

ASIA PACIFIC CIVIL FORUM ON MARINE LITTER

# MARINE LITTER NEWS

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# PREFACE

## MARINE LITTER NEWS

### Dear Readers,

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As we approach the close of another eventful year, we reflect on the global milestones and challenges in our collective fight against plastic pollution. This November, Busan, South Korea, hosted the 5th Intergovernmental Negotiation Committee (INC-5) for the Global Plastics Treaty. Although the treaty text remains unfinished, with discussions extended to a 5.2 session, the gathering marked a historic moment, underscoring the collective efforts of nations and civil society worldwide. The progress made during this year will be remembered as a step toward ending plastic pollution.

In this edition, we delve into critical perspectives and impactful initiatives that demonstrate the global determination to address plastic pollution. In the Opinion section, we feature an overview of the two years of negotiations for the Global Plastics Treaty, highlighting key issues and challenges that have shaped the discussions. We also explore future prospects and envision the treaty's potential impact on curbing plastic pollution. Additionally, we feature examination of the current policy challenges and scientific understanding surrounding plastic pollution in the deep ocean, offering recommendations for addressing this critical issue through effective global governance and action.

In the Activity section, we highlight diverse and innovative actions from across the Asia-Pacific region. These include the 3rd East Asia Sea Initiative for Clean Ocean (EASICO), which fostered international cooperation among marine debris response organizations, and the Eco-Ikot Center in Manila, a groundbreaking facility led by local women champions to improve waste management and reduce marine pollution. Thailand's Sustainable Mai Khao Foundation exemplifies community-driven solutions to combat plastic pollution, while Australia's Rig Recycle initiative introduces approaches to managing fishing gear waste. Another noteworthy event was the 2024 Marine Citizen Science Forum held in Seoul under the theme "The Power of Record-Keeping to Change the World!" The forum showcased the transformative impact of citizen science in recording and protecting marine environments, with a focus on marine debris monitoring and coral habitat preservation.

The Research section focuses on the impact of marine litter in India's West Bengal mangrove regions. These ecosystems, vital for coastal protection and biodiversity, face significant threats from plastic debris accumulation. The article emphasizes the importance of clean-up events, proper litter management, and increased awareness to safeguard these invaluable habitats.

As we look ahead, the stories in this newsletter aim to inspire and inform, highlighting the interconnectedness of our actions and the shared responsibility we hold in safeguarding our oceans. We hope these efforts catalyze further collaboration and innovation in the fight against plastic pollution. OSEAN remains committed to amplifying these endeavors and supporting the path to a robust and impactful Global Plastics Treaty. With INC-5 behind us and a renewed determination for INC-5.2, we step into 2025 with hope, resolve, and the knowledge that together, we can create a cleaner, healthier ocean for future generations.

With gratitude.

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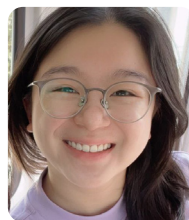
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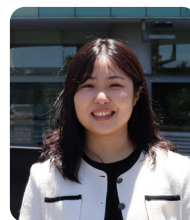
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# THE FUTURE ENVISIONED IN THE GLOBAL PLASTIC TREATY

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\* This article is a translation of the original piece published in Korean in Issue 283 of Small is Beautiful (Dec 2024)



[Image 1. Observers expressing support for civil society participants' statements during the opening plenary (Credit: Trimoulla Laurianne)]

## The result of Global Efforts to Address Plastic Waste

Humanity became aware of plastic's negative impacts earlier than expected. By the 1960s, when large-scale plastic production began, cases of marine creatures dying from entanglement in nets or ingestion of plastic were already noted. In the 1970s and 1980s, *Ghost Fishing* (the repeated death of marine animals from abandoned fishing gear) and the predominance of plastic waste on coastlines were recognized. By the 2000s, the discovery of a massive "Plastic Soup" in the Pacific brought global awareness, placing plastic pollution at the forefront of international discussions.

Since the first United Nations Environment Assembly (UNEA) in June 2014, "marine plastic waste and microplastics" have been on the agenda of every UNEA session. In February 2022, the 5th UNEA passed

Resolution 5.14, establishing a legally binding international treaty on plastic pollution, including marine environments. The agreement, which addresses the entire lifecycle of plastic with legal force, marked a significant victory for global environmental movements and laid the foundation for one of the most important environmental treaties in history.

The topic of “marine plastic pollution and microplastics” was an excellent starting point for the treaty, as ending severe marine plastic pollution through international cooperation was widely accepted. However, the complexity of the issue could lead to its exclusion from the current treaty negotiations, as it requires a broader transformation of human society.

### Five Rounds of Negotiations Over Two Years for Treaty Formation

A report from the ad hoc expert group suggested that existing environmental agreements are insufficient, and a comprehensive treaty covering the entire lifecycle of plastics is needed. Supported by many nations, the resolution (UNEA 5.14) emphasized the need for such a treaty and the essential role of international cooperation. It also called for expanding the treaty’s scope to include all-natural environments, from both maritime and terrestrial sources.

The resolution proposed that the Intergovernmental Negotiation Committee (INC) finalize the treaty text between 2022 and 2024. To prepare, the chair established procedural rules during an interim meeting in May–June 2022. The UNEP Secretary-General convened the INC, leading to four rounds of meetings, culminating in the 5th round in Busan, South Korea, in November 2024. Below is a summary of the negotiation progress leading to Busan.



[Image 2. Progress of the Intergovernmental Negotiation Committee (INC) for Global Plastic Treaty (Source: Geneva Environment Network (retrieved on 09 Dec 2024), <https://www.genevaenvironmentnetwork.org/resources/updates/international-cooperation-on-plastic-pollution/> )]



*1st Round of the INC (November 28–December 2, 2022, Punta del Este, Uruguay)*

The first meeting discussed the treaty's scope, goals, structure, and regulations. Delegations differed on whether the treaty should set legally binding global targets or follow voluntary national plans. A consensus was reached that countries would submit position papers by the second session.

*2nd Round of the INC (May 29–June 2, 2023, Paris, France)*

Before INC-2, the chair distributed a provisional options paper based on written submissions from governments, organizations, and civil society. Despite initial concerns about procedural delays, substantive discussions on the treaty text proceeded. Key issues such as high-risk plastics, regulatory approaches, and extended producer responsibility (EPR) were debated. The session resulted in gathering national input to draft the treaty and additional discussions on its scope and principles.

*3rd Round of the INC (November 13–19, 2023, Nairobi, Kenya)*

A draft treaty text was circulated in advance. Despite fears of delays, the session quickly shifted to discussions on critical issues, including high-risk plastics, regulatory methods, and financial mechanisms. However, disagreements led to an expanded text with no clear agreements.

*4th Round of the INC (April 23–29, 2024, Ottawa, Canada)*

A revised draft treaty was distributed in advance. Differences persisted on issues such as the regulation of plastic polymer production, hazardous chemicals in plastics, and the treaty's scope. Delegations agreed to address financial mechanisms and plastic design regulations in intersessional work.

*Intersessional Work (August 24–28, 2024, Bangkok, Thailand)*

As no agreements were reached at INC-4, intersessional work was conducted to address outstanding issues. Expert Group 1 focused on financial mechanisms, agreeing on new funds, existing fund usage, and additional contributions from developed countries. Expert Group 2 discussed plastic design, national approaches, and promoting recycling and reuse, presenting recommendations for international consistency and national flexibility.

## Bridge to Busan

The tensions at the INC site, resembling a silent battlefield, signalled an inevitable conflict in Busan. Before delving into the key elements, it's essential to highlight two significant developments from the recent INC-4. First, oil-producing and plastic-producing nations, including China, Iran, Saudi Arabia, and Russia, formalized their grouping as the "Like-minded Group (LMG)." At INC-4, they submitted an official statement opposing production cuts, arguing that plastic production regulations would hinder economic growth in these countries. They advocated limiting the treaty to packaging, design changes, recycling promotion, and contamination management of existing plastic waste. Despite their minority status, they wield strong negotiating power as key stakeholders in ratification and implementation.

Second, private-sector opposition emerged. Major companies such as ExxonMobil, Shell, and Dow, along

with industry groups such as the American Chemistry Council and Plastics Europe, demanded that the treaty focus solely on post-production solutions, similar to the LMG stance. They argue that production cuts would cause economic losses and increase consumer costs, using lobbying to block reductions and weaken the treaty's enforcement. These companies, already facing pressure on fossil fuels, see plastic as a stable alternative and have expanded production, as global plastic output is set to triple by 2050. They often pose as environmental NGOs to gain observer status and use substantial capital to spread misleading scientific facts and conduct public relations campaigns. For example, during INC-4, billboards at major Ottawa sites depicted patients with plastic oxygen masks and African children drinking from plastic bottles, with slogans such as "Plastic saves lives" and "Plastic brings water." They've also recruited influencers to promote such messages on platforms like TikTok.

However, not all industries are hostile to the treaty. The Business Coalition for a Global Plastic Treaty (BCGPT), launched in 2022 by the Ellen MacArthur Foundation and World Wildlife Fund, supports upstream and downstream measures for a circular economy, with over 250 companies and NGOs backing the reduction of plastic production, increased recycling, and pollution prevention. Unlike the petrochemical sector's focus on recycling, BCGPT advocates for managing production to address the root cause of plastic pollution.

In response to the growing pro-plastic lobby, Rwanda and Peru circulated the "Bridge to Busan" declaration two days before the close of INC-4. The declaration called for including PPP regulations in the treaty, urging member states and observers to sign. Though some experts criticized its lack of legally binding force, it remained the strongest formal statement of support before INC-5.

Some countries, including the chairing nations and South Korea, expressed a desire for INC-5 to be the final meeting, prompting the chair to circulate a non-paper as an alternative to the bracketed draft. This document consolidated contentious items from the draft and was revised three times before being presented a month before INC-5.

## INC-5: Extended Negotiations

The opening of INC-5 required consensus on whether to proceed with the chair's non-paper or the original draft from INC-4. The non-paper, focused on achievable outcomes, lacked legitimacy without member states' consent but served as a basis for discussions. Despite concerns over delays by LMG countries, a swift agreement was reached to use the non-paper with reference to the draft.

That evening, the conference began with four contact groups. As expected, logistical issues surfaced. Although the event aimed to be paperless, the lack of adequate internet service led to attendees acquiring portable Wi-Fi. The cafeteria, ironically serving single-use plastics, drew immediate criticism, prompting blame-shifting between the UN and the South Korean government.

In the sessions, progress was slow. The chair's brief proposal involved 32 clauses, but delaying tactics,



such as re-examining each clause line-by-line, kept discussions stalled. As a result, most of the document remained unchanged, with more brackets added. By day four, informal meetings were held, excluding observers, who play a crucial role in ensuring diverse perspectives in treaty negotiations. This exclusion drew sharp criticism, particularly since indigenous peoples and informal waste pickers had attended the conference, marking a significant milestone for their participation.

On December 1, the chair's final document was released. At 20 pages, it was disappointing in both form and content, with many clauses still in brackets and extreme options offered for each clause. During the final plenary, as predicted, the chair announced an extension of the meeting.

While INC-5's results were seen as insufficient by some, it was not without merit. About 100 countries signed on to key elements, such as production cuts, implementation mechanisms, and hazardous chemical regulations. INC-5.2 discussions are expected to gain momentum.

South Korea, however, refrained from signing these statements, likely focusing on concluding discussions at INC-5. The host country's ambition to mediate was overshadowed by its neutral stance on production cuts and its limited influence over the ongoing talks.



[Image 3. Immediately after the press conference of 100+ countries agreeing to production cuts on the final day (Credit: Trimoulla Laurianne)]

## Post-Treaty Plastic Landscape

After INC concludes and countries ratify the treaty, the treaty's specifics will be fleshed out at future COP meetings, similar to the Paris Agreement. Establishing the treaty's foundation is crucial, even though modifying treaty texts, as seen in the Basel Convention, can take decades. Setting reduction targets alone doesn't guarantee implementation, as evidenced by COP29, where carbon emissions rose despite expectations for reductions.

Plastic presents a far more complex challenge compared to other environmental treaties. It's used across diverse sectors, and alternatives are varied. The damage caused by plastic is less dramatic than mercury poisoning, making it harder to rally global consensus. Solving plastic pollution requires sweeping changes across production systems, consumer behavior, and societal structures. Transitioning away from plastic is a massive challenge, but the treaty could catalyze much-needed changes.

With the treaty in place, new initiatives in research, development, and recycling are already underway. Countries will likely see more cooperation at global, regional, and national levels to address issues like illegal waste trade, with government agencies working together to build monitoring systems.

Although it will take time to implement large-scale regulations, the global consensus on the need to address plastic pollution is promising. Governments and corporations now have a mandate to drive systematic changes, alleviating public concerns and empowering individuals. Notably, the medical community has already taken steps to reduce unnecessary single-use plastics, demonstrating that even unaddressed areas can see voluntary reductions. The treaty provides a critical framework for creating innovative solutions.

While individual action may seem limited within government-led meetings, citizen involvement remains crucial. Engaging in various grassroots activities and advocating for the treaty's direction will be essential in ensuring its success. Governments and corporations must recognize that the most powerful force for change is the demand for action from an informed and committed public.



# ASIAN MARINE ENVIRONMENTAL NGOS TO PROMOTE JOINT ACTION IN THE ASIA-PACIFIC REGION TO RESPOND TO THE GLOBAL PLASTIC TREATY

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The 3rd East Asia Sea Initiative for Clean Ocean (hereinafter EASICO), organized by Our Sea of East Asia Network (hereinafter OSEAN), was successfully held in Seoul from July 8th to 11th, 2024. This workshop served as a platform to discuss international cooperation for marine environmental protection and the expansion of citizen science programs, bringing together marine debris response organizations from various countries in the Asia region.



[Image 1. Group photo of workshop participants]

EASICO was launched following a Memorandum of Understanding (MOU) signed at the 2021 P4G Seoul Summit with the goal of achieving zero marine plastic waste. Sponsored by the Ministry of Oceans and Fisheries and Partnerships in Environmental Management for the Seas of East Asia (hereinafter PEMSEA),

OSEAN leads this initiative in collaboration with prominent marine debris response partners from Asia, such as Indonesia Waste Platform, Viet Nam's GreenHub, and ICC Philippines. The initiative focuses on international cooperation with an emphasis on citizen science and community participation.

The 2024 Capacity Building Workshop was held at CESCO Members City in Seoul over four days, supported by the Ministry of Oceans and Fisheries, PEMSEA, and CESCO. As a corporate partner of OSEAN, CESCO, which has been analyzing microplastics that are difficult to identify with the naked eye, provided convenience by offering tours of its world-class environmental hygiene research and development center and microplastic analysis lab. The workshop began with a keynote speech by Ms. Yen Ning from Indigo Waters, followed by presentations by signatory organizations on their efforts to reduce marine debris in their respective countries. This was followed by a review of the achievements over the past three years since the initiative's launch and discussions on the development of follow-up initiatives.



[Image 2. Presentation of workshop participants' achievements]

As EASICO concludes its three-year journey, discussions on follow-up initiatives for reducing marine debris in the Asia-Pacific region continue. A major initiative under discussion was the "TEN2ONE Campaign," which focuses on identifying and analyzing the ten most frequently found and harmful types of marine debris on coastlines, and proposing policies based on these findings. Participants shared ideas on how to localize this campaign in their respective countries and discussed concrete implementation plans. The campaign is expected to serve as a practical solution for implementing the Global Plastic Treaty and will be used as a pilot project to provide scientific evidence and monitor the effectiveness of related measures.





[Image 3. Discussion on follow-up initiatives with invited panelists]



[Image 4. Presentation on the Global Plastic Treaty by Yuna Lee, OSEAN's International Cooperation Team Leader]

Given that this workshop was held ahead of the fifth Intergovernmental Negotiation Committee on the Global Plastic Treaty in November, the final day included discussions aimed at increasing participants' understanding and capacity to effectively respond to the treaty. Yuna Lee, International Cooperation Team Leader of OSEAN, shared insights into the significance of the Global Plastic Treaty in tackling plastic pollution, highlighting its implications and strategies for the Asia-Pacific marine environment. Won Kim from the Wonjin Institute of Occupational and Environmental Health introduced the harmful effects of plastics and chemicals. Lastly, Felipe Victoria, Senior Manager at the U.S.-based marine conservation organization Ocean Conservancy, delivered a video presentation, offering a vision for the Global Plastic Treaty from a marine environment perspective and highlighting the organization's pioneering role in addressing marine debris. Following these presentations, Greenpeace Plastic Campaigner Nara Kim and Semee Rhee, International Policy Advisor at Break Free From Plastic, a global environmental coalition fighting plastic pollution, participated in discussions with workshop attendees, sharing their experiences with various campaigns and activities aimed at the Global Plastic Treaty and engaging in heated discussions on effective strategies to reduce marine debris in the Asia-Pacific region. Through this session, it was decided to launch an East Asia Plastic Response Initiative to actively respond to the upcoming Global Plastic Treaty. The EASICO workshop, which was also broadcast online, attracted over 120 participants who actively engaged in questions and discussions, demonstrating strong interest in the Global Plastic Treaty and marine debris.

OSEAN President Sun Wook Hong stated, "This workshop provided an opportunity to recognize the achievements in citizen science and community engagement activities made by participating organizations over the past three years, and based on these achievements, we have decided to pursue joint actions to respond to the Global Plastic Treaty." President Hong added, "We plan to prioritize reducing the most frequently found and harmful marine debris in each country while using citizen science to track specific changes through monitoring activities."



# CORA LAUNCHES NEW FACILITY PROMOTING SUSTAINABLE WASTE MANAGEMENT IN MANILA

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[Image 1. Opening ceremony for the EIC in Barangay 128, Smokey Mountain]

The Communities Organized for Resource Allocation (CORA), a nonprofit led by its Founder and Executive Director Antoinette Taus, launched a new facility in Manila to promote sustainable waste management and environmental conservation efforts.

The ‘Eco-Ikot Center’ is the first free-standing facility in Barangay 128, also known as Smokey Mountain in Manila, to address the urgent challenges of solid waste management by establishing new collection and diversion facilities in the city that are led by local women champions.



[Image 2. Exterior View of the EIC]

Through a circular economy waste management system, the Eco-Ikot Center incentivizes communities to exchange clean, dry, and segregated recyclables for points, which can be redeemed for e-cash and various sustainable goods.

“Smokey Mountain serves as a beacon of hope for locally-led transformative change – from being a dumping site, to now leading in solid waste management initiatives. Through the Eco-Ikot Center, we are not just reducing waste, but also creating livelihood opportunities for women, improving health, and showing how waste can be a resource. Our collective efforts are transforming lives and building a greener and more sustainable future without leaving anyone behind,” CORA Founder and Executive Director Antoinette Taus said.

Representatives from the local government of Manila, the Korea International Cooperation Agency (KOICA), the United States Agency for International Development (USAID), Our Sea of East Asia Network (OSEAN), and other civil society groups attended the event.

KOICA Deputy Country Director Yoo Ji Young expressed her aspirations for the new facility. “Our Eco-Ikot Center will not just be an infrastructure for processing and recovering waste but will also serve as a symbol of hope and inspiration for people to find solutions to the global waste problem. This problem should be addressed at-source by starting with ourselves, our households, and our communities,” she stated.



USAID Mission Environmental Officer Dr. Paul Brown believes the Eco-Ikot Center could be replicated nationwide. “In partnership with the local government and our key stakeholders, CORA established the Eco-Ikot Center, a pioneering waste management program for waste reduction. It is truly a model that could be replicated in different areas of the Philippines,” Dr. Brown exclaimed.

CORA established the ‘Eco-Ikot Center’ in Paranaque City in 2022. Since then, the center has diverted over 90,000 kilograms of recyclables, preventing unsegregated waste from being disposed of in landfills.

It has also trained and provided livelihood to women as leaders in waste management and fostered partnerships with businesses to achieve Extended Producer Responsibility (EPR) targets. The initiative has also educated and influenced schools across Paranaque and Manila and engaged the public and private sectors to implement policy changes and ethical procurement practices.



[Image 3. A Woman Champion Introducing Facility Usage Guidelines to Participants]

The program is part of the ongoing, “Enhancement of Marine Litter Management in Manila Bay (EMLM) Project” being implemented by KOICA, the Department of Environment and Natural Resources (DENR), and USAID.

Data from the government in 2023 showed that the Philippines generates an estimated 61,000 metric tons of waste daily, of which 24 percent was plastic waste.



# RIG RECYCLE: INNOVATING CIRCULAR SOLUTIONS FOR SUSTAINABLE FISHING

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The Rig Recycle program is an Australian-first initiative that aims to transform how selected recreational fishing gear and packaging are managed at the end of their life cycle. Through a comprehensive repair, reuse, and recycling framework, the program diverts these items from landfills (Fig 1), addressing a significant recycling gap in the recreational fishing industry and mitigating the environmental impact of discarded fishing materials.

Rig Recycle operates as a holistic, circular system by connecting recreational fishers, community clean-up participants, fishing retailers and suppliers, social enterprises, and community partners. This collaborative approach ensures that the materials collected are managed as waste and given a new life. The program seeks to change the recycling behaviors of both consumers and retailers, focusing on preventing fishing gear and packaging from becoming litter or ending up in a landfill. This is important in reducing the environmental footprint of the recreational fishing industry, which, without proper waste management and recycling infrastructure, contributes to pollution and marine debris.

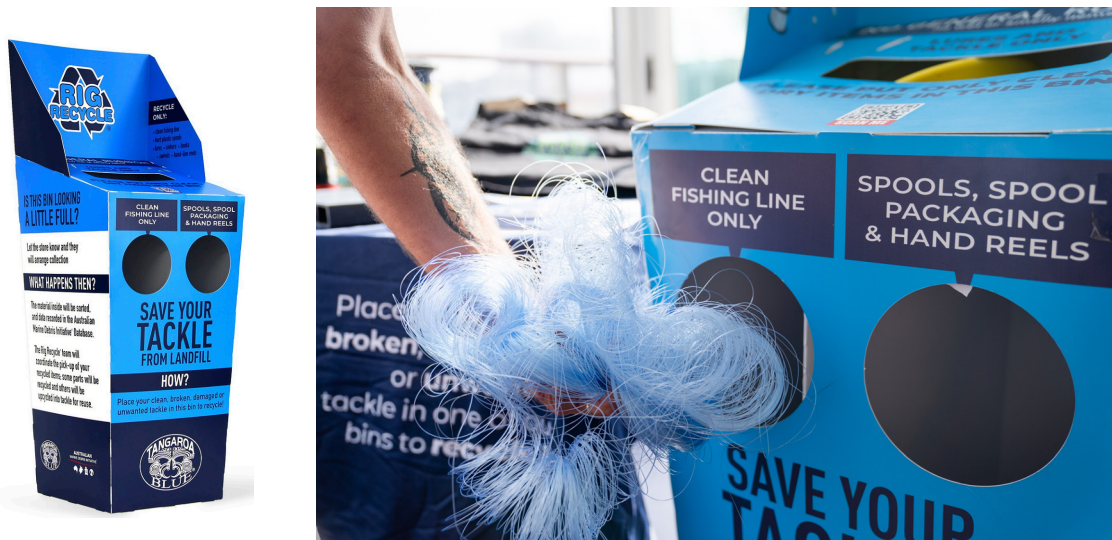
One of the recycling challenges for recreational fishing gear is dealing with discarded fishing lines, which are notoriously difficult to recycle due to their tendency to become tangled. In February 2023, Tangaroa Blue partnered with Telford Smith to find a solution to this problem. After exploring several recycling options, including using a granulator, Telford Smith proposed a safer and more effective solution: a compact, bench-mounted line cutter explicitly designed for spooled fishing lines. This device safely cuts and prepares fishing lines for recycling, making the process more efficient and accessible for retailers and other participants in the Rig Recycle program.

This partnership with Telford Smith has led to developing an innovative line-cutting device that decentralises the recycling process, allowing it to be performed directly in retail stores. We launched the line cutter (Fig 2) at the August 2024 Australian Fishing Trade Association Tackle Show. This localized recycling approach reduces the logistical challenges of collecting and transporting large amounts of tangled fishing lines, offering a practical solution for fishing retailers and consumers. Additionally, plans are to adapt the line cutter for commercial fishing vessels, further expanding its reach and impact within the fishing industry.

Through this collaboration, Rig Recycle has achieved a groundbreaking result: creating a world-first, high-value circular engineered polymer made from recycled fishing lines. This polymer can be reintroduced into the recreational fishing industry, reducing the need for virgin materials and closing the loop on fishing gear production and disposal. The success of this innovation not only demonstrates Telford Smith's expertise in plastics engineering but also aligns with Rig Recycle's core mission—to promote

sustainability through innovation and partnership.

In addition to technological advances, Tangaroa Blue is working with BehaviourWorks Australia (BWA), a leading behavior change research enterprise at Monash University, to refine and scale the Rig Recycle program further. BWA is reviewing the program to identify areas for improvement, focusing on understanding the behaviors and motivations of recreational fishers. Together, we can develop more effective strategies for reducing recreational fishing-related marine debris, ensuring a healthier ocean for future generations.



[Figure 1. A Rig Recycle station that can be placed in locations such as recreational fishing retailers to collect fishing tackle for recycling (left) and an image of recreational fishing line being placed into one of the Rig Recycle stations (right)]



[Figure 2. An image of the bench top Line Cutter]

# 2024 MARINE CITIZENS SCIENCE FORUM HELD IN KOREA: “THE POWER OF RECORD-KEEPING TO CHANGE THE WORLD!”

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On September 24, the 2024 Marine Citizen Science Forum was held in Seoul under the theme, “Lovers of the Ocean: The Power of Record-Keeping to Change the World”. Co-hosted by Green Korea United, an environmental organization, and Marine Citizen Science Center PARAN, the forum highlighted the significance of documenting marine environments. PARAN, a marine NGO, works with citizen scientists to record coral habitats and identify threats, aiming to enhance marine conservation policies. The forum showcased five citizen scientists who chose ‘record-keeping’ as their approach to ocean conservation, sharing their experiences and exploring the role of citizen scientists as alternative agents for marine conservation efforts.

Among the cases presented, three related to marine debris stood out:

## 1. Monitoring Marine Debris through Citizen Science

Dr. HONG, Sunwook, President of Our Sea of East Asia Network (OSEAN), shared their efforts in marine debris monitoring through citizen science. OSEAN developed a monitoring program and proposed it to the Ministry of Oceans and Fisheries, which led to the establishment of the national Coastal Litter Monitoring System. Data collected through this system has been utilized as foundational resources for national policies. OSEAN's goal is to use citizen-collected data to devise ways to “turn off the plastic tap”. By ensuring scientific reliability and publishing findings in academic journals, OSEAN, has become a leading example of citizen science in action.

## 2. Documenting Pollution and Bycatch on the High Seas

Mr. KIM, Minsoo, a former deep-sea fishing officer, shared his experiences documenting illegal marine litter dumping, bycatch, and ghost fishing on the high seas. Despite facing pressure from colleagues, he captured over 1,000 videos during his 5 years aboard fishing vessels, reporting them to broadcasters. Kim highlighted that at least 300,000 whales and dolphins die annually from entanglement in abandoned fishing gear. He expressed his determination intention to continue his records to raise awareness and drive change, stating, “Humans take all countless benefits from the ocean, yet all we give back is trash.” and work towards changing people’s perceptions and reality through his recordings in the future.



### 3. Coral Surveys by a Jeju Divers

Ms. KO, Myeonghyo, a haenyeo(traditional female freediver catching seafood) from Jeju, the southernmost island of Korea, shared her journey with PARAN's Coral Investigation Team. After learning SCUBA diving through the program, she began conducting monthly coral habitat surveys around Moonseom and Beomseom in Seogwipo since 2023. While observing coral was enjoyable, seeing them entangled in fishing lines or threatened by tourist submarines drove her to focus on documenting these issues. Ko emphasized the potential power of collective action, stating that collaboration among Jeju's 102 coastal fishing villages could yield incredibly powerful results.

### Collaboration for Meaningful Citizen Science

The forum concluded with discussions on how local residents and environmental activists could elevate their records from temporary exposés to meaningful citizen science data. Participants agreed that collaboration with experts and the creation of platforms for sharing data and insights are essential for effective citizen science. Despite inevitable challenges, the forum reaffirmed that the consistent documentation efforts of many could contribute to strengthening the ocean's resilience and fostering its recovery.



[Image 1. Participants of the Marine Citizen Science Forum sharing their favorite sea creatures (Credit: Paran)]



[Image 2. Soft coral entangled in fishing line  
(Credit: Ko, Myeong Hyo)]



[Image 3. A whale shark caught as bycatch(Credit: Kim, Min Soo)]



[Image 4. Coastal monitoring tools and informational brochures displayed for participants (Credit: Paran)]



# MARINE PLASTIC ABATEMENT WITH SUSTAINABLE MAI KHAO FOUNDATION ON THE NORTHERN COAST OF PHUKET ISLAND, THAILAND

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Located on the northern coast of Phuket Island, Thailand, Mai Khao faces significant challenges in waste management. This is mainly due to the high volume of tourism-generated single-use plastics. Phuket generates around 1,000 tons of waste daily, much of it plastic (Open Development Thailand, 2019). Addressing this issue is crucial for preserving marine ecosystems and maintaining the region's natural beauty.

The Sustainable Mai Khao Foundation (SMF), established in June 2020 by Michelle Mouillé, has become vital in addressing these challenges. Through community-focused initiatives, SMF combats plastic pollution and fosters sustainability with four primary pillars of action:



Beach Cleanups



Recycling



Eco-Education



Corporate Social Responsibility (CSR)

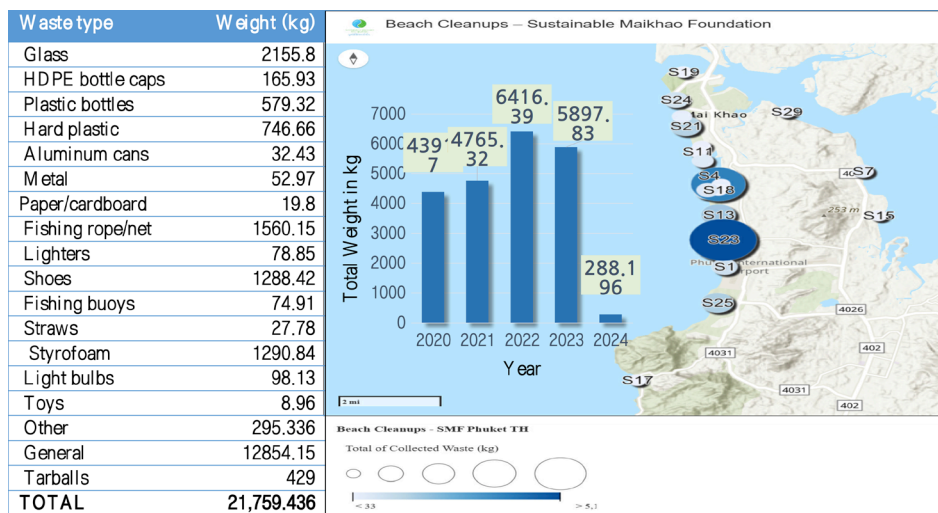


From May to October, Phuket's west coast, including Mai Khao Beach, experiences an influx of waste due to southwesterly monsoons. If left uncollected, this waste risks drifting back into the ocean, endangering marine biodiversity and habitats. To combat this, the Sustainable Mai Khao Foundation organizes regular beach cleanups, engaging local communities, schools, universities, businesses, hotels, national parks, and government officials. The collected debris is sorted into 18 categories (e.g., glass, plastic bottles, metal, and fishing nets), ensuring maximum recycling and reducing landfill waste. The foundation also collaborates with other organizations for cleanups on nearby islands, emphasizing waste separation and sustainable disposal practices.

Since its establishment, SMF has achieved remarkable milestones in environmental conservation. As of January 2024, the foundation has organized 228 beach cleanups across 29 locations, collecting 21,759.44 kilograms of waste. Explore the impact of these initiatives at individual cleanup sites<sup>1</sup>.

The diversity of collected materials highlights the extent of coastal pollution (Figure 1). Notably, the general waste category alone accounts for over half of the total weight (12,854.15 kg), reflecting the overwhelming presence of non-specific, mixed waste materials. Additionally, significant amounts of Styrofoam (1,290.84 kg), fishing rope/net (1,560.15 kg), and shoes (1,288.42 kg) underscore the persistence of synthetic materials in marine environments.

These findings reveal the critical challenges of managing coastal waste in Phuket Island and highlight the urgent need to address the root causes of pollution. Items like plastic bottles, fishing equipment, and light bulbs further illustrate the human footprint on natural ecosystems. Meanwhile, toxic materials like tarballs and metals raise concerns about long-term environmental and health impacts.



[Figure 1: Types and Quantities of Coastal Waste Collected by the Sustainable Mai Khao Foundation Across 29 Locations in Phuket, Thailand (June 2020 - January 2024)]

<sup>1</sup> <https://www.arcgis.com/home/item.html?id=c1b4cdc9ee3d4833a5ac29402893bf1f>

Nevertheless, the Sustainable Mai Khao Foundation (SMF) actively promotes sustainable waste management practices by fostering innovative approaches to recycling and upcycling. SMF collaborates with 36 recycling yards across Phuket to ensure the proper disposal and repurposing of collected materials. These efforts have inspired a wave of startups to transform ocean-bound waste into household items, lifestyle products, and artwork, including rubber flip-flops, LDPE plastic bags, plastic bottle caps, fishing ropes, buoys, straws, and other debris (Figure 2).



SaveUsFromPlastics uses 40 bottle caps to make 1 turtle phone holder.



Ocyco uses 60 bottle caps to make 1 plant pot.



Ocyco uses 60 bottle caps to make 1 plant pot. Tlejourn uses 10 old shoes to make 1 pair of flip flops.

[Figure 2: Recycling and Upcycling Initiatives by Startups Transforming Ocean-Bound Waste Collected by the Sustainable Mai Khao Foundation (SMF)]

The Sustainable Mai Khao Foundation continues to make remarkable impacts in mitigating Phuket's coastal pollution and promoting sustainable waste management practices. However, the issue of microplastics presents an unresolved challenge. These invisible pollutants, often overlooked in conventional cleanup efforts, persist in the environment and accumulate over time, threatening marine ecosystems and human health.

Research indicates that urban estuaries in the region are moderately contaminated with microplastics, predominantly from washing effluents, with rayon and polyester being the most abundant polymer types (Jiwarungrueangkul et al., 2021). The abundance of microplastic debris ranges from 1 to 35 items m<sup>-2</sup> at Kalim, Tri Trang, and Patong Beaches in Phuket Province, with blue fibers predominant at Kalim Beach, likely originating from rope, safeguard lines, and fishing materials (Akkajit et al., 2019). Additionally, microplastics like PET, regenerated cellulose, PP, and PU are prevalent on tourist-heavy beaches such as Chalong and Patong due to harbor activities and tourist traffic (Akkajit et al., 2021).

These findings highlight the urgent need for intensified efforts to combat microplastic pollution, which threatens marine biodiversity and the health of the island's ecosystems. As the battle against marine plastic pollution evolves, addressing microplastics will require improved waste management infrastructure, increased public awareness on reducing plastic consumption, innovative solutions, and sustained community engagement to safeguard Phuket's coastal ecosystems for future generations.

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# PLASTIC POLLUTION IN THE DEEP OCEAN

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The Deep-Ocean Stewardship Initiative (DOSI) is a global network of experts that integrate science, technology, policy, law and economics to advise on ecosystem-based management of resource use in the deep ocean and strategies to maintain the integrity of deep-ocean ecosystems within and beyond national jurisdiction. DOSI has published several Policy Briefs and Information Sheets on plastic pollution in the deep ocean. We share some of the key points from our most recent publications on deep-sea plastics below.

## Plastic pollution in the deep ocean

### Key Points

- Plastic pollution is everywhere, including the deep ocean. The deep ocean is the ultimate sink for marine plastic debris, where it remains harmful and unretrievable.
- The deep ocean supports immense biodiversity, providing vital ecosystem services, but is vulnerable to human impact.
- Plastic can persist for centuries. Therefore, the impact of plastic pollution on the deep ocean is long-lasting.
- Plastic can fragment into microplastics, which interfere with animal growth, behaviour and reproduction. Ingested plastic can transfer harmful chemicals up the food chain.
- Marine plastic comes from both land- and water-based activities. Better governance and management of these activities is required to prevent the arrival of plastic in the deep ocean.
- Political and practical efforts to reduce plastic consumption and better regulate plastic waste management are effective ways to prevent plastic reaching the deep ocean.

## Recommendations

- Ensure that the fate and danger of plastic in the deep ocean is acknowledged as a growing matter of concern to all parties during the negotiations and establishment of an international legally binding instrument that addresses the full life cycle of plastics as called for by United Nations Environment Assembly resolution 5/14.
- Promote and implement the International Maritime Organization's strategy to achieve zero plastic waste discharges to sea from ships by 2025.
- Impose caps on virgin plastic production. Production caps can achieve a 59% reduction in terrestrial and aquatic plastic pollution relative to current growth trajectories, and can be implemented at low cost by all economies.
- Simplify and standardise the design of plastic polymers to enable safe and effective recycling of necessary plastic.
- Encourage port-side adoption of the 'no-special-fee' system to disincentive offshore plastic waste disposal - whereby the cost of reception, handling and disposal of ship-generated wastes is included in the harbour fee or otherwise charged to the ship irrespective of whether wastes are delivered or not.
- Endorse mandatory use of owner-marked plastic fishing gear to discourage at-sea dumping.
- Impose a ban on the use of non-biodegradable plastic dolly ropes on trawls, which are designed to become abraded at the seafloor to protect towed fishing gear.
- Support research, monitoring and data-sharing schemes in the deep ocean to enable the assessment of efficiency of remedial measures taken, such as establishing an Integrated Marine Debris Observing System and the identification of plastic debris as an Essential Ocean Variable.

To read the full Policy Brief, please see:

DOSI (2023). "Plastic Pollution in the Deep Ocean" – Policy Brief. Deep-Ocean Stewardship Initiative. <https://www.dosi-project.org/wpcontent/uploads/deep-ocean-plastic-2023-english.pdf>

## Deep-ocean plastic pollution must be considered in Treaty negotiations

Plastic pollution exacerbates the many stressors already acting upon the deep ocean. The deep sea is remote from human habitation and supports many vital planetary processes. It is therefore key to human survival but is not immune to human pressures. Many man-made stressors are already affecting the integrity of the deep sea, most of which can also be linked to plastic.

All plastic begins its life on land and, upon entering the ocean, much ultimately sinks to the seafloor. Plastic on the seabed is consumed by and entangles wildlife, causing untold harm within the food chain. Because of its persistence, plastic in the deep ocean will continue to cause harm for centuries to come.

We do not have the technology or resources to retrieve plastic from the deep ocean, and because of the linkages between plastic and other stressors, plastic pollution cannot be considered in isolation. Given the ubiquity of plastic in the ocean, its harmful effects on wildlife and the environment, and its ability to worsen the effects of other deep-ocean stressors, preventing new plastic pollution from entering the deep ocean must be considered in Plastic Treaty negotiations.

To read the full Information Sheet, please see:

DOSI (2023) "Deep-Ocean Plastic Pollution Must be Considered in Treaty Negotiations"– Information Sheet. Deep-Ocean Stewardship Initiative. <https://www.dosiproject.org/wp-content/uploads/deep-plasticnegotiations.pdf>



# EFFECTS OF MARINE LITTER ON MANGROVE REGIONS OF WEST BENGAL, INDIA

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Mangroves are unique wetland ecosystems that fulfill a major role in preserving the global marine environment. 'The World's Mangroves 2000-2020' report published by FAO reveals that the global mangrove cover is around 14.8 million hectares<sup>1</sup>. India has significant mangrove forest regions distributed along (0.15% of the country's geographical area and 3.3% of the world's mangrove area) the coastal lines of the country. According to IFSR 2021, India's total mangrove cover is 4,992 sq. km. West Bengal state covers a major mangrove area (2114 sq. km) in India amongst other states. India holds 40% of the Sundarban Mangrove (South 24 Parganas, West Bengal), which is one of the world's largest mangrove forests (10,000 sq. km.) and is recognized as a UNESCO World Heritage Site. From the past two decades, India has witnessed a gradual incline in growth rate in mangrove areas of particular regions, which represent a positive sign in the conservation of mangrove ecosystems<sup>3,4</sup>.

Mangroves typically form at the edge of land where the ocean meets. These forests are majorly distributed along the intertidal coastal zones of tropical and subtropical regions, estuaries, and delta areas. Mangroves are also called Mangal or mangrove swamps. In India, they are distributed along the coastal shorelines, major estuaries of various rivers. [The mangrove ecosystem is characterized by its distinctive flora and fauna, which have evolved specialized physiological adaptations to withstand the extreme fluctuations in salinity, moisture, temperature, and other environmental parameters, enabling them to thrive in this unique habitat compared to other ecosystems<sup>5</sup>.](#)

Mangroves are sentinels of the coast that safeguard the coastlines from erosion, storms, cyclones, and tsunamis<sup>6</sup>. They are ecosystem service providers and act as carbon storage units by capturing the carbon from the atmosphere, thereby reducing the levels of greenhouse gases in the atmosphere. [Mangroves capture, transform, and store carbon dioxide from the atmosphere in their roots and soil, a process known as carbon sequestration. By exporting the organic carbon from coastal zones to the ocean, mangroves play a key role in regulating the global carbon cycle and mitigating climate change<sup>7</sup>.](#)

Mangrove forests are breeding, feeding, and nursery grounds for many oceanic fish in the marine environment, hence enormously contributing to the marine food chain and enabling a most productive and economic value for the fisheries worldwide<sup>8</sup>. These forests shelter thousands of species ranging from bacteria to mammals of both marine and terrestrial environments and play a vital role in biodiversity and conservation<sup>9</sup>. Tourism associated with mangrove areas creates a sustainable source of income for the local livelihoods and communities of these areas<sup>10</sup>.

[Despite their importance](#), the state of the world's mangrove areas is declining gradually. Several predominating factors attributing global mangrove losses are conversion of mangrove areas into

farming lands for agriculture and aquaculture sectors, climate change, ocean acidification, droughts, coastal urbanization, and various anthropogenic activities<sup>1</sup>. However, efforts from the last decade (2010-2020), such as increased awareness and national policies of many countries, has limited the rate of global decline of mangrove covers<sup>3</sup>.

Global coastal communities currently face significant threats from the rising plastic pollution. Plastic waste leaks from the land into aquatic bodies, following various routes (from drains to canals to rivers to oceans) to ultimately reach the oceans. In river mouths and estuaries, mangrove areas act as barriers for these plastic materials. The dense rooting system and bushy nature of these plants trap various types of garbage materials that float through their branches and roots during the high tides<sup>12,13</sup>. When the tide recedes, the trapped litter gets accumulated on the stems and roots of these plants in the majority of mangrove areas. During our recent survey of the mangrove plantation at Champa estuary, West Bengal, India, we discovered several plastic items (such as plastic bags, cement bags, sheets, ropes, hard plastics, and single-use plastics) trapped in the bushes of the mangrove plants (Figure 1&2). We also noticed that plastic sheets and covers trapped themselves to the roots of these plants, shielding them from exposure to sunlight (Figure 3). In addition to the plastic materials, we also observed other litter items such as textiles, glass fragments, polystyrene foams, metallic fragments, glass bottles, rubber items, and wooden objects (Figure 4). Furthermore, one of our team members recovered 46 pieces of trapped litter objects from a single mangrove bush at the study site during the expedition (Figure 5). [Our team detangled several plastic ropes, plastic sheets, fish net fragments, and cement bags from different parts \(stems, branches & roots\) of the mangrove plants in the study location.](#) A total of 150 kg of litter was recovered from the mangrove plantation area and handed over to the DSDA garbage collection units (Figure 6).



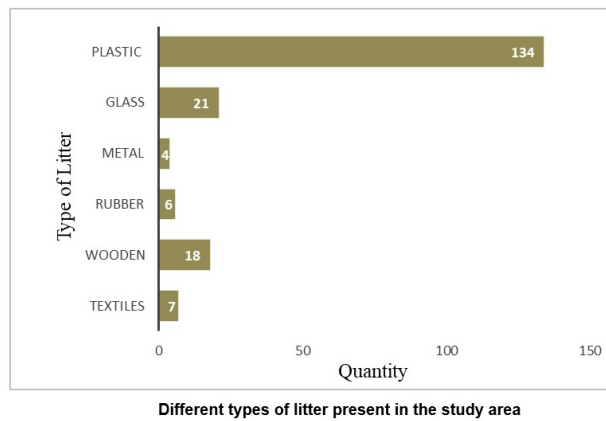
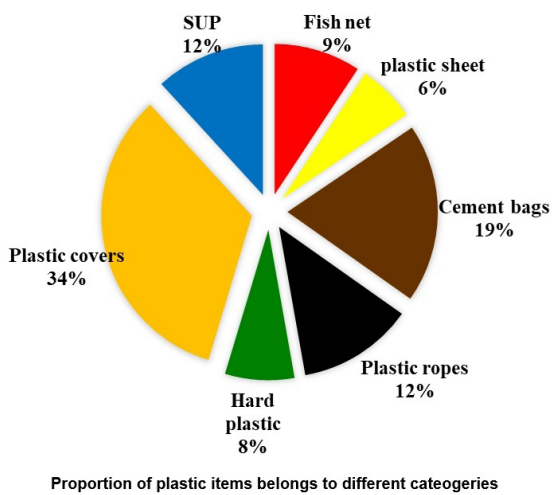
[Figure 1: Team MARC collecting the litter from the mangrove patch of Champa estuary]





[Figure 2: Different types of trapped plastic litter in mangrove plantation areas a. fish net fragments b. plastic decorative objects c. cement bags d. plastic bottle handle e. plastic rope fragment f. plastic sheet g. plastic straw h. plastic spoon i. plastic beverage bottle j. biscuit packet wrapper]

[Figure 3: A trapped plastic sheet covering the roots of mangrove plant]



[Figure 4: Relative proportions of different types of plastic waste; Different litter categories found in the study area]





[Figure 5: Garbage items recovered from a single mangrove plant]



[Figure 6: Our team members]

## Conclusions

Mangroves play a vital role in the marine environment, and worldwide efforts consistently strive to revive mangrove areas along different coastal segments. The emerging plastic threat affects not only recreational beaches, but also mangrove regions globally. Major routes of litter accumulation in mangroves include litter floating through rivers and canals carried into estuaries, the mismanagement of nearby landfills and various anthropogenic activities. Accumulation of litter in these zones can cause loss of habitats and present a serious threat to the flora and associated fauna of mangroves. During

our clean-up expedition, we observed that mangroves trap significant amounts of litter items including plastics and act as natural litter aggregators. Regular clean-up events and proper litter management in these areas can significantly control the marine litter problem. Further, creating awareness amongst fishermen and encouraging them to bring back the on-board litter from fishing boats for proper disposal, providing strict instructions to tourists not to dump litter in mangroves positively impacts the control of the litter problem. Conserving these invaluable and productive ecosystems will safeguard our coastal communities and effectively address global climate change issues.

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