



River and Ocean Plastics Collection and Recycling Programmes Report

April 2023

RECQUP

Leading a more circular plastics value chain



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Executive Summary

With the challenges of unmanaged and irresponsibly disposed of plastic waste continuing to accumulate globally, the build-up of material in marine environments has numerous negative effects on marine settings, wildlife, and coastal communities ¹. Marine programmes help to reduce the negative effects of plastic pollution and minimise the compounding degradation of global waterways by removing and reducing the presence of this material.

Producers and consumers are increasingly looking for ways to make a positive impact on our aquatic environments through reducing waste and developing clean-up operations. Marine programmes work on 'cleaning up' already littered waste, and waste that has a risk of entering a marine environment. This offers an opportunity for organisations that want to take part in marine plastic collection but may not have the capacity to begin their own individual collection programme. This also extends to corporate offset programmes, with claims to recycle '*ocean plastic*', and certification proving involvement in a marine programme or programmes.

River and ocean programmes provide information regarding their collection and recycling of plastic around aquatic environments. It can be difficult to collect detailed information from publically available sources on how these programmes operate, where the material is collected, and what happens to the material after it is collected. RECOUP has undertaken initial research into the operations of ocean and river programmes through information made public on their websites and in the media. This has enabled recommendations for future research, as well as interventions that would increase transparency in ocean and river programmes and reduce confusion around their operations.

There are many different types of marine programmes operating in aquatic environments around the world, and each programme can have a different approach to collecting material. Some rely heavily on technological innovation such as floating vacuums that skim plastic from the surface of the water, whilst

¹www.iucn.org/resources/issues-brief/marine-plastic-pollution#:~:text=Impacts%20on%20marine%20ecosystems,stomachs%20become%20filled%20with%20plastic

others employ the use of paid workers or volunteers to manually remove plastic from areas on land, such as beaches and riverbanks, or aquatic environments.

Marine plastic collection programmes can be categorised into three types:

- **Collections:** Organisations that are actively involved in the physical removal of marine plastic.
- **Technological Innovation:** Organisations that have created or are developing technology to remove plastics from marine environments.
- **Other:** Organisations that not only perform collections, but are also involved in advocacy, education, reprocessing, or sales of recycled marine plastic products.

In total, RECOUP identified a representative sample of **30** ocean and river programmes that specifically focus on collecting and recycling plastic from aquatic environments. These types of programmes have been termed '**marine programmes**', in this report, as they focus on collecting material that is already in, or has high potential to end up in a marine environment. Whilst **30** organisations were identified and researched, there are more marine programmes operating worldwide. Marine programmes are often located in one country, while holding operations in another. Of the **30** researched, **53%** operate internationally, **13%** in the United States of America (USA), **7%** in both Australia and Indonesia, and the others operate in other locations worldwide. They also vary in the way they are structured financially, how they collect plastics, and their processes of managing the collected material. How much information these programmes choose to disclose on their operations is subject to the individual programme, as well as the wording used to describe their locations and types of material.

60% of the organisations investigated physically collect material, with beachfronts being the most common location, with the remaining programmes developing technology and software for collection schemes to use. Of those that disclosed their corporate status, **37%** of the identified programmes are for-profit companies, rather than Non-Government Organisations (NGOs) or charities.

Organisations commit to a variety of operational strategies to either generate profit or receive funding needed to continue their activities in the collection of waste in marine environments. One of the ways they may acquire these funds is through corporate offsetting initiatives. Corporate offsetting is a service provided by a programme, by which organisations can 'offset' their use of plastic by purchasing plastic

credits that go towards removing plastic from the environment ². **30%** of marine programmes offer this service, which may help to fund their activities. Additionally, of those programmes that collect material, **83%** collect all material types, **10%** declared a focus on a specific polymer, and the remaining **7%** have a specific criterion, for example collecting only ghost gear, or textiles. These programmes also sell end products made from those recycled plastics.

The majority of identified marine programmes are involved in reprocessing the material they collect, in some capacity. Details of the reprocessing operations, including quantities, were identified by around **10%** of the marine programmes that collect material analysed in this report. Limited use of established certification schemes, and understanding of the reprocessing operations of marine plastics, highlight key challenges relating to transparency and accountability in this area.

20% of the **30** marine programmes use certification schemes to verify their operations. This may be due to possible limitations for certification schemes to conduct on-site quality and standard audits. **60%** of the programmes do not openly communicate information on their progress and success.

Transparency of marine programmes is essential for building confidence for both business and consumers. This report found that some organisations go above and beyond in their quality assurance methodology, and provide ample information into their process, progress and wider stakeholder effects. However, other organisations provide little or no information about this. In many cases, disclosure for what happens to the collected material was not openly communicated.

There was a variety of definitions for the terms '*ocean*' and '*ocean-bound plastics*'. There are some general assumptions around their meaning. '*Ocean-bound plastics*' tends to refer to mismanaged plastic that can easily make its way into the ocean ³. This means that in practice, the term '*ocean-bound plastic*' can be used to describe any plastic that has the potential to end up in an ocean or river, which can be highly dependent on interpretation. '*Ocean plastics*' is usually assumed to reference plastic which is collected directly from the ocean ⁴. Of the **30** programmes researched, less than half use the term '*ocean plastic*,' and instead describe collecting '*ocean-bound plastic*' or a mix of plastics from different

²www.forbes.com/sites/jamiehailstone/2022/01/13/are-plastic-offset-schemes-the-next-big-thing-in-sustainability/?sh=24b7f2376bf7

³<https://garage.hp.com/us/en/impact/Jenna-Jambeck-ocean-plastic-trash-pollution.html>

⁴<https://oceanservice.noaa.gov/hazards/marinedebris/plastics-in-the-ocean.html>

marine environments. Global definitions would help to allow for a more holistic understanding of claims by marine programmes, and any items produced which contain marine plastics.

Recommendations

Many changes to the current situation would be beneficial to the industry, and RECOUP recommends five key interventions that would increase the transparency and reduce confusion around marine programmes and their operations. These are:

- **Widely Understood Definitions.** Established and consistent international definitions of '*ocean-bound*' and '*ocean plastic*' are developed.
- **Credible Auditing.** A requirement for independent auditing or use of established certification schemes to provide transparency on programme operations and claims.
- **Complying with Legislation.** Programmes should communicate and demonstrate how they comply with national and international legislation to collect, transport and recycle the material they handle.
- **Disclosing Collection Information.** A requirement to disclose how and where the material is collected, including the personnel and methodologies used.
- **Increased Recycling Infrastructure.** Increased research and development on the technology requirements and infrastructure needed to recycle collected material effectively, including the impacts of high levels of oceanic and river-based contamination.

RECOUP continues to use these recommendations to guide future activities around removing plastic waste from the environment.

RECOUP has also identified a due diligence checklist for those wishing to get involved or use material from marine programmes.

- ✓ If the programme uses the terms '*ocean-bound*' or '*ocean plastic*,' do they provide clear and concise definitions for these terms?
- ✓ It is clear if the programme uses independent auditing or is a part of any certification schemes, and if so, what are their processes and what certification schemes do they use?
- ✓ Can the programme demonstrate how they comply with national and international regulations, and can they collect, transport and recycle the material that they handle?
- ✓ Can the programme provide evidence of how and where they collect and recycle material?
- ✓ Is it clear whether the programme works with volunteers and / or paid workers?



Background and Objective

Producers and consumers are increasingly looking for ways to make a positive impact on our aquatic environments through the reduction of waste, and the development of clean-up operations. Marine programmes 'clean up' already littered plastic and other waste that has either entered, or has a risk of entering a marine environment.

There are many different types of marine programmes operating in aquatic environments around the world, and each programme can have a different approach to collecting material, or how they support the collection of material. Some rely heavily on technological innovation such as floating vacuums that skim plastic from the surface of the water, whilst others use paid workers or volunteers to manually remove plastic from areas on land, such as beaches and riverbanks, or aquatic environments.

Marine programmes offer an opportunity for organisations to take part and support marine plastic collection in circumstances where they may not have the capacity or inclination to begin their own individual collection programmes. Marine programmes also provide a range of benefits for organisations wishing to get involved, such as corporate offset programmes, claims to recycle '*ocean plastic*,' and certification proving involvement and support of a marine programme. Corporate offsetting programmes work by offering to remove plastic from marine environments through proportional offsetting. This is where an organisation may pay an offset programme to clean-up an agreed volume of plastics from the environment to 'offset' their environmental impacts

In addition to physically collecting plastics, marine programmes may also collaborate with local communities or fishermen to reduce the amount of waste entering marine environments in the first instance.

It is estimated that 'ghost gear', or abandoned equipment from the fishing industry ⁵, makes up the majority of the large plastics in the ocean by weight ⁶. Meanwhile, it is also estimated that **30%** of pollution from other industries is often in the form of microplastics that are less than five millimetres,

⁵www.ghostgear.org/

⁶www.greenpeace.org/usa/news/new-greenpeace-report-reveals-ghost-gear-contribution-to-plastic-pollution

and nano plastics less than 100 nanometres ⁷. These small pieces of plastic are formed when plastic waste breaks down through ultra-violet (UV) radiation and ocean currents ⁸. Due to their size, these plastics are also more difficult to clean up once they enter waterways as they require special filtration systems to remove them from the water ⁹.

It is estimated that **90%** of the plastic in our oceans originates from 10 rivers, eight of which are in Asia ¹⁰. Plastic can enter waterways from any country but is more likely to happen at scale in parts of the world where there is poorer recycling infrastructure, and fewer waste controls and regulation ¹¹. With such a large proportion of marine plastic originating from Asia, there has been a recent focus on increasing marine collection efforts in this part of the world, in particular.

While marine programmes offer an opportunity to support waste clean-up efforts, each programme offers separate operations, collection and reprocessing capacities and varying levels of information. Therefore, it is imperative to better understand these programmes, and have high-quality information available to help make informed choices when supporting these schemes.

RECOUP identified a representative sample of **30** ocean and river programmes that specifically focus on collecting and recycling plastic from aquatic environments. These types of programmes have been termed '*marine programmes*' in this report, as they focus on collecting material that is already in or has high potential to end up in a marine environment. Whilst **30** organisations were identified and researched, there are more marine programmes operating worldwide.

⁷www.ncbi.nlm.nih.gov/pmc/articles/PMC8422880/

⁸www.unep.org/resources/report/microplastics

⁹www.bbc.com/future/article/20210825-how-to-fight-microplastic-pollution-with-magnets

¹⁰www.ufz.de/index.php?en=36336&webc_pm=34/2017

¹¹www.nationalgeographic.com/environment/article/china-ban-plastic-trash-imports-shifts-waste-crisis-southeast-asia-malaysia



Research Methodology

RECOUP identified and analysed a representative sample of **30** different appropriate marine programmes and separated them by how they operate.

The main forms of operation were identified as the following categories:

- **Collections:** Organisations that are actively involved in the physical removal of marine plastic.
- **Technological Innovation:** Organisations that have created or are developing technology to remove plastics from marine environments.
- **Other:** Organisations that not only perform collections, but are also involved in advocacy, education, reprocessing, or sales of recycled marine plastic products.

Separating marine programmes by operation type helps to identify and explain gaps in the data. For example, technical innovation programmes are less likely to have information on the material they collect as their technology is often purchased or rented and operated by a third-party organisation. RECOUP has also conducted case studies with one selected programme from each of the above programme types.

Each of the **30** marine programmes analysed were scanned for key information, including operations, source of material, financial structure, profit orientation and registered status, which has been compiled to produce the findings presented in this report. Additional data recorded includes: where the organisation is based, where they operate and if they provide information on how they process the plastic collected.

When assessing collections programmes, it is important to distinguish the difference between collection and prevention. Collection is about the removal of material once it has entered the environment, whilst prevention is addressing the root cause to stop material entering the environment in the first place. This report analyses programmes that collect plastic, either exclusively or as well as other materials. This collection of plastic does not automatically assume that the material is recycled or goes to a circular solution, simply that it is removed from the natural environment and disposed of in a controlled and

responsible way. While reducing the amount of mismanaged material that enters the environment is the most effective approach to mitigating the negative impacts of plastic pollution in these environments, collection programmes can still play an important role.

Challenges and Limitations of Reporting Data

The **30** different marine programmes researched in this report were considered a representative sample size to understand the challenges they face, and the opportunities they offer towards the collection and removal of plastics from the environment. It does not necessarily reflect all programmes globally, or all different methods and outputs from these types of activity.

To collate and analyse data for this report, publicly disclosed information was to be found on the programme websites or through other public sources. However, marine programmes display their information in different ways and can choose what information to disclose, which can make collecting consistent and comparable information across several programmes challenging.





Research Findings

The findings in this report have been based on the following categories:

- Locations
- Ocean Plastic vs. Ocean-Bound Plastic
- Certification Schemes
- Recycling Process
- Corporate Offsetting
- Type of Material Collected

Locations

The **30** marine programmes investigated in this report base their operations across **16** different countries and **three** continents. **51%** of these programmes are exclusively involved in the collections of collecting waste, while **23%** innovate technologies for collecting waste. **26%** conduct other activities including combinations of collection and advocacy. The most common country for the base of marine programmes is the United States of America (USA), with **19%** of programmes basing their operations there. This was followed by Holland (**16%**), and Canada (**10%**). Programmes are often located in one country while operating in another. **53%** of marine programmes operate internationally, **13%** in the USA, **7%** in Australia, **7%** in Indonesia, and the majority of the others operating in Asian countries.

The base of location for each programme can impact the way they operate due to the variation in laws and legislation between different regions and nations. This impacts each programme differently depending on their status, and if they are listed as a charity or profit-making company. **37%** of the **30** marine programmes operated for-profit, and generate their profits through services like offsetting, funded collection and transportation of collected marine waste, reprocessing and/or sale of collected marine plastics, or the sale or lease of technology that removes waste from waterways. **33%** did not disclose this information and **30%** operate under not-for-profit or charitable status.

Of the **30%** of programmes that disclosed charitable or not-for-profit status, **89%** were registered as charities, and **11%** provided no specific information.

Ocean Plastic vs. Ocean-Bound Plastic

The terminology used to describe plastic collected from the ocean can be inconsistent, confusing and potentially misleading. Products and packaging claiming to contain ‘*ocean plastic*’ or ‘*ocean-bound plastic*’ have become more common in recent years as brands and producers aim to engage an increasingly environmentally conscience consumer^{12 13}. While neither ‘*ocean plastic*’ nor ‘*ocean-bound plastic*’ have legally binding definitions¹⁴, there are still general assumptions around their meaning.

‘*Ocean-bound plastics*’ tends to refer to mismanaged plastic that can easily make its way into the ocean¹⁵. This means that in practice, the term ‘*ocean-bound plastic*’ can be used to describe any plastic that has the potential to end up in an ocean or river, which can be highly dependent on interpretation.

‘*Ocean plastics*’ is usually assumed to reference plastic which is collected directly from the ocean¹⁶. Of the **30** programmes researched, less than half use the term ‘*ocean plastic*,’ and instead describe collecting ‘*ocean-bound plastic*’ or a mix of plastics from different marine environments.



¹²www.researchgate.net/publication/316965265_Green_Marketing/link/591aa0c10f7e9b1db652b0b4/download

¹³www.forbes.com/sites/gregpetro/2022/03/11/consumers-demand-sustainable-products-and-shopping-formats/?sh=24fd0fa96a06

¹⁴www.ciel.org/issue/plastic-global-law-policy/

¹⁵<https://garage.hp.com/us/en/impact/Jenna-Jambeck-ocean-plastic-trash-pollution.html>

¹⁶<https://oceanservice.noaa.gov/hazards/marinedebris/plastics-in-the-ocean.html>

A common definition for 'ocean-bound plastic' that was used by marine programmes was plastic found within a specific number of miles of a major body of water or coastal area. This specification can be within any distance ¹⁷, and major bodies of water can include oceans, rivers and lakes. As an example, if we were to use the common 'ocean-bound plastic' definition of 'any plastic found within 50 miles of a major waterway,' then litter found in Birmingham, one of the furthest points away from the sea in the UK, could be considered 'ocean-bound plastic'.



A map of all rivers in England and Wales ¹⁸

¹⁷www.obpcert.org/what-is-ocean-bound-plastic-obp/

¹⁸www.wwf.org.uk/uk-rivers-map

Of the **30** programmes researched, **18** reported collecting plastics from land near rivers or other marine environments. Two of these programmes use the term '*ocean-bound plastic*' to describe the plastics they collect, while the majority of programmes use the term '*ocean plastic*' in some capacity. Additionally, out of these 18 programmes, only **two** programmes clearly state the proximity of collection. This was **within 50 kilometers** of a major waterway or coastal area. Of these two, one provided a definition for '*ocean-bound plastic*', which was '*plastic not yet in the ocean, and not being or likely to be collected*'.

RECOUNP recommends establishing a universal legal definition for '*ocean-bound plastic*' and '*ocean plastic*' in the scope of marine programme collection activities. Marine programmes should clearly state what types of plastic they collect, its proximity to a waterway, and the type of waterway the programme is collecting from.

Certification Schemes

In the context of marine programmes, certification schemes are mostly used to provide validity to claims and operations¹⁹. Due to the vast international operations of marine programmes and varying regulations impacting their operations, certification schemes can provide an extra layer of transparency and validity, particularly if the scheme being used is able to conduct in-person audits of the programme and its operations. Certification schemes are useful for providing businesses and consumers with confidence in processes that may go unchecked or unverified without a certification scheme in place. Certification can be presented as an eco-label on programme websites, products and advertisements.

Certification schemes can have different approaches to monitoring the activities of programmes. This approach is dependent on the type of certification, the type of organisation being audited, and the frequency of the checks that may take place. Many certification schemes will ask for a submission of documents, such as environmental policies, to prove that specific criteria are being met, such as environmental practices and proof of staff training. Organisations may also be required to allow in-person inspections. These inspections usually involve an external auditor from a certification scheme visiting the organisation's site and conducting a paper, digital and visual assessment of compliance. In-person inspections can help to mitigate against non-compliance by providing visual evidence that claims around the activities of the scheme are accurate, including verifying any submitted documents.

Out of the **30** organisations researched for this report, **six (20%)** clearly show certifications on their website. Of these six, **three** organisations have certification from more than one scheme.

RECOUNP recommends that more research needs to be undertaken, and more data collated on the various forms of material audits which can be done in the context of marine programmes, as well as learnings from non-marine projects, such as codes of practices and litter projects.

Recycling Process

When a marine programme removes plastic from the environment, there needs to be a process in place for managing the material collected. The more material a programme collects, the greater the waste management and reprocessing capacity needed. The process of recycling material which has interacted with a marine environment, such as the open ocean, can create significant reprocessing challenges.

The ability to reprocess collected material is dependent on its quality, and generally open ocean and beachfront plastics are of low quality and highly contaminated as a result of the environmental conditions they are exposed to. This is due to high levels of contamination and the effects of salt and ultraviolet (UV) radiation that degrades the material. There may also be limited financial and technical capacities for sorting and identifying material that can be recycled with the infrastructure available in the country where the programme is operating from.

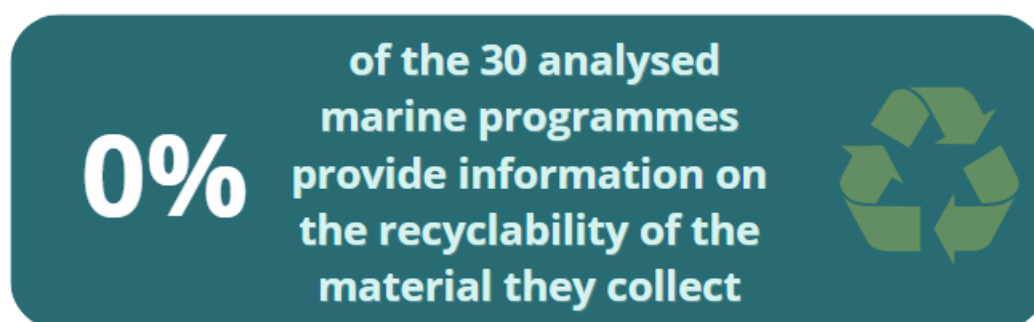
Processing plastics with high levels of contamination is challenging, and it can make recycling collected marine material an expensive endeavour. This may lead to material being disposed of through non-circular means, such as through landfill or incineration, rather than being sent for recycling and repossessing. Products that incorporate recycled plastic which is collected from marine environments often require blending with either higher quality recycled material or virgin plastic to form a useable pellet²⁰. Under current definitions, a product which contains 10% recycled plastic collected from the open ocean, 70% recycled plastic collected at the beachfront, and 20% virgin plastic, might potentially be classified and sold as being 'made from 80% ocean plastic.' Along with a clear definition of '*ocean plastic*' and '*ocean-bound plastic*', the information about where the material is collected, and how much of it is in any item should be communicated by the marine programme.

Information from marine programmes regarding the amount and quality of material collected could help provide context about how much material is being processed and what is and is not being recycled.

²⁰www.tombag.com.au/post/recycled-ocean-plastic-greenwashing

57% of the **30** programmes analysed claim to be involved in the recycling process of the collected material, including the trade or use of the material at different stages of the supply chain. With the price of recycled marine plastic being significantly higher than recycled plastics collected from household and commercial environments and virgin plastic, this is an important consideration. Additionally, **none** of the **30** programmes researched provide publicly accessible information on the quality of the material they collect, which could help to provide insights into the recyclability of the material collected. There was also no evidence of disclosure regarding the amount of collected material recycled by these programmes, and if the material was not reprocessed, the alternative end destination.

Of the **30** marine programmes collecting material, **60%** do not provide information on how much material they collect.



Corporate Offsetting

Corporate offsetting is a service provided by a programme, by which organisations can ‘offset’ their production or consumption of plastic by purchasing plastic credits that go towards removing plastic from the environment ²¹. They can do this by either funding or being in direct involvement with removing plastic from the environment. There may be some avoidance of using the word ‘offsetting’ for these types of services, due to concerns around the meaning of the phrase ²². This report considers marine programmes as providing offsetting if they have a service that fits the broad definition, even if the word was not explicitly used. **30%** of the **30** marine programmes offer a type of offsetting service, **47%** do not, and **23%** make no reference to one.

²¹www.forbes.com/sites/jamiehailstone/2022/01/13/are-plastic-offset-schemes-the-next-big-thing-in-sustainability/?sh=24b7f2376bf7

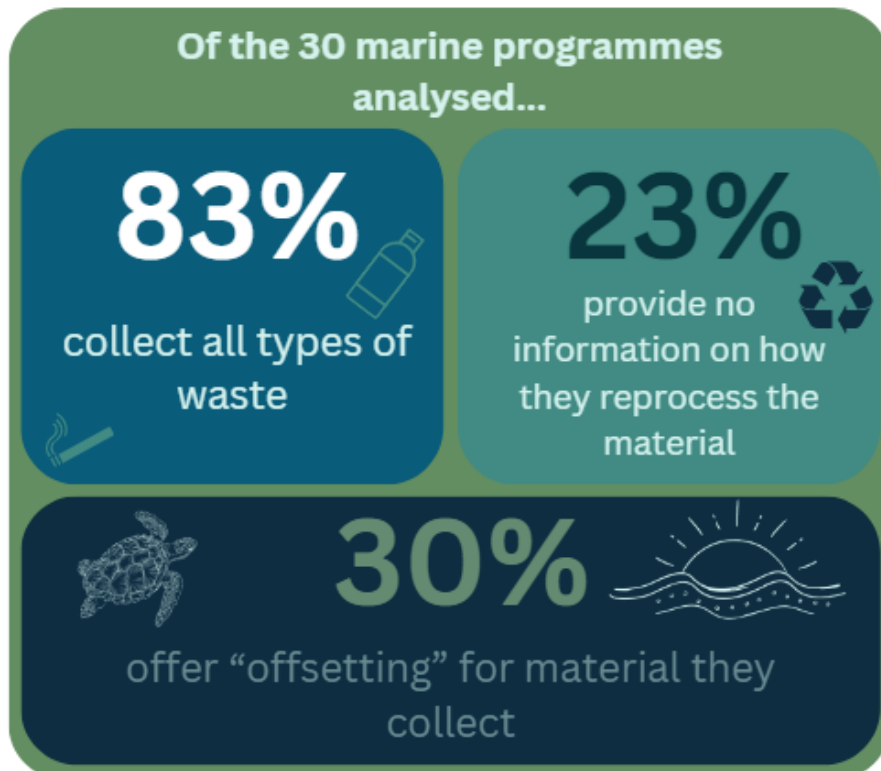
²²<https://policy.friendsoftheearth.uk/insight/dangerous-distraction-offsetting-con>

Type of Material Collected

83% of the **30** analysed programmes conduct ‘mass waste collection,’ which is considered by this report to be the collection of all types of waste, including non-plastics. **10%** of marine programmes explicitly state that they focus on collecting a specific type of waste, and **7%** give no information on the type of material they collect.

Of the programmes that state they focus on a specific waste type, **7%** handle polyethylene terephthalate (PET), which includes items such as plastic drinks bottles. **3%** handle polyethylene (PE) and petroleum-based rubber. However, there was no information to indicate if these were the only types of material collected.

57% of the programmes report that they process collected material. However, none of the projects investigated detailed what proportion of the collected waste goes to either recycling or non-recycling end destinations. Additionally, with the high operational cost of recycling marine plastic, this means that these may have a higher potential to end up in non-circular waste streams such as landfill and Energy from Waste (EfW).





Case Studies

The data collected on the **30** different marine programmes investigated in this report gives a broad understanding of the gaps in available information, areas of improvement for reporting and key terms that could benefit from improved clarity. To provide greater detail on how these issues may affect individual programmes, three case studies have been developed. There is one for each organisational type to provide a representative sample of processes and other disclosed information by organisations. These three organisational types are:

- **Collections:** Organisations that are actively involved in the physical removal of marine plastic.
- **Technological Innovation:** Organisations that have created or are developing technology to remove plastics from marine environments.
- **Other:** Organisations that not only perform collections, but are also involved in advocacy, education, reprocessing, or sales of recycled marine plastic products.

Each case study focuses on publicly shared information relating to how plastics were captured from marine environments, or any information related to the programme's operations available on their website.

Organisation A - Collections

Background of Project

Organisation A is a for-profit business selling products containing marine plastics that the organisation collects through its own collections collection scheme. The website of organisation A displays images of its products, and promotional statements such as “each purchase reduces plastic waste”. Images of the product are also displayed alongside videos of the collections operations.

This organisation uses the terms '*ocean plastic*' and '*sea plastic*'. According to the information they share about its collections, plastic is collected from the open ocean from fishermen in Europe and from

beachfront areas from workers in developing countries. Organisation A claims that its products are made from 100% recycled '*sea plastic*'.

Publicly Available Information

While no definition was given for the terms '*ocean plastic*' or '*sea plastic*' on the organisation's website, it could be assumed, based on its activities, that this is referring to plastic which is collected from the open ocean.

Organisation A collects marine plastics through a collections programme, where workers are paid based on the amount of material that is collected. Payment of workers is publicly disclosed, and is a set payment for every kilogram of material collected. It is unclear how workers are monitored during their collection process to ensure what is being received is plastic from the specified locations. Organisation A also works in collaboration with fishermen to collect used plastic fishing nets for recycling. The organisation has several certifications for social fairness and facilitates additional programmes focusing on social welfare.

Organisation A provides brief information on how it reprocesses the collected marine plastic. This is a chemical recycling process that creates a specific type of pellet used for their products. However, it gives no information on the technology used or how it works.

Organisation A does not provide public information on the revenue generated from its products.

Observations

Organisation A could benefit from a clear definition of '*ocean plastic*' and '*sea plastic*,' and a further explanation of its monitoring system in place for workers that collect material in its collections operations. The chemical recycling process explanation given for collected material is limited in describing how the product is produced from collected material. Further detail on the recycling process would help to explain how a 100% recycled '*ocean plastic*' or '*sea plastic*' product is produced.

Organisation B – Technological Innovation

Background of Project

Organisation B is a for-profit company that sells equipment and technology to clean all types of waste out of waterways. The organisation does not conduct its own collection of material, but the technology and equipment it sells collates data on the material it collects, which can potentially be used to help better understand the composition of litter in waterways and advise ways in which to best address and remove this material from the environment. The website of organisation B shows videos of its technology removing material from the water, and features information about the data collected from its product.

Publicly Available Information

Organisation B does not conduct collections or sell any products containing marine plastic but promotes its technology to clean waterways and advertises the potential to increase knowledge of, and reduce instances of litter based on the data that its equipment can capture.

How the technology works is explained in detail, but there is limited information on how the product physically cleans up the collected material beyond that it can be programmed to operate autonomously on predetermined routes. It is unclear if the product needs to be routinely, manually monitored to operate effectively, if this product can collect waste below the surface of the water, or if it can operate effectively in choppy waters. The frequently asked questions (FAQ) page on its website says that the organisation's product can also collect microplastics within a specified criteria of size and environment.

As organisation B is producing the equipment and technology, there is no information on what happens to material once it is collected as the handling of material will likely be up to the discretion of the company that is operating the equipment. As organisation B is relatively small, there is a short list of employees that includes robotics engineers and sales personnel, but as it does not conduct collections, they do not use volunteers.

Observations

Organisation B operates as a company that sells its technology and equipment for marine programmes to operate, rather than as an organisation collecting marine plastic itself. While transparent in respect of its equipment, the organisation lacks the data relating to the material itself, as this will be collected by the organisation that purchases and operates the equipment.

Organisations such as this one, which focus primarily on the development of technologies aimed at reducing marine waste, would benefit from information sharing agreements with their buyers. This would allow for more transparency on the impact that their products have on reducing marine waste and plastic pollution in the environment.

Organisation C – Other

Background of Project

Organisation C operates collections where its workers act as individual contractors and are paid on a piece-rate system, meaning the more items they collect, the higher their gross pay is. Organisation C is different from organisation A as it processes the material itself rather than collecting material that is then processed by an external third-party organisation.

On average, workers are paid 75% above the minimum wage for the locations that the programme operates. Collectors undergo a screening and contractual process, which ensures fair and equitable recruitment and selection of employees. This is aimed at reducing the negative impact of waste material in areas of operation, having a positive impact on areas of poverty and providing greater investment to communities to improve living standards.

Publicly Available Information

Organisation C states that its collectors are employed to register collected material through a blockchain system, recording transactions and tracking assets²³ through shared photos that are audited monthly. Unannounced, on-site quality inspections and sampling are also performed weekly by third-party auditors. This is to provide proof for organisations investing in the programme and to ensure fair compensation to all material collectors.

Organisation C does not produce products made of recycled plastic. However, there is publicly available information on the route of the material after collection. Following material sorting, plastic bales are sold to recycling facilities which produce pellets before being manufactured into recycled products. The programme is funded by revenue raised from selling the collected marine plastic. Although the amount of material recycled is not specified, organisation C does disclose that if collected material cannot be

²³www.ibm.com/uk-en/topics/what-is-blockchain

reprocessed as a result of material quality, it is managed responsibly by being sent to Energy from Waste (EfW) facilities or to landfill sites.

Observations

There is a breakdown in the amounts of each polymer type this programme collects, and this could be due to using a blockchain system that allows for data be collated and reported, though greater detail of the formats and packaging types may be beneficial for better understanding what is collected, and how and why it has ended up in the environment. The collected material is photographed, and the location is documented within the blockchain system, including the weighing and sorting activities, allowing for a robust and reliable dataset for evidencing the impact of the programme.

Case Studies Conclusions

These three case studies demonstrate the variety of marine programme types, not only in terms of their operations, but the different levels of information available and terminology used. In terms of the transparency of the journey of the material after collection, organisation A provided a brief explanation of their chemical recycling process for collected materials, whilst organisation C gave a detailed explanation of how collected materials move from the collection point to a reprocessor. Organisation B provided no information due to it not being directly involved in the collection of the material.

Organisation A also used two terms, '*ocean plastic*' and '*sea plastic*,' to describe what they collect, while organisations B and C used no such terms, and instead refer to their collected material simply as 'material' or 'litter.' There were also different approaches to material audit trails, with the blockchain system used by organisation C seemingly the most comprehensive and detailed.

The case studies show the need for standardisation and consistency in terminology, as well as greater detail and transparency in the outcomes of the programmes itself. With the current varying data available, it is not possible to estimate or understand the volumes of material collected by these schemes overall, and how much of this material is ultimately recycled. Furthermore, the lack of defined criteria and language risks confusing or misleading those supporting the programmes by not measuring their activities and outputs consistently with one another.



Conclusions & Recommendations

RECOUP recommends five key interventions that would increase the transparency and reduce confusion around marine programmes and their operations. These are:

- **Widely Understood Definitions.** Established and consistent international definitions of ‘*ocean-bound*’ and ‘*ocean plastic*’ are developed.
- **Credible Auditing.** A requirement for independent auditing or use of established certification schemes to provide transparency on programme operations and claims.
- **Complying with Legislation.** Programmes should communicate and demonstrate how they comply with national and international legislation to collect, transport and recycle the material they handle.
- **Disclosing Collection Information.** A requirement to disclose how and where the material is collected, including the personnel and methodologies used.
- **Increased Recycling Infrastructure.** Increased research and development on the technology requirements and infrastructure needed to recycle collected material effectively, including the impacts of high levels of oceanic and river-based contamination.

Building on these interventions, RECOUP has also identified points of guidance in the form of a due diligence checklist for those wishing to get involved or use material from marine programmes.

- ✓ If the programme uses the terms '*ocean-bound*' or '*ocean plastic*,' do they provide clear and concise definitions for these terms?
- ✓ It is clear if the programme uses independent auditing or is a part of any certification schemes, and if so, what are their processes and what certification schemes do they use?
- ✓ Can the programme demonstrate how they comply with national and international regulations, and can they collect, transport and recycle the material that they handle?
- ✓ Can the programme provide evidence of how and where they collect and recycle material?
- ✓ Is it clear whether the programme works with volunteers and / or paid workers?

It is clear that marine programmes can be beneficial in efforts of preventing and removing the presence of plastic in the environment, but more is needed from some of these organisations to ensure that their outputs are delivered, and results are transparent. RECOUP is not aware of any comprehensive guidelines having been developed around marine collection and recycling programmes and how they operate. This is something RECOUP can produce if appropriate funding is made available.

River and Ocean Plastics Collection and Recycling Programmes Report 2023

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