technologies that capture biogas and landfill gas. Waste projects also support resilience by reducing waste disposal in waterways and safeguarding infrastructure against flooding.

Health and safety: The World Bank's work in municipal waste management improves public health and livelihoods by reducing open burning, mitigating pest and disease vector spread, and preventing crime and violence.

Knowledge creation: The World Bank helps governments plan and explore locally appropriate solutions through technical expertise, and data and analytics.

From a practical level, marine litter also bears some characteristics that have to be considered. For example, greatest cumulative effects are felt quite often literally and metaphorically 'down stream' in sensitive riparian or coastal areas where communities may be vulnerable due to their remoteness and dependency on the worst-affected ecosystems (Figure 1). The Mataniko River in Honiara, Solomon Islands provides a good example, *"Honiara has high population growth, rapid urban expansion, and high reliance of households on the natural environment for food, water, shelter, income opportunities, and health and wellbeing. This makes remnant fragments of terrestrial, freshwater, and marine ecosystems highly valuable to Honiara's urban and peri-urban communities."* (SPREP, 2018)

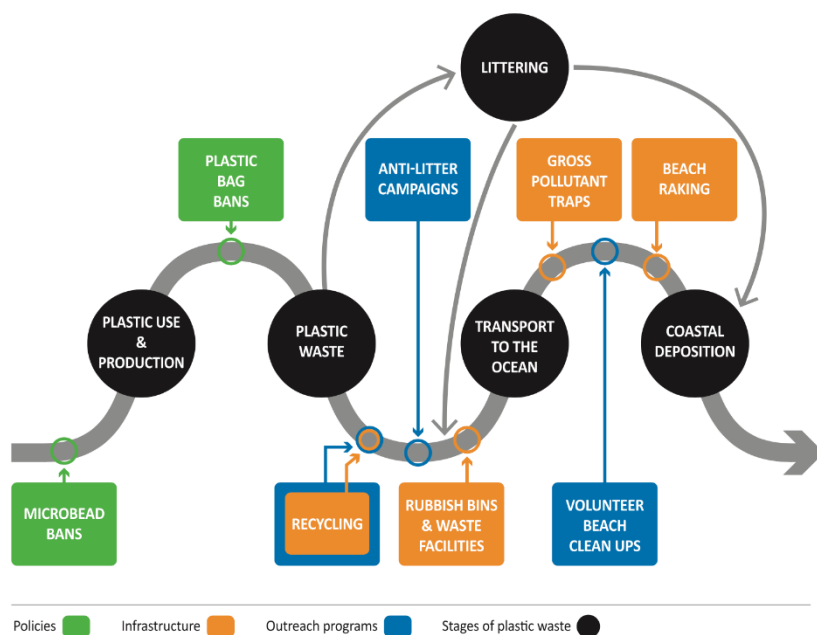


Figure 1: The type and point of waste abatement interventions along the plastic waste pathway. Thin arrows indicate the point of intervention, shapes indicate the type of intervention and large arrows indicate the pathway flow. From Willis *et al.* (2017)

In any location, solid waste management can be approached as either disaster mitigation or an opportunity for economic and ecological growth. In the Pacific region, this choice is made more stark due to unique geographical, demographic, and economic circumstances. (Howell, J.P 2015)

Many communities are small-scale fisheries and also vulnerable to climate change. Addressing marine plastic and enabling poverty alleviation is part of the solution to building resilience in communities that are worst-affected. The solutions are almost never as obvious as simply addressing waste management. A critical first step is giving communities the chance to have their say, addressing their priorities first and giving them chance to determine the conservation outcomes they can best manage, then supporting them through capacity building and training to achieve their own objectives sustainably.

Cultural diversity, both within and between communities, proves one challenge as optimum approaches may vary significantly between places geographically close. The priorities of individual communities differ, as does the motivation of different ethnic or gender groups (Kleiber *et al.*, 2015). Addressing the cause of a marine litter problem in a community may mean also working on waste management some distance away where similar cultural challenges occur but often at even greater scale due to the higher population densities. Even then, there are numerous enabling factors to get right, before anything can be done e.g. appropriate policy frameworks, sanctions, finance, management and operations.

On the positive side, the problem is now worse enough that governments are quite rapidly pursuing institutional capacity-building and basic improvements to solid waste management infrastructures (e.g. SPREP, 2017) (Howell, 2015). This makes it even more important for projects to ensure consistency with overall policy and not act alone, without due consideration of what else is being done to tackle the issue.

When budgets and the scope of Non Governmental Organisation (NGOs) are isolated they can only represent part of a bigger scenario. Scalability depends on knowing all the factors, at once, that can work together to create conditions that enable ongoing sustainable support. Ultimately, the success of projects depends on having a well thought-out exit strategy which is missing from most projects, often left until the last moment when it is too late (despite its comprehensiveness, exit strategies were not mentioned at all in Anschütz (1996). If finance runs out before exit strategies are completed, all prior investment is lost. If projects can't scale, it's questionable how valuable or relevant they were in the first place.

Australia provides an interesting case study for waste management. Personal observations are that waste in the environment is at a similar level now, in the Pacific, as it was in Australia before highly successful initiatives such as Cleanup Australia were implemented. While Australia is in a much different situation and context to small island nations in the Pacific there are a number of factors and lessons learned of relevance to any project or attempt to develop community driven solutions. There is a strong body of knowledge about effective community waste management and consultation that may be useful to apply and provide some optimism as to the impact this could have in the Pacific. The challenges faced in remote villages are not that different to remote communities in outback Australia.

Behavioural change is easier to generate if there is a direct positive outcome for the participant. To create motivation that leads to changed habits that are environmentally beneficial or have a latent positive outcome is more challenging. LGAS (2009)

A recent study (Willis *et al.* 2017) looked at the effectiveness of management across 40 jurisdictions in Australia, with the following results:

- Investments in campaigns led to larger reductions of waste in the environment than did investment in policies.

- Illegal dumping, litter prevention, recycling, education and Clean Up Australia programs all significantly reduced waste along a council's coastline.
- Integrated solutions are best at reducing coastal waste loads in Australia. A model including recycling, litter prevention and illegal dumping programs was better at reducing waste loads than any single term model.
- Councils with illegal dumping programs, litter prevention programs and recycling programs had significantly less waste along their coasts than councils without those programs.
- Councils who invest at least 8% of their budget towards waste management and focus a proportion of that budget towards coastal waste management will also have less waste on their coastline.

These examples show that effective waste management can be scaled to an entire country if there is sufficient support and the approach is carefully planned and ties in at the national, regional and local levels. Hence, this literature review focuses on ways of creating measurable outcomes, at scale (or with potential to scale), where there are exit strategies and sustainable finance in place at any level. This is also a principle information gap in the literature and the reason many (perhaps most) projects fail to launch or sustain them. Rather than repeat the exhaustive work of Anschütz (1996), we have used the problem categories from their work, as a framework for this review and listed their main findings (Box 1, Table 1). Results are tabulated with reference to other reports, projects and studies, summarising the problems and focusing the review on factors for success, which are listed in Table 2. We have then extracted key factors and summarised them, so they can be used as a decision-support tool to help guide investment by Cefas in waste management projects.

TABLE 1: KEY CHALLENGES based on problem categories from Anschütz, J (1996) with additional information from other studies.

Content	Challenges
1. Low participation of households	
A. Low community priority for solid waste management	
Engaging communities in and raising awareness about solid waste management.	<ul style="list-style-type: none"> - Non-involvement of stakeholders in planning and decision-making; - Education about the benefits of a service is not enough alone to create long-term behavioural change; - Inadequate marine waste management not being a community's priority. - Residents of a neighbourhood may have a sense of responsibility for their immediate environment, but public spaces such as streets and drains may be considered the responsibility of the state.

Content	Challenges
	<p>Eco-School program (pilot) (In. Solomon Islands Waste Strategy)</p> <ul style="list-style-type: none"> - lack of consistent support from school teachers and principals; - the sense of township; - additional workload for teachers; - limited financial support from school administrations; - human resource constraints to provide consistent project monitoring and evaluation. - periodical clean-ups may have only temporary positive effect on the cleanliness of streets and public spaces. - high mobility of households and the large amount of people renting in some neighbourhoods.
B. Low willingness to participate in collection and recycling	
Waste management requires some effort on the part of households.	<ul style="list-style-type: none"> - Lack of facilities within 100m of household. - Lacking knowledge and incentives to keep to rules of collection systems and operators lacking sanctions and authority. - Perceived cost-benefit of systems including whether community thinks this is 'dirty' work or below them (this was referenced to a particular study in India). - Lack of 'social' control. - Lack of perceived time to sort rubbish.
	<p>Rigasa et al (2016)</p> <ul style="list-style-type: none"> - Lack of convenience. Low motivation, social factors and travel distance leads to disposal in open spaces, drains and around road-side bins. - Small communities far from waste management centres tend to be less well-served (this affects coastal communities disproportionately). - 88% of people want FREE solid waste management.
	<p>Sekito et al (2013)</p> <ul style="list-style-type: none"> - The study showed a strong relationship between income levels and people's willingness to separate their waste.
C. Low willingness to keep public spaces clean	
Interest in keeping private and public spaces tidy.	<ul style="list-style-type: none"> - residents of a neighbourhood may have a sense of responsibility for their immediate environment, but public spaces such as streets and drains may be considered the responsibility of the state.

Content	Challenges
D. Low willingness to pay	
Lack of affordability for households.	<ul style="list-style-type: none"> - Willingness to pay and how varies between communities. - Not being able to afford to pay. - Neighbourhoods with low incomes struggle to commit other resources.
2. Management problems	
A. Low willingness to manage	
Reasons why individuals, households or communities may not wish to participate or may not participate fully.	<ul style="list-style-type: none"> - Often carried out by volunteers, among the more affluent and may not be secure long-term. - Not abiding by the rules of the collection systems - Placing rubbish next to, rather than in bins (causing hygiene issues). - Payment of workers isn't easy to manage. Equal pay is to the detriment of the hardest working. Sometimes people prefer to be rewarded with more material benefits. - Waste handlers may not be willing to cooperate in separation at source if they know the value of the recyclables and do not want to sell them to waste collectors. - Lack of trust of group (e.g. NGO) that is trying to put the plan in place.
B. Lack of accountability to the community	
Codified expectations and contracts to ensure work is carried out to a high standard.	<ul style="list-style-type: none"> - Dependence on one individual or enterprise can lead to lack of accountability to the community but also may not be secure long-term. - Projects that are based on trust with little financial or performance control. - Sudden changes to management of payments not being properly communicated.
C. Unrepresentative management	
Representation of different individuals, communities and groups, to ensure trust and consistency with needs and priorities.	<ul style="list-style-type: none"> - Whether the management includes an elected body or appointed by the local government, whether it consists of traditional leaders or modern community organizations, or of influential individuals. - Representation of the interests of under-privileged groups or minorities is particularly important for women, youths and certain cultural or ethnic groups. - Feelings of 'officialdom' dominating, leading to communities not wanting to participate.

Content	Challenges
3. Social operation problems	
A. Low salary of operators	
Operational activities are distinct from management. Collection of waste, sorting and recycling are almost entirely done on the basis of profit, i.e. a personal salary, because work is hard and status is low.	<ul style="list-style-type: none"> - waste collection fees and sale of recyclables do not yield much revenue in low-income neighbourhoods. - households in low-income neighbourhoods are not able to pay high fees - the size of coverage areas may be too small to earn an adequate income.
B. Low status and bad working conditions	
Low pay and working conditions work together to create this problem.	<ul style="list-style-type: none"> - The nature of work is often considered unpleasant and filthy.
C. Unreliable service	
	<ul style="list-style-type: none"> - Creates trust issues and leads to lack of participation from community
D. Competition from private entrepreneurs	
	<ul style="list-style-type: none"> - Informal' waste contractors disposing of material in drains and streams. - Private individuals or groups interfering (or not being engaged in) the process.
E. Space problems	
	<ul style="list-style-type: none"> - Space for communal bins - Space for depositing and sorting material for shipping / sale.
4. Financial problems	
A. Cost recovery problems	
For a project to be viable, there has to be sufficient income to cover the costs of all implementation including taxes etc.	<ul style="list-style-type: none"> - in many cases, fees to cover capital and recurrent costs of solid waste activities do not cover costs (often fixed by governments). - difficult access to credit especially when wanting to scale operations - low loan repayment (in case of low willingness to pay) - marketing problems when it comes to composting or recycling projects.

Content	Challenges
B. Inadequate fee collection	
Fee collection is determined not only by willingness to pay but also the method of collection.	- fee collection influenced by the way of payment, by the availability of sanctions and by the persons collecting fees
C. Low ability to pay	
	- municipalities lack money and/or manpower to fulfil this task and sometimes think the neighbourhoods are responsible for this.
5. Failing cooperation with municipalities	
A. Direct obstruction of community-based solid waste management	
Existing systems and vested interests may obstruct introduction of new community-led initiatives.	<ul style="list-style-type: none"> - A municipality or solid waste agency can obstruct community-based solid waste management in various ways, either directly, by hampering the performance of community-based services, or indirectly, by refusing to provide legal, financial or promotional support. - Inability or unwillingness of municipalities to adopt a clear solid waste management policy and a strategy to integrate community initiatives into the whole solid waste management system. - Change in municipal systems (if local authority suddenly changes operator or operating procedures). - Unskilled staff undertaking the duty; - Bins becoming broken or stolen. - Schedules of primary and secondary collection not coordinated meaning accumulation at communal collection points.
B. Lack of assistance from the municipality	
	<ul style="list-style-type: none"> - Absence of long-term waste management strategies; weak coordination between authorities and neighbourhood association workers who undertake primary collection; - The attitude of a municipality is, bound to elections and assistance is thus temporary and its solid waste management policy lacks continuity - Limited access to facilities (equipment, composting sites, etc.), establishment of legislation, financial assistance and promotion.

TABLE 2: Keys to successful community driven waste management solutions

Factor	Approach
Knowledge	<p>Detailed community consultation is a hallmark of all successful projects reported in IUCN (2018) and instrumental to understanding the scope of problems, identifying barriers, gathering baseline information, local priorities and identifying critical pathways to solutions.</p> <p>Gather reliable baseline - Understand your litter problem before you act (EPA NSW, 2009)</p> <p>Ensure sufficient expertise-sharing and technical support for on-ground project officers.</p> <p>Provide wider concepts such as saving natural resources and sustainability while linking it to the local environment (available land space, economics, local environment, job creation). (LGAS, 2009)</p> <p>Ensure community knowledge and incentives to meet collection system rules (Anschütz, J 1996).</p> <p>Ensure communities understand that biodegradable plastics are NOT a solution to plastic waste. In general, biodegradable plastics should not be considered a minimal impact alternative (WHITE PAPER: Prohibition on the sale of single plastic in the Western Province, Solomon Islands).</p> <p>Natural resource management and conservation programs that promote building capacity and social learning among participants often lead to the formation of learning networks. A strong network coordinator and continuing efforts to support information sharing and learning are crucial to the network's strength and sustainability (Pietri <i>et al.</i> 2015).</p> <p>From Schwarz <i>et al.</i> (2014)</p> <p>Women play an integral role in solutions-forming but for various social and other reasons may not be heard. Outcomes may be dependent on not underestimating the role of women.</p> <ul style="list-style-type: none"> - Provide targeted communications materials (specific to groups, gender etc) - Work directly with those groups to create that material. - Utilise and empower strong educated women to be trainers of others in the community and provide women opportunities for leadership. - Support access to information for people who have different time or resources. <p>Peer to peer learning exchanges or creation of learning centres help spread the word about benefits to other communities, increasing the scope for uptake and scaling of outcomes. E.g. Quinlan, R In: IUCN (2018) says "fishers from target communities visit other communities already implementing temporary fishery closures or other marine management strategies. By learning directly from real fishers from similar backgrounds, target communities realise they can adapt strategies in their own contexts."</p> <p>Conduct ecological monitoring because the results will be measured, often rapidly, in the return of fish, birds and other wildlife that in some cases, may be culturally or economically valuable.</p>
Infrastructure	<p>Increase dedicated financial support from domestic governments and encourage other stakeholders including the domestic and international financial community and other private sector actors to invest in local waste management. According to the UNEP and International Solid Waste Association (ISWA) Global Waste Management Outlook report, increasing collection rates to levels of 95%+, and spending to 1% of Gross National Income (GNI) is considered best practice. APEC (2016)</p>

Factor	Approach
Legal structures and institutions	<p>Authorities with illegal dumping programs, litter prevention programs and recycling programs have significantly less waste along their coasts than councils without those programs (Willis <i>et al</i> 2017).</p> <p>Authorities who invest at least 8% of their budget towards waste management and focus a proportion of that budget towards coastal waste management will also have less waste on their coastline (Willis <i>et al</i> 2017).</p> <p>Concentrate the majority of municipal solid waste responsibilities within a single government entity or independent department or agency, while clearly defining the waste-related roles and responsibilities of remaining institutions. APEC (2016)</p> <p>Private sector stakeholders, donors, and other private investors need strong, transparent assurance that money provided will be used efficiently and effectively. APEC (2016)</p> <p>Availability of sanctions or fines for non-compliance. This may include locally-led patrolling and enforcement. This gives the locals a direct stake in the natural resource protection (Trinh, C-M In: IUCN, 2018).</p> <p>More effective environmental laws may be achieved using strategies that integrate regulation with community-based social marketing (Kennedy, 2010).</p> <p>Identify the most problematic plastic items to ensure the elimination of these items will result in the greatest reduction of plastic entering nature. Then, for the identified plastics to be banned, evaluated alternatives for their own environmental impacts and prioritise the substitution of sustainable alternatives.</p> <p>Collaborative regulation setting encompasses a wide variety of regulatory tools from traditional laws to social normative values (perhaps codified in village management plans) through to government sanctioned policy and regulation. It's important these are set by the community, encouraging participation of as many as possible to ensure a high level of ownership and support (Quinlan, R In: IUCN, 2018).</p>
Financial sustainability	<p>Set ambitious waste management targets at the economy-wide and municipal levels in consultation with affected stakeholders. (APEC 2016)</p> <p>Develop essential, common waste definitions concerning what is recyclable or recycled, that are needed to support international comparisons of targets and policies. Common terms will also better facilitate trade and investment in waste management technologies and services. APEC (2016)</p> <p>Establishment of innovative, transparent funding approaches. These might include independent, blended pooled funding entities, and pay for performance delivery models. APEC (2016)</p> <p>Develop end-of-life incentive policy to stimulate recycling market demand and increase product recyclability APEC (2016)</p> <p>Introduce other enterprises, to achieve self-sustainability and become independent of outside funding. For example, Kuruwitu Conservation and Welfare Association included a tourism business to attract visitors, create employment and take pressure off the ecosystem. This was complemented by diverse livelihood options, such as honey and crafts making, with a portion of projects going towards community welfare needs like water, health and education. Bowden, D, In: (IUCN 2018)</p>

Factor	Approach
Citizen engagement	<p>Address local needs first, including poverty.</p> <p>For example, in Mozambique In 2006 (Marques da Silva, I. In: IUCN, 2018), health care was a major issue for the population of Vamizi island and there was no school on the island. The tourism company raised funds for constructing a school, a health centre was built, and the LMMA patrol boat used as an ambulance, providing the foundation for the community' support to the LMMA.</p> <p>Invest more in campaigns (which lead to larger reductions of waste) than policy development (Willis <i>et al</i> 2017).</p> <p>Celebrate your achievements.</p> <p>A practical application, that is the infrastructure, must be available and convenient for the user. (LGAS, 2009)</p> <p>Preparation of a robust public relations strategy - Regardless of budget, community consultation and its flowon effect of support for the new system is essential. (LGAS, 2009)</p> <p>Iterative and adaptive nature and an extended period facilitating the targeting of diverse motivations and the building of community trust, which in turn leads to greater community participation (Brown & Bos, 2015).</p> <p>From Anschütz, J (1996)</p> <ul style="list-style-type: none"> - Undertaken a community needs assessment study - Presence and role of a neighbourhood association, which performs waste collection regularly, plus a neighbourhood-based waste management strategy are essential.
Social inclusion	<p>Find partners to help (EPA NSW, 2009)</p> <p>Encourage the waste picker sector to assume new service roles in waste collection, recycling, composting, and treatment through facilitation by NGOs and municipalities to improve health and safety while improving economic livelihoods. (APEC 2016)</p> <p>Acknowledgement of target groups - Variants embraced include age, gender, socio-economic status, language preference, new mothers, locality and population density and diversity of groups within the total community. (LGAS, 2009)</p> <p>From Schwarz <i>et al</i> (2014):</p> <ul style="list-style-type: none"> - Ensure both female and male strong champions for community-led involvement. - Utilize existing, well-respected networks. - Build the capacity of women to speak confidently about issues. - Acknowledge publicly, the recognition of women's work. <p>Build in youth representation. The effective participation of youth has been a formation of the rights of young people to be listened to and taken seriously in matters that affect them ... It also has many far-reaching impacts ... from tangible projects ... to employment opportunities and everything in between (GLF, 2014).</p>

Factor	Approach
Accountability	<p>Know how you will measure your effectiveness (EPA NSW, 2009)</p> <p>Build waste management performance indicators and methodology to track progress against economy-wide and municipal waste targets APEC (2016)</p> <p>Set strong environmental standards with reliable and transparent monitoring; consider community engagement strategies for transparency and accountability. APEC (2016)</p> <p>Participation in recycling that leads to positive foreseeable or tangible results, such as economic rebate in rates, community involvement, better facilities, job creation or regeneration of landfill sites open to public. (LGAS, 2009)</p> <p>Ensure contracted duties with performance measures linked to payments and define procedures of control. Contracts and agreements should ideally be made by the community or a community organisation.</p> <p>Management committees are set up with interested local stakeholders, so decisions are based on formal processes and communication between the government authorities and locals is fluid (Monteferri, B In: IUCN, 2018).</p>
Integrated approaches	<p>A model including recycling, litter prevention and illegal dumping programs is better at reducing waste loads than any single-term model (Willis <i>et al</i> 2017).</p> <p>Five key approaches to reduce littering (EPA NSW, 2009) are:</p> <ul style="list-style-type: none"> - improving infrastructure - raising community awareness and educating about litter - engaging people in a sense of pride and ownership of a location through partnerships and local involvement - lifting your enforcement profile - cleaning up the location, keeping it cleaner and removing graffiti. <p>Successful solutions to the marine litter problem require coordinated action amongst a wide range of public and private actors, across sectors, and from the local to the global level. Successful actions aim at a diversity of goals, ranging from changing consumer behaviour, the introduction of new technologies, the design, implementation and enforcement of a multitude of plans, policies and laws, to full- scale revision of current practices of production, use and management of waste. This implies active involvement of consumers, producers, policy makers, managers, inhabitants, tourists, (fisheries) industries, companies, and many other actors. (Löhr <i>et al.</i> 2017)</p> <p>The Community Based Waste Management and Recycling Enterprises in Watamu, Kenya puts its success down to a combined range of benefits.</p> <ul style="list-style-type: none"> • Watamu Community Support • Watamu Business Sector Support • Government support – Council, NEMA, KWS • Land ownership • Easily accessible and cheap product material • Saleable product • Growth industry and access to retail outlets • Sustainability • Security and infra structure

Conclusion and key factors for success

The essential elements of any community conservation project have been well known for decades and are often well-executed on a project-specific level. However, the ability to create working **exit strategies**, **sustainable finance** and most importantly, expanding these initiatives to address the **scale** and urgency of the problem, remains elusive but needs to dominate any consideration of funding. It's essential for projects that strive for long-term viability and growth.

Few projects (perhaps most) adequately apply the process of community engagement, consultation and planning to these factors, which leads to failure to launch or sustain outcomes. So while there are realms of studies about how to go about these aspects of work, integration with exit strategies, sustainable finance and scaling, remain principle information gaps in the literature for community conservation projects. Yet to understand these elements means looking no further than the business sector. Businesses are adept at creating conditions for growth and sustainable finance - after all, no business could survive otherwise. Community conservation projects are no different.

One fundamental flaw is ideological. Many donors and NGOs try to force an outcome on communities when the market is either unprepared or uninterested in the outcome. Successful businesses, on the other hand, would sell what the customer wants to buy and adapts to meet the market, thus creating a living for its staff and an opportunity for growth. A critical first step, therefore, is giving communities the chance to have their say, addressing their priorities first and giving them the chance to determine the conservation outcomes they can best manage. By doing this, projects can steer their focus in a direction for which there is acceptance and then help communities achieve their objectives sustainably, by connecting them with markets.

Overall, to create these outcomes requires an integrated approach. There are three over-arching and integrated areas of consideration for any startup community driven waste management project:

- How to create the right conditions for community engagement, self-determined objectives and empowerment, addressing key factors for exit strategies, sustainable finance and scaling at the project outset;
- Where the key litter source is and therefore, whether it's necessary to extend the scope of work to encompass that as well as the location of the end-point pollution.
- What enabling factors exist already, that are necessary to support project longevity e.g. if there are existing policies or operational frameworks, and how to fit within these and alongside other existing projects.

The ability to scale and have well thought through exit strategies (put in place at the start of the project) are essential. Key factors to minimise the risk of failure (due to challenges identified in Table 1) and maximise the chance of success are:

- Enabling conditions need to be in place (governance structures from policy to community social marketing, operational and management of waste collection etc). Without this, projects may struggle to achieve outcomes in isolation.
- The source of plastic pollution is often a long way away. It may be necessary to run projects in more than one location, or to work alongside groups addressing upstream effects.
- Knowledge is key, both in terms of understanding the baseline and creating learning opportunities and skills transfer among local populations. Providing appropriate skilled local people to support and creating conditions for knowledge transfer is vital.
- Governance structures need to be in place at all levels, from regulatory and policy instruments of government, down to local community-driven policies. Where laws or other controlling provisions are created, this needs to involve all the community for social acceptance and communication between government and locals needs to continue.

- Engagement at the community level is critical from the outset. We have reviewed, in detail, overall community engagement methods (since it's a larger topic) but key elements include establishing community leadership, allowing communities to set their own priorities, creating local champions and regular steering committees to oversee implementation. The success of any project depends on communities having ownership of the idea and implementation on their terms, which means it has come from their own ideas.
- Social inclusion means making sure all groups are represented. There may be differences both within and between communities that determine how outcomes are achieved, including who operates or manages things at different levels (local to regional). Ensuring integration with different groups - particularly women's empowerment (as women play a vital and often under-estimated role) is key to achieving adequate acceptance and resources to run and maintain the work.
- Financial sustainability can be achieved in a variety of ways, not always directly. Communities will have different needs and priorities (so too will groups within those communities). Trust-building and creation of sustainable finance may take time and the community may identify alternative economic priorities that have to be addressed first. Financial input may be needed to kick-start initiatives. Good business-planning should identify barriers to scaling, such as the need to invest in additional infrastructure.
- Alignment with other projects is essential. Too many projects act in isolation. Before any work begins, it's essential to understand what else is being done.
- Accountability and performance must both be tracked continuously. This means having transparent governance and clearly defined roles based on deliverables. A good baseline means understanding not only the litter issue but also any of the other priorities locals set as a condition of their involvement. Ecological monitoring is also an important consideration, especially if the communities are remote and dependent on the environment for food e.g. fisheries.
- Overall, integrated approaches are essential. Models including recycling, litter prevention and illegal dumping programs may be better at reducing waste loads than any single term model. Campaign spending is more effective than policy-making and marine litter is best addressed if authorities put a proportion of funding specifically into those areas.

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6.3 Questionnaires used in stakeholder surveys

Development of an Action Plan for Community Driven Solutions for Marine Litter

Marine litter is found in all the oceans of the world. It is found not only in densely populated areas like big cities but also in remote areas and islands, far from obvious sources and human contact.

Up to 90% of marine litter is made up of plastics, originating from both land and sea-based sources (UNEP, 2009; Ospar). This makes plastic pollution one of the most widespread problems facing our oceans today. If we are to tackle this issue, urgent, coordinated and effective action is paramount. Globally, it is estimated that 6.4 million tonnes of marine litter enter the oceans each year, with about 8 million items entering the oceans every day (UNEP 2005; McIlgorm, A., et al. 2008). The social, economic and environmental impacts on people and communities globally are huge.

TierraMar, in partnership with the Vanuatu Environmental Science Society and WWF Solomon Islands have been asked to work with key community stakeholders in Vanuatu and the Solomon Islands to develop innovative approaches to tackle waste and marine litter at the community level, learning from those already doing great things in this space. Specifically, we have been asked to develop draft action plans for Vanuatu and Solomon Islands (focused initially on Western Province and Honiara. The action plans need to identify:

- how to drive change at the community level when it comes to waste and marine litter;
- identify the key needs in relation to training and support capacity building that would enable local partners to take forward actions; and
- highlight what activities are already happening within communities that can be used as best practice examples and could be scaled up where appropriate (e.g. organic waste-recycling).

This project is a part of a broader project by the Centre for Environment, Fisheries and Aquaculture Science (Cefas), part of the UK government, to work with partners across the Commonwealth to share expertise and find solutions to the environmental and socio-economic problems caused by litter in the marine environment. Experts are collaborating with national governments, local authorities, regional sea conventions, NGOs, universities and industry to identify country specific solutions. The programme is known as the Commonwealth Marine Litter Programme (CLIP) will support up to six developing countries across the Commonwealth to develop national litter action plans focusing on plastics entering the oceans.

You have been identified as a key person to talk to with respect to the development of the action plans in Vanuatu and the Solomon Islands.

We would kindly ask for one hour of your time to assist us with information collection and to advise us as we undertake this project. Attached is a list of questions to provide guidance on the information we are seeking. You do not need to complete the questionnaire.

Guiding questions - community

1. What are the main sorts of waste you see in your village, on the beach and around where you work? For example, plastic wrappers, bottles, organic waste, fishing gear, bits of plastic, other? What type of waste do you see the most of? Do you know where it comes from? If you can, outline what sort of percentages of each type you would generate every week.
2. What about in your house? What sorts of waste do you generate? What do you have the most of and what do you do with it? What about the other types? If you can, outline what sort of percentages of each type you would generate every week.

3. What happens to the waste in your village, on the beach or around where you work? Where does it go? Does it get cleaned up? If so, please explain.
4. What do most people think about waste or marine litter? What has been the attitude of your village and has it lead to any actions to address the problem?
5. Who are the key people in your village or around where you work that are doing things relating to reducing waste and marine litter or cleaning up areas? What sort of things do they do? How successful are they and why?
6. What else do you think needs to be done? What ideas do you have for reducing waste from your village or from washing up on the beaches etc?
7. What sort of training, knowledge or support is needed to help your village or key people interested to do more about waste/ marine litter?
8. Is there anything we have covered that you think is important for us to know?

Guiding questions – government and other stakeholders

1. What do you see as the main challenges in managing waste/marine litter with respect to communities?
2. What sort of ideas have you tried to get the community engaged in reducing, reusing and recycling type activities as well as cleaning up areas? What works, what doesn't and why? What are the lessons learned from these activities?
3. What is the general attitude of most people in your province? Have you seen any changes in these attitudes over the last few years? What has caused this and why?
4. Are there any good examples of projects or activities happening that you are aware of that are achieving real traction with communities and making an impact on the ground with respect to waste/marine litter?
5. What else do you think needs to be done? What ideas do you have? Who needs to be involved?
6. What sort of training, knowledge or support is needed to help the government, your communities and key people interested to do more about waste/ marine litter?
7. Is there anything we have covered that you think is important for us to know?

6.4 Stakeholders consulted

6.4.1 Consultation – Vanuatu

Name	Postion	Organisation	Province/ Location
Government			
Rontexter	Pollution control / waste officer	DEPC	
Ionie Bloenga	Waste officer	DEPC	
Trinison Tari	Communications	DEPC	
Vatu Molisa	MacBio Country rep	DEPC / IUCN	
Mark Kalotap	Manager of Shefa Tourism Office	Shefa Tourism (provincial)	
Kehana Andrew	Acting Principal Accreditation Officer	Dept of Tourism	
Other organisations/stakeholders			
David Loubser	PEBAC Vanuatu country manager	SPREP	
Mia Rimon	Regional Melanesian director	SPC	
Krishna Kotra	coordinator of the science program	USP, Fiji	
Michlle Temmick	Game fishing business		
Sylvain		Vanuablue	
Glarinda Andre	Incountry director	Live and Learn	
Emil Samuel	RESCCUE project	Live and Learn	
Jo and Peter	Founders	WSB	
Pallen (WV) and Yael and Ibarra	Pem Plastic programme	World Vision / Azure	
Georges Combo and Christelle Thieffry	Founders	Green Wave / No Plastic Bag Plis	
Lina and Marcia		Suzanne Bastien Foundation	
John Steven		Vanuatu Surfing Association	Shefa
Tracy Elliott	Development Officer	Vanuatu Aquatics Federation	Shefa
Jessica Richardson and Elaine Moli	Coaches	Vanuatu Rowing Association	Shefa
Mike Crawford (and Andrew Hibgame)	Professional Divers	Big Blue	Port Vila, Shefa
Marc Giraud	Manager	Vanuatu Ecotours	Shefa
Community Members			
Erakor	3 local fishermen + 2 CM	Efate Community	Erakor, Shefa
Ifira Island	3 local fishermen + 2 CM	Efate Community	Shefa
Erakor Bridge	2x community +	Efate Community	Shefa
Freshwota1	2x community +	Efate Community	Shefa

Community Waste Management Model Action Plan Workshop

Name	Postion	Organisation
Rontexter Mogeror	Pollution control / waste officer	DEPC
Ionie Bloenga	Waste officer	DEPC
Trinison Tari	Communications	DEPC
Kehana Andrew	Ecotourism Officer and Acting Accreditation Officer	Department of Tourism
Mark Kalotap	Manager of Shefa Tourism Office	Shefa Tourism (provincial)
Glarinda Andre	Incountry director	Live and Learn
Emil Samuel	RESCCUE project	Live and Learn
Lina Ariki	Co-Director	Suzanne Bastien Foundation
Linda Ross	Agriculture teacher	Onesua Presbyterian College
Ken White	Waste Management Rep	Koftau Community, near Erakor Bridge
Timothy Andrew (Marik Koftau)	Koftau Chief	Erakor Bridge
Marsel Lauto		Erakor Bridge
Albert Douglas Manlaesinu	Chief	Emua Community
Norman Ben	Environmental Committee Chairs	Emua Community
Nicholas Kalwatman	Assistant Chief	Pango Community
Yoan Kaltabang	Pango Green Force	Pango Green Force
Ezra Dick	Pango Green Force	Pango Green Force
Kalorib Sope	Assistant Chief	Pango Village Council

6.4.2 Consultation – Solomon Islands

Mataniko River Action Plan Workshop

Name	Gender		Position	Organization	Village
Judah Suimae	Male		Coordinator	Friends of the City	Lio- Ridge
Ella Rizwold		Female	Principal Environmental Health Officer	HCC	Tehamurina
Agnes Menanopo		Female	Journalist	Sunday Isles Newspaper	Fijian Quarter
Moses Perry	Male		Community Rep	Vara Creek Community	Vara Creek
Mary Tahu		Female	Lecturer	SINU	Lungga
Martin Rasu	Male		Community Rep	Namba 3 Community	Namba 3
Peter Young	Male		SIMSA officer	SIMSA	Kombivatu
Selwyn Sukulu	Male		Community Rep	Namba 3 Community	Namba 3
Assaneth Buarafi		Female	Principal Fisheries Officer	MFMR - CBRM	Riffle Range
Tesney Jane Baisi		Female	Local Coordinator	Learning and Ecological Activities Foundation for Children (LEAF- JICA)	Zion
Arte Loti		Female	Community Rep	Fijian Quarters	Fijian Quarters
Dominic James	Male		Community Youth Rep	Fijian Quarter	Fijian Quarters
Wendy Beti	Male		Chief Environment Officer	MECDM	Honiara
George Tauika		Female	President	Isabel Provincial Council of Wd	Isabel Province
Nelson. Katovai	Male		Provincial project coordinator	Save the Children	
Cynthia. Nakozuete		Female	Conservation Practice	CNC	

Gizo Focus Group

Name	Gender		Address	Organization	Position
Renee Rario	Female		Gizo	GTC	Senior Waste Management Officer
David Boseto		Male	Gizo	ESSI Team Leader	Team Leader
Hensellyn Boseto	Female		Gizo	ESSI	Office/ Project Manager
Salome Topo	Female		Gizo	WWF	Field Office Coordinator
Deanne Seppy	Female		Gizo	MG 2 Aluminium Recycling	Manager
Beryl Sosote	Female		Gizo	GELCA	President
Ikou Gumo Tigulu		Male	Gizo	ESSI	Field Research Officer
Watson Qalopui		Male	Gizo	ESSI	Field Research Officer
Dafisha Aleziru	Female		Gizo	WWF	Community Outreach Officer
Hellen Tau Maika	Female		Gizo	GELCA	Vice President
Jully Kalamana Misimake	Female		Gizo	Environment Officer	WPG
Obreat Oti Maekera	Female		Gizo	ESSI	
Relinta Manaka	Female		Gizo	ESSI	Project support Officer
Faith Pwea	Female		Gizo	MUPG	Senior Admin Officer

6.5 Raw data from consultation

6.5.1 Vanuatu

Refer attached spreadsheet

6.5.2 Solomon Islands

Refer attached spreadsheet

6.6 Mataniko River Action Plan

Refer attached document

6.7 Vanuatu Community Waste Management Model Action Plan

Refer attached document

6.8 Best Practice Community Driven Waste Management Case Studies

Refer attached document

6.9 Demonstration Project Reports

6.9.1 Solomon Islands Project Report

Refer attached document

6.9.2 Vanuatu Project Report

Refer attached document

6.10 Financial Report

The project is being managed by TierraMar. The final actual project spend was £95,486, against a budget of £105,949. It is important to note that the first payment from CEFAS was delayed, and not received until early February 2019. This did not impact on the project deliverables however as TierraMar financed the project accordingly. A total of £10,463 will be returned to CEFAS.

A summary of budget to actual expenses is provided below as at Table 1.

Table 1 Budget to actual expenses

Services Required	Budgeted Qty	Unit of Measure	Total Cost £	Actuals £	Balance remaining £
Project team					
- Project Manager	78 days	£520/day	£ 40,560.00	£ 40,560.00	£ -
- Focal Points	100 days		£ 16,635.00	£ 17,195.95	-£ 560.95
Technical Experts in country	2 experts		£ 2,540.00		£ 2,540.00
Demonstration projects/scaling	6 projects		£ 20,130.00	£ 26,441.78	-£ 6,311.78
Workshops	5 w/shops		£ 3,800.00	£ 1,340.96	£ 2,459.04
Communications, design, printing, web, social media, translation			£ 9,264.00	£ 3,716.67	£ 5,547.33
Travel (airfares, accommodation, meals, incidentals, transport)	6 international flights plus 6 domestic flights		£ 13,020.00	£ 6,230.29	£ 6,789.71
Total Cost:			£ 105,949.00	£ 95,485.65	£ 10,463.35

Explanation for variations

Project team – additional resources were brought in at the country level with our on ground partners to support the consultation process in Vanuatu and Solomon Islands within the shorten timeframe of the project.

Technical experts – this had originally been intended to include a workshop by Dr Transform in Western Province for the white paper on the plastic bag ban with government. Due to prior commitments, Dr Transform was no longer available to conduct the workshop so the budget for technical experts was not used.

Demonstration Projects – 6 demonstration projects (3 in each country) were supported by the CLiP project. The funding provided to all 6 projects allowed for a number of key deliverables within the project timeframe as well as to support ongoing efforts to scale beyond the project end date. With the shortened timeframe for the project, scaling was impacted significantly, particularly for Plasticwise Gizo, who want to role out their train the trainer program across the country.

Workshops – originally 6 workshops were planned for this project. 3 Action Planning Workshops (2 Solomon Islands and 1 Vanuatu) as well as 2 workshops relating to rollout of the best practice approaches identified during the project (one per country). With the shortened timeframe it was not possible to deliver these 2 workshops. Two action planning workshops took place in both country as well as a focus group workshop in Gizo. Total workshops for this project were 3.

Communications – This budget was overestimated and not required in its entirety. With the approach taken for the action plan workshops and the changes to other deliverables, graphic design, social media and translation were not required to the extent anticipated. The Best Practice Toolkit is still in development and will be completed

Travel – the full travel budget had been based on this project being undertaken in isolation of the other CLiP projects. As TierraMar was responsible for also delivering the Contest and a portion of the Ghost Gear project, the travel budget was split across the three projects, so significantly reduced.

6.11 Terms of Reference

SPECIFICATION OF REQUIREMENT

Background to Cefas

CEFAS is the UK's largest applied marine science organisation. It shapes and implements policies through scientific and collaborative relationships that span the EU, UK government, non-governmental organisations, research centres and industry.

Cefas' work spans a wide range of issues:

- Climate change impacts and adaptation
- Marine spatial planning and environmental licensing
- Sustainable fisheries management
- Marine biodiversity and habitats
- Fish and shellfish health and hygiene.

This is supported by the collection, management and interpretation of environmental, biodiversity and fisheries data.

Additional information on Cefas activities, personnel and organisation is available at www.cefas.defra.gov.uk

Background to Requirement

Defra will fund the Commonwealth Marine Litter Programme (CLIP), which will be led by the UK through the Centre for Environment Fisheries and Aquaculture Science (Cefas). The programme will support up to six developing countries across the Commonwealth to develop national litter action plans focusing on plastics entering the oceans.

The programme will contribute to the UK meeting its responsibilities under the Commonwealth Blue Charter, which calls for Commonwealth countries to drive action and share expertise on issues affecting the world's oceans, including marine litter. CLIP will contribute to delivering the objectives under the UK and Vanuatu-led Commonwealth Clean Oceans Alliance (CCOA), which calls on other countries to pledge action on plastics, be this by a ban on microbeads, a commitment to cutting down on single use plastic bags, or other steps to eliminate avoidable plastic waste. CCOA also promotes actions in line with the United Nations Sustainable Development Goal 14 (life below water) to conserve and sustainably use the oceans, as well as contributing to the UK Government's 25 Year Environment Plan.

Plastic pollution: challenges and potential

Marine litter is found in all the oceans of the world. It is found not only in densely populated parts of the Commonwealth but also in remote areas, far from obvious sources and human contact.

Up to 90% of marine litter is made up of plastics, originating from both land and sea-based sources (UNEP, 2009; Ospar). This makes plastic pollution one of the most widespread problems facing our oceans today. If we are to tackle this issue, urgent, coordinated and effective action is paramount. Globally, it is estimated that 6.4 million tonnes of marine litter enter the oceans each year, with about 8 million items entering the oceans every day (UNEP 2005; McIlgorm, A., et al. 2008). The social, economic and environmental impacts on people and communities globally are huge. It is estimated that in the Asia-Pacific region, the cost of marine litter to marine industries is a minimum of €1.26 billion per year, including losses from tourism, entangled ship propellers and time lost for fishing (McIlgorm, A., et al. 2008). In the EU, it has been suggested that the cost for coastal and beach cleaning is about €630 million annually (Acoleyen, M., et al, 2013; Werner, S. et al, 2016).

Preventing plastic pollution from entering the environment will require focused efforts on behaviour change (reducing our reliance on single-use plastics), improvements in waste management, and developing a more sustainable life cycle for plastics. Defra launched its ambitious 25-year Environment Plan in May 2018, which aims to leave the environment in a better state than it was found and includes working towards eliminating avoidable plastic waste in the UK by the end of 2042. In 2018, the EU launched its Strategy for Plastics in a Circular Economy. This Strategy aims to ensure all plastic packaging will be recyclable by 2030, and that the use of single-use plastics and microbeads will be restricted.

Where does CLIP fit in?

Cefas will work with partners across the Commonwealth to share expertise and find solutions to the environmental and socio-economic problems caused by litter in the marine environment. Scientists will be collaborating with national governments, local authorities, regional sea conventions, NGOs, universities and industry to identify country specific solutions. Cefas will work alongside international organisations, such as the United Nations and the Global Environment Facility, to ensure actions are coordinated on national, regional and global levels, which activities that are already taking place to tackle marine litter.

CLIP will develop a network of specialist advisors who will lead the development and implementation of national litter action plans in select Commonwealth countries. The action plans will aim to reduce the amount of waste entering the marine environment, contributing towards making our oceans cleaner, healthier and more sustainable. Although the action plans will be country specific, they will also provide regional templates for other countries across the Commonwealth.

Objectives

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
- develop management approaches to marine litter that are consistent with international best practice
- CLIP activities will fall under five themes:
 - actions to combat sea-based sources
 - actions to combat land-based sources
 - removal actions
 - education and Science
 - outreach

Cefas experts will work alongside national and international partners to address these five themes during workshops, training, capacity-building sessions, as well as undertaking monitoring and research in each country. Cefas will work with each beneficiary country to create a whole suite of actions and interventions to tackle plastic pollution. The programme will result in 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. Evaluation of the implementation of the plans will take place at the end of the project in 2020.

Scope

Cefas requires the Supplier to develop innovative approaches which rely upon inclusive stakeholder engagement and participatory planning activities in relation to one or all the areas below in Vanuatu and/or the Solomon Islands:

- community based demonstration projects in relation to waste management and/or marine litter
- removal activities in ports, harbours, rivers or estuaries
- remediation of sensitive or heavily polluted areas e.g. clean up

This will need to be combined with bespoke, comprehensive and appropriate workshops, training and community-based demonstration projects with an assessment of their success to manage, remove or remediate in Vanuatu and the Solomon Islands.

For more information about this opportunity, please visit the Delta eSourcing portal at:

<https://www.delta-esourcing.com/tenders/UK-GB-Lowestoft:-RFP-Best-Practices-and-Removal-Actions/KEP978A2KD>

Requirement

Detailed methods

The Supplier will be required to fulfill the following tasks in relation to the following areas: waste management, removal activities, remediation.

Throughout this section, the Supplier should collaborate with the Customer and other relevant stakeholders, specifically grass root communities, e.g. to setup actions to improve waste management, remove waste or remediate areas while utilising innovative or successful methods shown to be economically sustainable. The aim is to help build commitment towards reduction and removal of waste in the environment, and a long-term sustainable programme within the region.

- 1) Undertake a stakeholder analysis to map relevant actors and providers
- 2) Produce a literature review of the current situation
- 3) Develop a comprehensive and full schedule of interviews and discussions to maximise the value of the fieldwork in collaboration with the customer
- 4) Setup qualitative and quantitative data system in collaboration with the customer and third parties to take forward and follow progress of task(s) e.g. composition and volumes of waste streams, removal approaches and effectiveness, attitudes and uptake, ...
- 5) Take an inclusive approach, be aware of sensitivities, consider existing legislative frameworks and (in)formal approaches, including those delivered by NGOs, government, the private and public sector.
- 6) Finalise a report identifying key players for each task and their inter-relationships, existing options, approaches and recommendations in advance of a participatory planning workshop
- 7) Prioritise activities in agreement with Customer prior to workshop
- 8) Setup a participatory planning workshop to develop a draft action plan.
- 9) Identify key needs for each area in relation to training and capacity building that would enable local partners to take forward actions after the projects lifetime

10) Evaluate existing pilot and full-scale activities (e.g. organic waste-recycling), and scale up where appropriate

11) Develop and disseminate case studies of best practices and training

12) Setup community-based demonstration and pilot projects with a range of simple, low-cost or no-cost technologies/processes to prevent plastic leaking into the environment or to clean up polluted areas

13) Raise awareness during the project lifetime

Output required

In addition to the above, the following is required:

1. The work needs to be delivered between 21st of September 2018 and 15th of January 2019.
2. An inception meeting must occur within 15 days of the project commencement.
3. A midway report, of what has been achieved, and what still needs to be achieved, must be provided halfway through the project.
4. The final report must be provided on completion of the project. A draft final report must be provided 30 days before the final report, for approval by the CEFAS representative. The final report from the Supplier should provide a detailed analysis of different approaches, identifying the most suitable for the region to allow for the sustainable continuation of such projects, post completion by the Supplier. The final report should also include what has been achieved by the Supplier.
5. An electronic database with quality-assured data from all the observation diaries and all necessary ancillary data required for analysis.
6. All analysis scripts used.

The exact dates of the reports to be agreed, in writing, between the Supplier and the CEFAS representative.

Data, ownership, archiving and Confidentiality

The Supplier will be responsible for securely archiving all raw data in a format agreed with Cefas. Storage and transmission of data must strictly follow government guidelines on collection, use and confidentiality of data from individuals and businesses, as required by the Data Protection Act. The contractor will maintain electronic files containing all analyses and material for the final report. All data collected during the project will be the property of the Crown. An important principle of government-funded data collection is that data should be publicly available with suitable measures to protect the identity of individuals and businesses. However, no data will be made available without permission from Cefas and all such requests must be routed through the Cefas project manager or appointed deputy to avoid the possibility of release of confidential data. The report of this survey will be published as part of a larger synthesis and technical report, the authorship of which will fully reflect the contribution of the contractor.

Project Team

The tenderer will be required to join monthly meetings with the Cefas team if needed. The first meeting (to be arranged by the tenderer) will be held within two weeks of the contract start date.

The proposed work will require interacting with a range of stakeholders in order to define the detailed specification and progress aspects of the work.

As a minimum, direct or indirect contact through meetings, telephone conference and e-mail will be required with:

- Cefas Project Manager, Principle Investigator and Cefas scientists
- National stakeholders and service providers



Centre for Environment
Fisheries & Aquaculture
Science

subcontractor logo same size and

centred across page

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.

We advise UK government and private sector customers on the environmental impact of their policies, programmes and activities through our scientific evidence and impartial expert advice.

Our environmental monitoring and assessment programmes are fundamental to the sustainable development of marine and freshwater industries.

Through the application of our science and technology, we play a major role in growing the marine and freshwater economy, creating jobs, and safeguarding public health and the health of our seas and aquatic resources

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Customer focus

We offer a range of multidisciplinary bespoke scientific programmes covering a range of sectors, both public and private. Our broad capability covers shelf sea dynamics, climate effects on the aquatic environment, ecosystems and food security. We are growing our business in overseas markets, with a particular emphasis on Kuwait and the Middle East.

Our customer base and partnerships are broad, spanning Government, public and private sectors, academia, non-governmental organisations (NGOs), at home and internationally.

We work with:

- a wide range of UK Government departments and agencies, including Department for the Environment Food and Rural Affairs (Defra) and Department for Energy and Climate and Change (DECC), Natural Resources Wales, Scotland, Northern Ireland and governments overseas.
- industries across a range of sectors including offshore renewable energy, oil and gas emergency response, marine surveying, fishing and aquaculture.
- other scientists from research councils, universities and EU research programmes.
- NGOs interested in marine and freshwater.
- local communities and voluntary groups, active in protecting the coastal, marine and freshwater environments.



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