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PREFACE

Hello, all of you who waited for Marine Litter News

In this issue, we are pleased to introduce the activities of not only Asia Pacific Civil Forum on Marine Litter (APML) member organizations but also other organizations. The activities of NGOs varied, ranging from collecting and recording trash on the beach to running academic events and instructor-led courses.

In Taiwan, there's a news from Greenpeace, the organizer of the Marine Debris Summit. There has been great progress in academic research on marine debris impact in Taiwan and creative activities such as board games and experience events to estimate the amount of marine debris are also introduced. On Penghu Island, Taiwan, there was an event that attracted the attention of citizens by making boats using plastic debris drifting ashore. OSEAN, Korea, organized a training course for raising 20 civil instructors on marine litter and also video contest on marine litter for public awareness.

The importance of citizen science in marine litter surveys is growing in the countries with such large areas as China and Vietnam. NGOs' involvements are becoming geographically and chronically important and necessary. Their findings are being analyzed more scientifically.

I am also happy to introduce a new NGO in China. Please appreciate Blue Ribon Ocean Conservation Association's activities in Weihei City, China. Fishing communities' participation is being a key component in co-management of marine litter.
It seems that more than ever before, we need cooperation across regions, borders and areas of activity. The international organization, EAAFP, to protect migratory birds is raising concerns about plastic pollution, and recently held an event in Korea.

In Hong Kong, Mr. Woodring sent his opinion on the international issues related to plastic waste trade. His opinion is not only to recycle, but to give second life to plastic after use to go to the circular economy.

Marine litter and microplastics are becoming a rapidly growing issue internationally. It is regrettable that the newsletter, which is published only twice a year, cannot capture all the activities of our member organizations and key partners in the Asia-Pacific region. We truly encourage and applaud all NGOs and people who contribute to this work and ask them to continue to be together in the future.

With love,
Sunwook Hong

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(*Researcher of OSEAN*)

Marine Litter News
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Asia Pacific Civil Forum on Marine Litter

Greenpeace hosts the first Marine Debris Summit in Taiwan

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Fig. 1. Colorful marine litter

The first ever Taiwan Marine Debris Summit was hosted by Greenpeace on 5 January 2019 in Taipei. More than 100 people attended the event, which included speeches, poster sessions, extra activities and plastic-free meals.

The year, 2018, marked a milestone in Taiwan. It was when the Environmental Protection Administration (EPA) and local NGOs worked together to release the Taiwan Marine Waste Management Action Plan with a plastic-free ocean goal for 2030. Meanwhile, researchers have been increasingly focused on the impacts of marine debris while NGOs and civil society have launched numerous creative initiatives to reduce Taiwan's excessive plastic consumption.

Guest speakers share their insights on the marine debris problem

Fig. 2. Guest speakers' speeches and sharing the idea of the marine litter

Guest speakers from government, civil society, industry and academia gave speeches at the summit. Mr. Lee I-Hua, Senior Technical Specialist from the EPA's Department of Waste Management introduced the Taiwan Marine Waste Management Action Plan, in particular he outlined the timeline for how four single-use plastic items - bags, straws, takeaway cups and utensils – will be phased out. Jason Hu from the Society of Wilderness (SOW) talked about the rapid assessment surveys of beaches that Greenpeace and SOW have been conducting. During the afternoon session, Ms. Ho Ting-Fen, leader of the Sustainable Design Team from Plastics Industry Development Center described how the company is working with NGOs, a recycler of expanded polystyrene and a stationer to convert waste Styrofoam into pens, which will be sold sometime this year. Finally, Ms. Ko Po-Hsiu, doctoral candidate from the Institute of Ocean Technology and Marine Affairs, National Cheng Kung University, introduced her field research and made suggestions for the oyster aquaculture industries in Taiwan and Japan.

Participants at the poster sessions said they were amazed at how research on marine debris had expanded so rapidly in 2018. There were new studies on microplastics in sand, reservoirs, shellfish, seawater and barnacles. A research team from the National Museum of Marine Biology and Aquarium greatly increased our understanding of the impacts of marine debris on coastal fish and sea turtles in southern Taiwan as well as seasonal variations on beachside microplastic density. Other displays illustrated the results of NGO brand audits on discarded PET bottles. Professor Ko Chia-Ying, Associate Professor from the Institute of Fisheries Science, National Taiwan University, used her calculations to throw insight into the origin of PET bottles found on the Dongsha Islands. These early studies reveal the urgency for more monitoring and research to create a better picture of marine debris hot spots in Taiwan.

How we made learning about marine debris fun

Creativity and humour were injected into the summit's side events to spark curiosity and learning. In one activity, participants were invited to try on the special backpack designed to collect Styrofoam at coastal sites. We filled a room with marine litter and let people loose to practice conducting a rapid assessment survey. Such innovative and engaging methods fuse learning theory and practice, and the relaxed atmosphere generated helped participants find possible future working partners.

Fig. 3. A room full of litter and people can practice assessing the volume

There were many other activities. We learned how scrap glass collected from beaches had been made into money to entice people to do beach clean-ups and to reduce single-use plastic items on Xiao Liuqui Island off Kaohsiung. Local NGO RE-THINK created a marine debris guidebook of 101 types of litter based on "Pokemon Go" to get people interested in ocean conservation. The board game "Ocean Crisis" helps players learn how rubbish in our oceans harms marine animals and what we can do to help in our daily lives

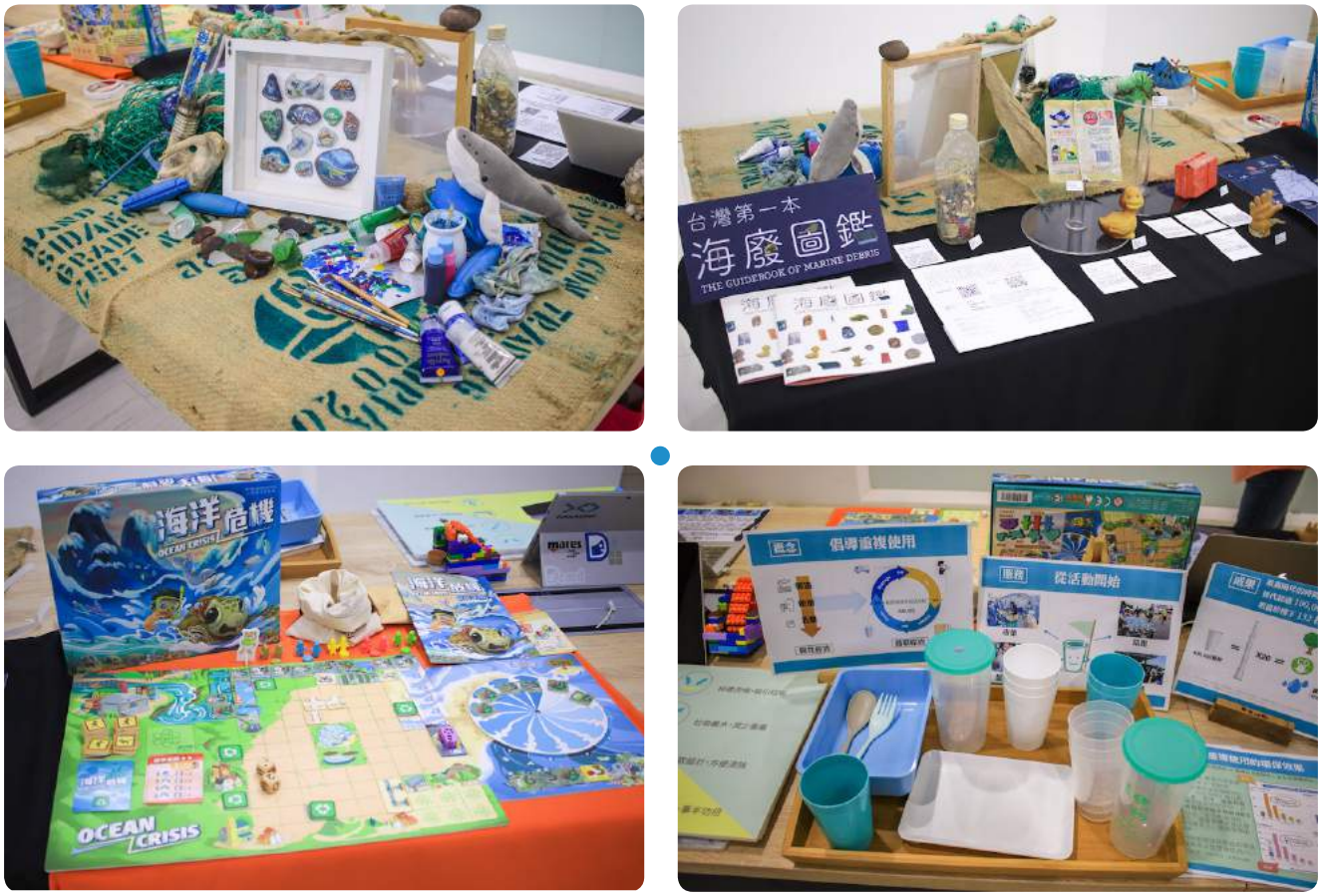

Fig. 4. From left to right, top to down: beach money, marine debris guidebook from RE-THINK, board game “Ocean Crisis” and the cup rental startup “QingPiao”

We finished the summit with a competition called “The king of marine litter,” in which people voted for the most bizarre items picked up during a beach clean-up; for example, various sex toys and a shoe housing the skeleton of a feather star (Crinoidea). Everyone was laughing at the list of funny objects and the three winners were presented with their trophies made from – yes, you guessed it – marine litter.

Fig. 5. “The king of marine litter” competition and the winner goes to two sex toys

This summit aimed to help those of us working on marine debris to get together and share ideas. We also wanted to make the results of research in this area more widely known. Government officials, academic researchers, museum staff, NGOs and social enterprises exchanged thoughts and held live discussions at the first Taiwan Marine Debris Summit.
We heard about a diversity of approaches to addressing the marine debris problem and we are looking forward to combining our strengths and working together to solve this issue in the future. The best outcome of this summit – the encouragement we gave each other to find practical ways to protect our oceans.

Fig. 6. We design some art installation made from marine debris for people to take photo, and we offered plastic-free meals for the audience.

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Asia Pacific Civil Forum on Marine Litter

OSEAN Holds the First Training Course for Marine Litter Instructors

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Fig. 1. OSEAN'S 20 and OSEAN staffs after a practice for the international coastal clean-up

From June 13th to June 15th, the first training course of 'OSEAN'S 20' for marine litter instructors was held at the Hallye Haesang national park nature center in Tongyeong. This training course was organized by the Our Sea of East Asia Network (OSEAN), a specialized marine litter experts group, to train professional instructors specialized in marine litter issues. Especially, it was conducted for 20 people who have experience in participating into the national marine litter monitoring project or teaching about marine litter. The program consists of a total of 44 hours of theoretical and practical courses, including the first lecture (total 3 classes), a general introduction to marine litter, international coastal clean-up (ICC) activities, and understanding and practice of microplastics.

In the opening day, Dr. Sunny Hong, the president of OSEAN, gave a keynote speech about marine litter. Dr. Hong began the speech as the definition of marine debris and addressed the illusion and the truth of the Great Pacific Garbage Patch. She, also, pointed out the seriousness of the marine litter issues and importance of scientific approaches. Tae-hee Kim, after the keynote speech, gave a lecture on useful teaching methods. In a row, instructors had a time to make lecture materials and practice lecturing.

Fig. 2. Dr. Hong giving a keynote speech on OSEAN'S 20

In the next day, Dr. Jongmyoung Lee, the chief science officer in OSEAN and country coordinator of International Coastal Cleanup (ICC) in Korea, gave a lecture on meaning of the ICC and guidelines for organizing the ICC. Also, instructors practiced the ICC activity on the beach near the national park nature center. In the same day, they met Jung-A Kim, an artist who has been making arts using marine litter, and listened to her world of artwork.

Fig. 3. Dr. Jongmyoung Lee giving a lecture on the ICC

In the closing day of the first training course, Dr. Wonjoon Shim in Korea Institute of Ocean Science & Technology lectured microplastics. Microplastics, which is firstly named by Richard Thompson, become one of the hottest keywords among researchers, and now some researchers have been trying to find out the ecological impact of them. After the lecture instructors practiced the method of sampling and analyzing microplastics led by Jongsu Lee, a researcher in OSEAN.

Fig. 4. Dr. Wonjoon Shim introducing the microplastic researches

Fig. 5. Training for surveying microplastics in the beach sand

Fig. 6. OSEANS 20 with Jung-A Kim, an artist who has been making arts with marine litter (4th from left in the front line)

In this training course, instructors rehearsed their own lectures using materials shared by OSEAN and exchanged opinions of the presentations. Also, they received certificates after finishing the first training course. They who have it can work as instructors certified by OSEAN. In the next few months the second and third training course will be opened for them.

	Course	Class (Theory/ Practice)	Curriculum	
			Theory	Practice
1st Training (June 13~15)	1. Introduction	2(2/0)	Definition, source and impact (2)	
	2. International coastal cleanup	4 (2/2)	Introduction, planning, processing, and application (2)	Field work (2)
	3. Microplastics	4 (2/2)	Definition, source and impact (2)	Field work (1), Analysis (1)
	4. Environmental education	4 (Integrated)	Teaching method, program and materials development, and practice (4)	
2nd Training	5. Research and Monitoring	4 (2/2)	Monitoring (1), Citizen science (1)	Monitoring practice (2)
	6. Sea-based source	6 (4/2)	Styrofoam buoys(2), Fishing gear debris (1), Fishermen participation (1)	Policy development and field visiting (2)
	7. Land-based source	4 (2/2)	Solid plastic waste management (1), River waste (1)	Policy development and field visiting (2)
	8. Environmental education	4 (Integrated)	Teaching method, program and materials development, and practice (4)	
3rd Training	9. National policy	4 (2/2)	Law, planning, and institution (2)	Policy development and field visiting (2)
	10. International governance	4 (3/1)	UN and regional sea (1), Main state parties (1), NGOs (1)	Practice of global cooperation (1)
	11. Environmental education	4 (Integrated)	Teaching method, program and materials development, and practice (4)	
Total		44		

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Asia Pacific Civil Forum on Marine Litter

Trash boat regatta in Penghu, Taiwan

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Penghu is an archipelago on Taiwan Strait, which is between Taiwan and China. It's made up of more than 90 islands. Because of the monsoon and ocean currents, it collects trash and waste from all over the world. Foundation of Pescadores Citizens published the marine debris map of Penghu (Table1 & Figure 1). For the map, they surveyed 211 beaches in Penghu, and divided the beach into three levels with the concept of traffic lights (red light: serious, yellow light: slight, green light: clean).

Table1: Marine Debris Map in Penghu

Levels	Number	Percentage
Red-serious	105	49.76%
Yellow-slight	83	39.34%
Green-clean	23	10.90%
Total	211	100.00%

It is worth noting that the red-light beaches are mostly located in the north or in the northeast. Also, it is speculated that the marine debris in Penghu is greatly affected by the northeast monsoon in the winter.

Fig. 1. Marine Debris Map in Penghu

Once the northeast monsoon begins in the winter, beaches are filled with marine debris no matter how hard we clean them. It is because of the great amount of marine debris. Also, we noticed that people who participated were all the same group. It's hard to let the general public interested. To gather public attention and spread awareness of marine litter, we have tried to do some different cleanup events to spread awareness. An idea we came up with was building boats made of marine debris. Using those trash boats, we rowed a boat race.

The trash boat regatta was held in 2019 Apr. 14. There were 18 teams that signed up, and about 200 people who participated. Not only the teams from Penghu participated, but also teams from Taiwan flew over to participate in this special regatta.

Fig. 2. Trash boat made of marine debris (photo credit: Liz Wang, Ethan Chang)

We emphasized not making new trash during the event. We reminded everyone to bring their own bottle. Also, we provided drinking water and some cups for the visitors who forgot to bring their own reusable water bottles.

Fig. 3. Water purification (photo credit: Liz Wang)

In order not to create new trash, we ordered lunch that was made from the community grandmas. All the ingredients were from the local area. It was a very traditional Penghu meal packed in a pottery pot. We didn't use any disposable tableware that day.

Fig. 4. Lunch (photo credit: Yan-Ling, Chen)

What was more? We prepared souvenirs for everyone who had to bring some T-shirts that were an archipelago rarely worn. You can make your own event-memorial clothes without making new trash.

Fig. 5. Event-memorial T-shirt (photo credit: Liz Wang)

The whole event looked like a fun game, but actually it was a cleanup event. To collect materials was to pick up marine debris. We had a fun time playing with those trash. In the end of the regatta, all the teams separated all the marine debris by classification.

Fig. 6. All boat trash was separated by classification

The purpose of the trash boat regatta was to make more people know the serious marine debris issue in Penghu. Only when you understand the current situation can you have an opportunity to make a behavioral change. We all have the power to change the ocean!

Marine Litter News
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Asia Pacific Civil Forum on Marine Litter

Community co-management and marine litter management in fisheries communities in Weihai City of PR China

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Plastic pollution is already one of the most serious environmental problems facing the world, and it is getting worse with population growth and a series of changes in ocean currents. And this problem, along with other environmental problems, threatens human survival. Scientists predict that by 2050, the oceans could contain more plastic than fish. The study, published in The Royal Society on Feb. 27, shows that plastic has filled the deepest parts of the world's trenches, and microplastics have been found in polar Marine animals [1]. This highly suggests that the planet's Marine ecosystems, which have not yet been contaminated with plastic, are gone.

In 2019, BlueRibbon ocean conservation association (BROCA) applied for a small grant project supported by UNDP/GEF Yellow Sea Large Marine Ecosystem Phase II Project, entitled " Condominium Program of Fisheries Community (Waste Reduction) in Jingzi Village of PR China ". The project was mainly organized by BROCA and supported by Huayi Social Work Center, Shandong university, Ivy League International School and other institutions. Its purpose is to effectively prevent fishery community ecosystem degradation and biodiversity loss, reduce Marine waste pollution, enhance the marine environmental protection awareness of community residents and fishermen, and promote community residents to participate in the delicate community construction. It has been more than a month since the project was launched. The report would like to give a detailed introduction of the project progress, work results, existing problems and later work plans.

I. What did we do in Jingzi village

A. Inception Meeting

The inception meeting of 'Condominium Program of Fisheries Community (Waste Reduction) in Jingzi Village of Shandong Province Project' was held on 17th May at Ivy League International School in Weihai [Figure 1]. Representatives from organizations and groups, including the YSLME project office, Sunjiatuan Street, Jinghai Community (it now sets up the community, formerly known as Jingzi Village) and Lihai Community (it is near the Jinghai Community), Ivy League International School, Huayi Social Worker Center, Shandong University and BROCA attended the meeting [1]. The meeting reviewed the background, relevance, project objectives, actions and anticipated results of the inception meeting. A management committee for the waste reduction in fishing communities was set up consisting of representatives from the government, NGOs, schools, community residents, fishermen, etc. Also, MOU was signed to lay a foundation for the model of community co-management of the project.

The meeting has also defined the goal of the project, which is to effectively resolve the contradiction between local marine resources environmental protection and community development, to make local villagers participate deeply in activities of decision-making, to transfer themselves from being managed to managers of environment around them, and to enhance the exchange and cooperation of ecological and environmental protection between China and South Korea and inter-regional sustainable cooperation in ecosystem-based management.

The project focuses on two aspects: the first is to establish an effective management system for fishing village communities and wharf waste, reduce the uncontrolled waste into the water mass, and improve the utilization rate of renewable resources; The second is to build a platform for public participation in marine protection through diversified and participatory activities, mobilize the enthusiasm of local residents and students to participate in project activities, promote garbage reduction, enhance environmental awareness, and expand the achievements of the Yellow Sea Large Marine Ecosystem Project.

Fig. 1. Project inception meeting and establishment ceremony of community co-management committee

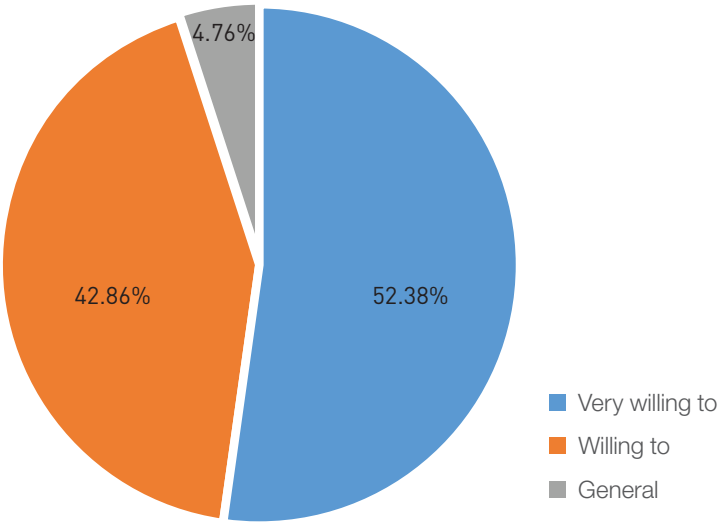
B. Carry out baseline survey and public awareness survey of garbage in Jinghai community

Carry out in-depth investigations into marine waste pollution, establish key monitoring areas for marine waste, and formulate a long-term monitoring system for marine waste. Six volunteers conducted a survey of garbage status and public awareness in Jinghai community on 24th May [Figure 2]. We have set up four monitoring points, which are located in the dock, the beach, the back hill and the community to investigate and evaluate the types, sources, classification, pollution and recycling of garbage in Jinghai community. At the same time, the residents' awareness of garbage management and environmental protection was investigated through visits and questionnaires. Most residents believe that environmental pollution is closely related to their lives, but the overall awareness of environmental protection is not high, the understanding of garbage classification and treatment is relatively one-sided, that their actions have little relationship with environmental change.

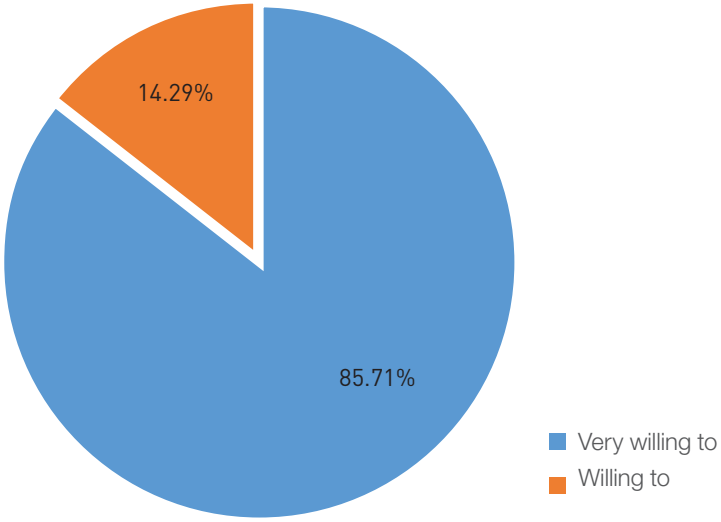
Fig. 2. Volunteers carry out community garbage survey

C. Film screening and Marine litter seminars

In order to effectively release the contradiction between environmental protection and local community development, we must cultivate the community public marine environmental awareness, enhance their awareness to improve the fishing village living environment, promote people to participate in improving fishery community environmental awareness, and actively build strong atmosphere to concern, support, participate the construction of exquisite community. On 7th June, BROCA together with Weihai Huayi Social Work Center, Sunjiayuan Street Jinghai community and Lihai community, held Blue Cinema watching and salon sharing activities. A total of 25 people participated, including 4 volunteers and 21 community residents [Figure 4]. The activity satisfaction is shown in figure 3. Before the activity, we went into the community and carried out a series of warm-up work. We fully mobilized the enthusiasm of the community residents through community visits, recruitment of public accounts, propaganda banners, activity leaflets and propaganda posters. The documentary Plastic Ocean was shown, and the theme lecture what can we leave after crossing the sea was held after watching the film. Through this activity, the community residents can fully understand the current situation of marine waste pollution, understand how plastic affects marine life, and even how plastic steps onto our dinner table. At the end of the activity, residents were encouraged to reduce plastic and abide by the principle of zero waste (refuse, reduce, reuse, recycle, rot), paving the way for the later stages of garbage classification and recycling, garbage reduction and other work in the community.



a Survey about whether you would like to participate in the activity again



b Survey of willingness to abide by the 5R principle

Fig. 3. Activity satisfaction survey

Fig. 4. Poster of the activity and marine garbage lecture

D. Organize beach trash removal activities

Organize community residents, college volunteers, Sunjiatuan Primary School and Ivy International School to clean the beach near Jinghai community for 2 times [Figure 5-6]. Add “marine garbage” theme classes in the activities of cleaning beaches, increase students’ awareness of the current situation of marine garbage, and enhance the awareness of marine protection. To improve the environment, guide the public to pay attention to marine garbage, and create a caring atmosphere for the ocean through beach cleaning activities. Through the model of “teacher-driven students and student-influenced parents”, the garbage reduction and marine environmental awareness of residents in Jinghai communities will be enhanced, and the coordinated development of ecological construction and improvement of delicate communities and people’s livelihood will be promoted, so as to build a demonstration village of marine ecological civilization.

Table 1: Information on beach cleaning activities in June

Information	Sunjiayuan primary school clean beach activity	Ivy league international school beach cleaning campaign
Date	3rd June	8th June
Site	Weihai Huancui district	Weihai Putaotan Bathing Beach
Number of participants	83	19
Garbage weight	52.3kg	87.4kg

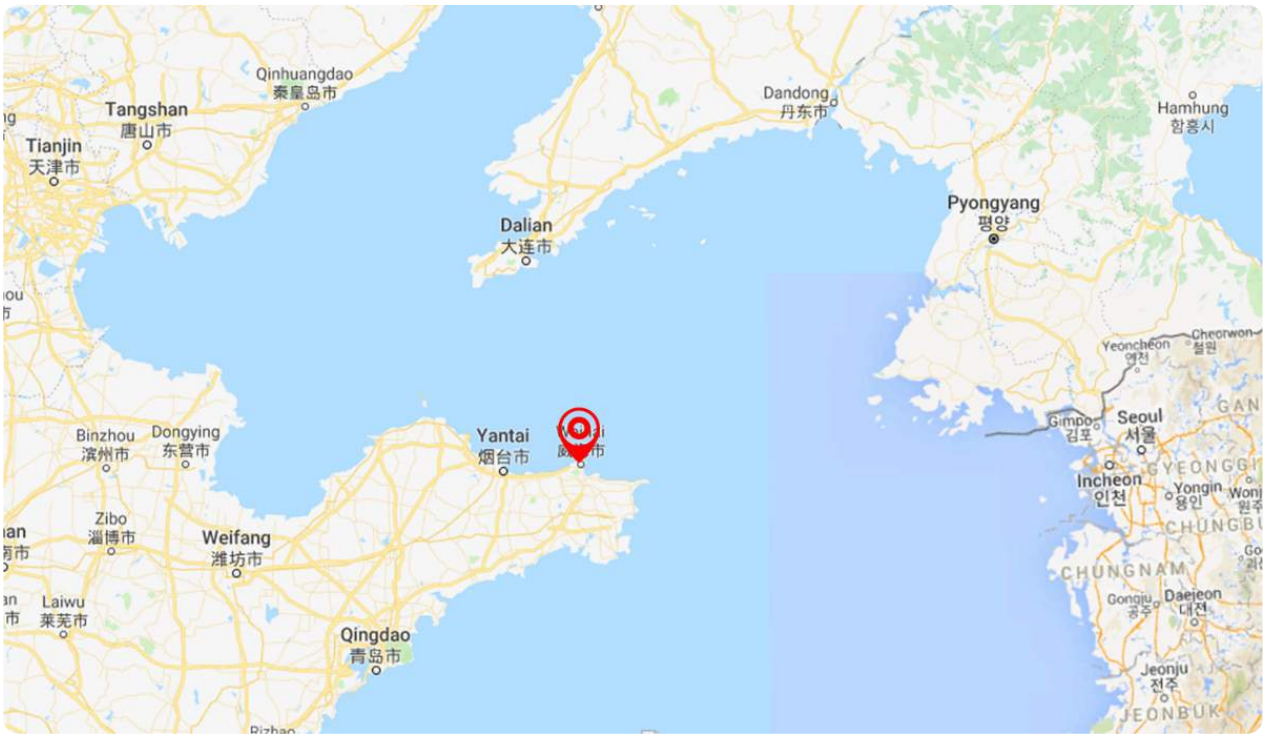


Fig. 5. Clean up site in Weihai of PR China (Source: Google Maps)

Fig. 6. Marine garbage knowledge popularization and beach cleaning activities

E. Project promotion

In order to raise the awareness of participating in environmental protection, to ensure the effectiveness of the project and, to enhance the influence of the YSLME project, BROCA has carried out a series of work on publicity and promotion. An official WeChat account and a website column were set up, and the corresponding event previews and activities were updated and promoted on the Internet media. Currently, the official account has sent a total of 7 tweets. A number of leaflets, posters and banners were distributed in the community in order to increase the community's attention to the project. Meanwhile, BROCA also invited Weihai TV, Weihai Daily and other medias to participate in relevant activity fairs where the origin, background, significance and goals of the project were introduced. This enables the public to learn about the current situations of marine litter and the importance of ocean governance, and it raises the attention to the projects from the residents, increasing the influence of the project

II. What have we accomplished at work

Multi-parties collaboration: Promote a long-term mechanism for multi-cooperative marine waste management and unite all parties to participate in coastal garbage control. Since the task of marine garbage disposal is more arduous, collaboration seems to be the main way to solve the problem of marine garbage management in order to achieve a sustainable development of the ocean. The project is now fully integrated with the government, Chinese and Korean NGOs, schools, research institutes, the media, environmentalists and other forces to participate in the Jinghai Community Marine Waste Management Project through various methods such as publicity, education, public action, etc.

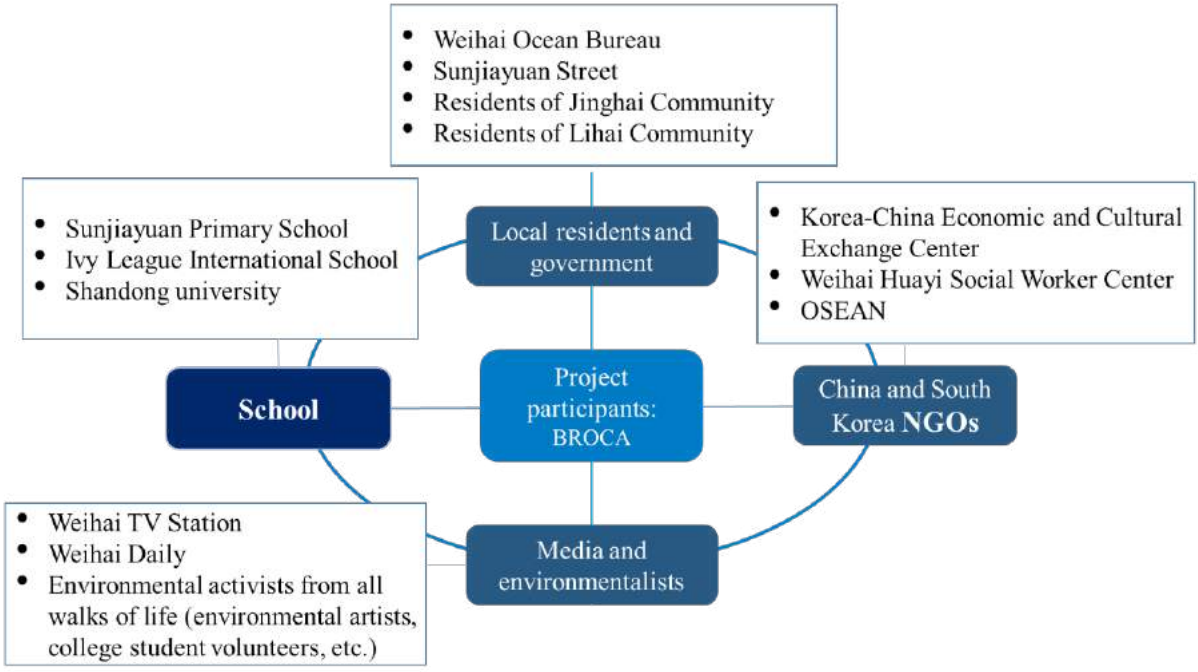


Fig. 7. Diagram of the project participation

Community co-management: Community waste management, waste reduction, and project sustainability must be supported by the community, and it must benefit residents from the environmental protection. The community co-management committee is composed of village committees and community residents, so that the community members can participate in local decision-making, protection and management, and give full play to their important functions such as mobilization, service guarantee, resource integration and social propaganda, and advocate more people to participate in marine waste management.

Raising awareness: Strengthen the publicity and education of fishermen's community families, including adding signs and slogans in the village, and actively invite experts and teachers to carry out lectures on the theme of "marine litter". Through the use of power point and publicity videos, the lectures led community residents and student groups pay attention to the problem of marine litter pollution and raise the awareness of residents in the fishing community to prevent and control marine waste discharge.

III. Summary and future plans

A. Employ smart waste-sorting appliances

In order to raise the awareness of environmental protection among the villagers, improve the utilization rate of garbage, and increase cooperation with garbage-recycle enterprises and relevant government departments. For example, a smart garbage collection device would be added to the fishing community to refine the waste sorting and recycling work. To popularize knowledge of garbage classification and use of recycling devices, it is possible to hold events with theme of "marine garbage management" and to guide fishermen to collect and classify domestic garbage and fishery waste. As a result, it could reduce marine pollution in offshore waters, and give them according to garbage collection. Appropriate subsidies allow residents to obtain certain benefits while protecting the environment. Moreover, it would be a good idea to award the fishermen according to how well they did in garbage classification.

B. In-depth discussion of community co-management model to enhance community project participation

During the implementation of the project, the community committees should be fully utilized to strengthen the sense of responsibility and ownership of the community residents. In the process of project execution and monitoring, the community committees will be used to lead the mobilization and enhance the participation of community residents. There is a need to pay attention to the role of women and children in improving the environment of the community, so as to pay attention to women and children in the project cycle management. This means to fully support women and children in the fishing community and the service targets. Through the activities, for example, “turning waste into treasure” production, it will improve the ability of women and children to participate in labor and community governance, and to enhance their own quality and public awareness.

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Asia Pacific Civil Forum on Marine Litter

China Coastline Monitoring and Cleanup Project Report 2018

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Marine debris pollution, especially marine plastic pollution, has received world-wide attention as a result of global population growth and industrialization. Governments, academic institutions and civil organizations have all taken actions against marine debris across the world. To illuminate the current state of the pollution in different Chinese waters. Shanghai Rendu Ocean NPO Development Center initiated the project "Watching Coastline — Scientific Monitoring" in 2014 with Shenzhen Mangrove Wetlands Conservation Foundation and conducted it at 12 monitoring sites along China's coastline in collaboration with 13 environmental NGOs (ENGOs).

In 2018, Rendu Ocean continued the monitoring in partnership with 24 ENGOs at 27 monitoring sites. The standing stocks of debris at new joined-the-network sites were analyzed with generalized linear model, and the accumulation rate with data from 2015 to 2018 was all taken into account and analyzed with generalized linear mixed model.

The results showed that in late January or early February (period 1) in 2018 the mean count of standing stock in the new 9 sites was 0.78 items m^{-2} and their mean mass of standing stock was 19.43 g m^{-2}. And the count densities and mass densities among sites were both significantly different (both p-values < 0.0001). Of the 23 valid monitoring sites the accumulation rate on the basis of number was 1.23 items m^{-2} $peroid^{-1}$.

Combined data of all monitored years revealed the accumulation rate of waters litter on the basis of number was 0.91 items m^{-2} $peroid^{-1}$, and the accumulation rate on the basis of mass was 23.00 g m^{-2} $period^{-1}$. The accumulation rates among different waters were not significantly different in number (p=0.1680) but their accumulation rates differed significantly in mass (p=0.0071). Different materials also had significantly different accumulation rates both in count and in mass (both p-values<0.0001). In addition, period had a significant influence on mass accumulation rate of debris (p< 0.001). The accumulation rates between years were significantly different in number and mass (both p-values < 0.001). In addition, the interaction in terms of waters and material, waters and period, and so on was also significant.

Moreover, we summarized major methods of marine debris control to provide advice for all kinds of environmental organizations when they would like to take actions.

Table 1: Marine Debris Control Methods in China

	Law & policy	Management actions	Infrastructure construction	Technology improvement	Advocation & education	Monitoring & research
Source reduction	Reduce or ban some unnecessary plastic products, and encourage or require the use of recycled materials.			Improve product design, use recycled materials and experiment environment-friendly materials.	Advocate sustainable and environment-friendly consumption practices, reduce the consumption and usage of single-use products, and realize sound waste management.	Carry out surveys to know the current state of different sectors in the waste management industry, and find out targeted solutions for the whole industrial chain in different environment, time, etc.
Mismanagement prevention	Improve the methods of monitoring and management, and assign responsibilities clearly.	Improve monitoring and management system.		Improve products, their packaging and subsequent waste disposal and establish recycling system.	Popularize garbage sorting.	
Land cleanup		Improve waste cleanup system of urban and rural areas.				
River cleanup			Develop an intercepting facility to keep debris in rivers of all orders from being carried into seas.			
Ocean cleanup	Establish a localized technical assessment system for ocean and coastline cleanup.	Establish a coastal environment cleanup system.	Find out practical technical solutions and develop devices to salvage marine debris.		Promote cleanup activities, and popularize the knowledge on waste management issues among the multitude.	
Circular economy	Promote recycling industry by means of policy.			Improve resource utilization rate, and realize safe waste disposal.		

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Citizen science initiative engaging citizen involvement in marine plastic surveys in Vietnam

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Citizen science is regarded as the practice of engaging the public in a scientific project or research which produces reliable data and information usable by scientists, decision makers, or other stakeholders. The public can also contribute to science through crowd sourcing, a practice that typically involves a large number of people in processing and analyzing data. The value of citizen science is discussed in relation to a range of projects of different types. For simplicity, 'value' is divided into scientific, educational, social and policy aspects.

Plastic marine debris is a global problem, but due to its widespread and patchy distribution, gathering sufficient samples for scientific research is challenging with limited time and human resources. Taking advantage of public interest in the impact of plastic on the marine environment, the Citizen Science (CS) initiative incorporates members of the public to provide public involvement in data collection in Vietnam. GreenHub has implemented serveral actions in the Citizen Science (CS) initiatives during the International Coastal Clean-ups every year and supported researches by scientists. In Vietnam, for some citizen science initiative, GreenHub focuses on educational benefits and awareness-raising. This supports citizen-led initiatives and the aims may be related to developing local planning for plastic marine debris management or reducing plastic usage.

During the period of 2000 to 2019, clean-up activities helped raise the awareness of the many threats of coastal waste, identified waste characteristics, and initiated community response to reducing waste generation. There are 36 sites from 28 provinces having been involved in these activities, with 10,454 volunteers from regular involvement of the Women's Union, Youth Union, Farmer and Fisher Associations and students from schools and colleges, NGOs, international organisations and business sectors. There have been increasing actions and interest from stakeholders and private sector (the Body Shop, GreenHub, Clean and Green Vietnam). All people used ICC data card as below figure for findings of the top 10 items.

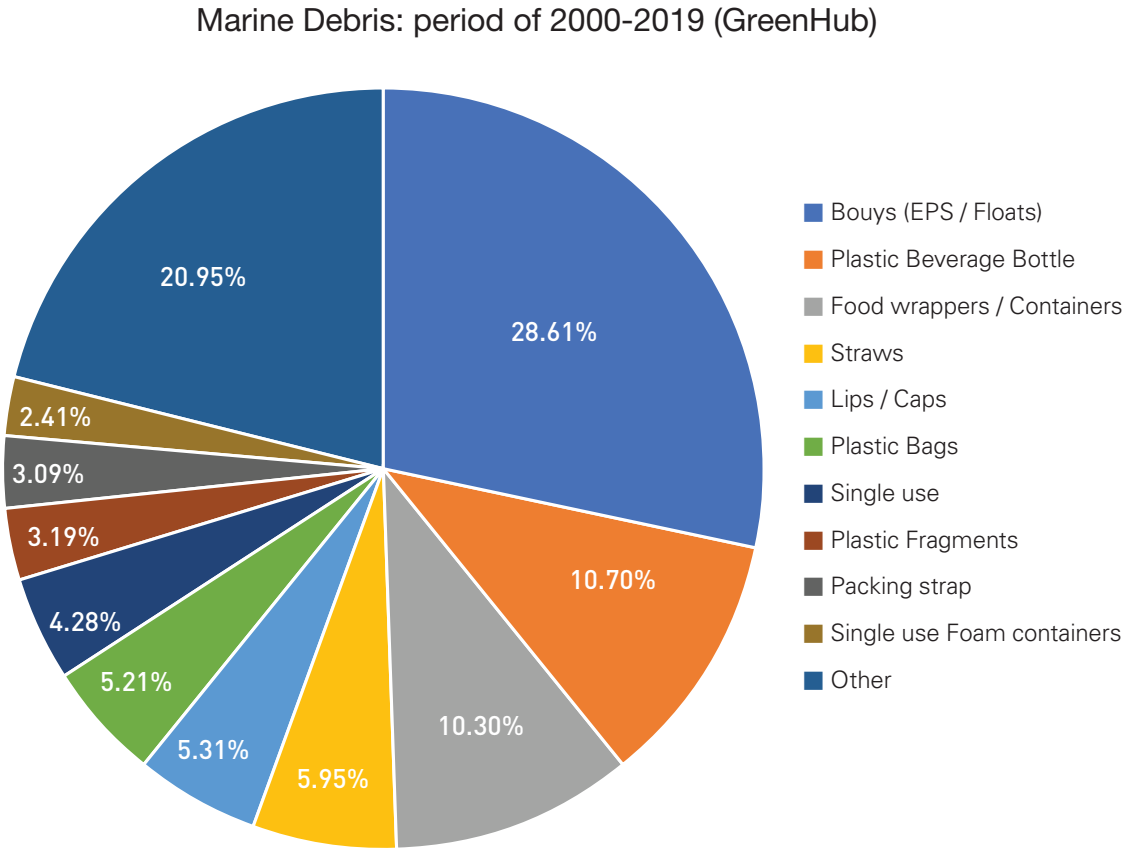

Fig. 1. Marine debris in Vietnam from 2000-2019 by ICC data

Regarding further action based on CS initiaves, after clean-up activities, we have supported youth and student groups to develop their green actions against marine debris and plastic reduction and recyling.

The value of citizen science is discussed in relation to a range of projects of different types. For simplicity, 'Value' is divided into scientific, educational, social and policy aspects.

With GreenHub activities, for some citizen science project, the educational benefits and awareness-raising are also common aims, although the distinction between scientific and other outcomes is not always explicitly made. By the survey of science research we also engaged youth in the educational benefits that can be experienced by participants in formal education (mostly children and young people) or as part of informal learning (adults and children).


Fig. 2. Volunteers participating ICC in Vietnam (1)

What do volunteers think about Global plastic pollution survey in VietNam 2018?

"Through the trip, I learned a lot, met the extremely cute friends and had many special experiences. There were sites that are very difficult to survey and we had to climb to the survey sites. In addition, there are very solitary sites. Although scared I still determined to overcome myself because it is my responsibility and my work."

Fig. 3. Volunteers participating ICC in Vietnam (2)

Citizen science is referred as practice of engaging the public, especially youth in a scientific project on plastic polution which produces data and information usable by scientists, decision makers, or other stakeholders. One among prioritized solutions should be developing a standard protocol for monitoring with engagement of citizen science to map locations of hot-spots of marine debris, plastic pollution and coordination for shoreline clean-ups. This will provide scientific evidence for the National Action Plan on reducing ocean plastic or long-run monitoring program.

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The 1st video contest "Save the OCEAN with OSEAN"

<**Sea is sick**> by Gil Yeana for The OSEAN Grand Prize

The Online Awards Ceremony

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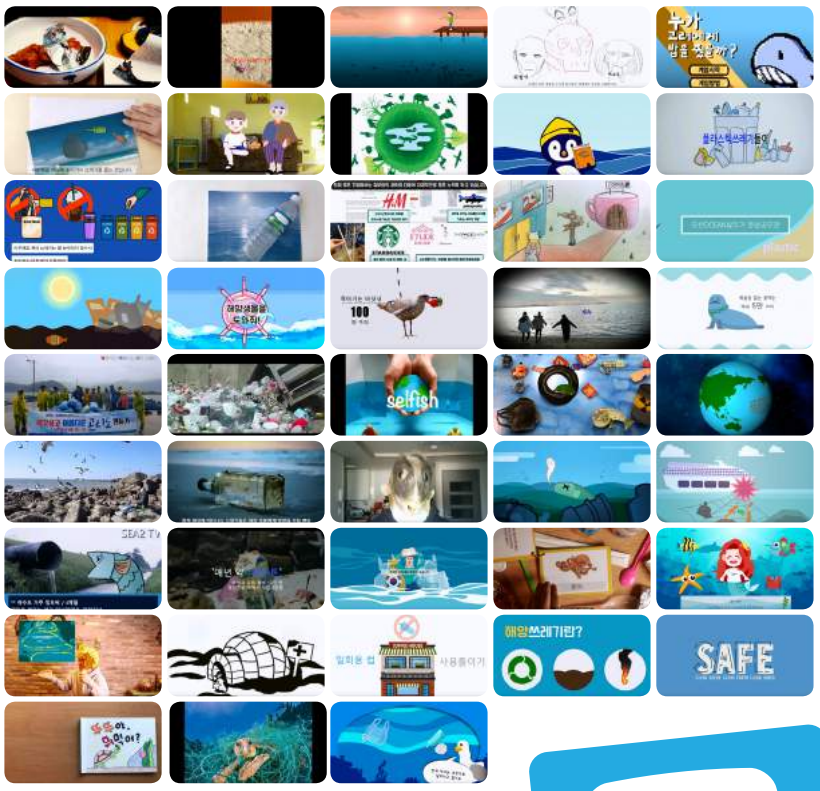
Poster of the 1st video contest "Save the OCEAN with OSEAN"



As the issue about marine litter is on the rise, the OSEAN held a video contest on the theme of marine litter, called “The 1st Save the Ocean with the OSEAN Contest”, to gather footages that contain the public interests and ideas. A total of 43 people (or teams) had participated for 2 months from January to March 2019. The awards ceremony was held on 20th March, in which 6 participants won 1 the OSEAN Grand Prize, 2 the OSEAN First Runner-up Prizes, 3 the OSEAN Second Runner-up Prizes, respectively.

The awards ceremony was uniquely designed online to save the energy and time. In fact, since OSEAN is in a small town, Tongyeong, there are many restrictions on preparing for offline events. In order to overcome these limitations, OSEAN has tried innovative methods to communicate people in other areas such as webinars or other online-conference platforms. The awards ceremony was experimentally held online in this context. Although it was held on a morning weekday, three of the six teams were able to participate in the ceremony because most of the winners were college students.

The online awards ceremony on 28th March included an introduction to the ocean, a celebration by Sunwook Hong, President of OSEAN, watching awarded videos, and speeches by winners.

In the celebration, she said “OSEAN is a nonprofit research institute and nongovernmental organization that devotes all passion and efforts to fundamentally reduce marine litter and microplastic debris. I sincerely congratulate you on receiving the awards. We would like to use the wonderful works that you made to reduce marine litter in the future.”

The awardees of the OSEAN Grand Prize, the OSEAN First Runner-up Prize, and the OSEAN Second Runner-up Prize won about $300, $200, and $100, respectively.

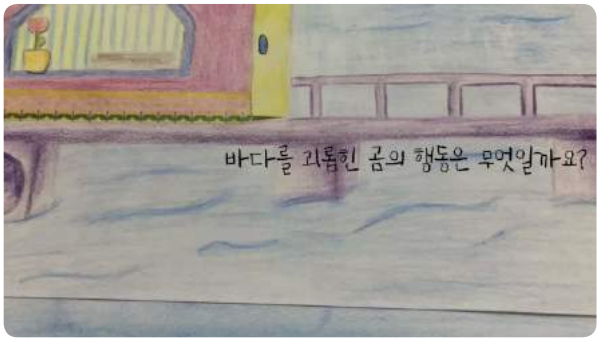
The list of winning teams and their footages are as follows.

The OSEAN Grand Prize
Sea is Sick
https://youtu.be/iZbgvUKkuzg

The OSEAN First Runner-up Prize
The Way to Save the Ocean, It Is Not Far Away
https://www.youtube.com/watch?v=BRoZflzh1MI&t=1s
(The Way to Save the Ocean, It Is Not Far Away -Hearangedul)

The OSEAN First Runner-up Prize
Hey, DduDdu, What Are You Eating?
https://youtu.be/mCqwvqYu3PI
(Hey, DduDdu, What Are You Eating?-DduDdu)

The OSEAN Second Runner-up Prize
Own Fault
https://youtu.be/YvlnX3950Hc
(Own Fault-Seashore Young Man)



The OSEAN Second Runner-up Prize
Microplastics Who Bully the Ocean
https://youtu.be/Lt0yc_9fMNA
(Microplastics Who Bully the Ocean-the Ocean Guardians)

The OSEAN Second Runner-up Prize
the Time of the Ocean
https://youtu.be/yUm-DEV7YA8
(The Time of the Ocean - Kim Gahyun)

At the last of the ceremony, awardees gave acceptance speeches. Gil Yeana, the first prize winner, said “This was my first time to participate in a contest, and I am very happy to receive the prize. I tried to give a clear message from this video. From now on, I will pay attention to marine debris more.” Hwang Soojin in the Ocean Guardians, the second prize winner, mentioned “Like the first prize winner, this was our first contest, and it is so glad to win the prize. Because I am interested in plastic issues, it was very fun to make a footage. Hyun Minkyeong in the same team added “Through making the film, I thought we had to make a lot of efforts to reduce plastic products including plastic bags.” Lastly, Kim Gahyun said “I didn’t have any interest in marine litter, but I knew the seriousness of them during creating the video, so I prepared hard to inform other people.

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Celebrating 2019 World Migratory Bird Day - Join us to Protect Birds: Be the Solution to Plastic Pollution!

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Initiated in 2006, World Migratory Bird Day (WMBD) is an annual awareness-raising campaign to promote the importance and call for global conservation actions for migratory birds. WMBD is now celebrated twice a year, on the second Saturday in May and in October. In 2019, the theme of World Migratory Bird Day is "Protect Birds: Be the Solution to Plastic Pollution!" and put the spotlight on the impact of plastic pollution on migratory birds and their habitats. East Asian-Australasian Flyway Partnership (EAAFP) is the key player to promote World Migratory Bird Day in this Flyway.

To learn about the impact of plastic pollution on nature, we need to first understand how serious the situation is. According to studies, global plastic produced annually increased 200-fold since the 1950s. Today, we produce about 350 million tonnes of plastic waste every year, which is nearly the weight of all human population in the globe. However, the majority (more than 70%) of plastic waste comes from Asia. Then, where would these plastics go? Nearly 80% of them end up in the landfill, 12% incinerated, and only 9% of all plastic waste produced has been recycled. Plastic waste on land easily goes with water and leaks to the oceans. Eight million tonnes of plastics flow into the oceans every year.

With such a huge amount of plastic waste going to the environment every day, nature and wildlife would undoubtedly be affected. According to reports from Convention on Biological Diversity, 'More than 800 marine and coastal species are affected by marine debris', that is, all known species of sea turtles, half of all species of marine mammals and at least one-fifth of all seabird species, which are harmed by mainly being entangled by plastic debris or ingesting them.

Even though we learned that there is serious impact of plastic pollution on wildlife, studies, especially in Asia, and migratory waterbirds, are very limited. Therefore, on the World Migratory Bird Day in May 2019, the East Asian-Australasian Flyway Partnership (EAAFP) grabbed the opportunity to hold a special session during the ceremony of 10th anniversary of EAAFP Secretariat, held on 10th May, 2019, to raise the awareness of this global issue to more than 100 representa-

tives from embassies, local government agencies and non-governmental organizations. Dr. Sunwook Hong, Head of the OSEAN was invited as one of the keynote speakers for this special session. Afterward, there was a discussion panel with Max Kim, from Patagonia Korea, Miwha Kim from Korea Zero Waste Movement Network and Dr. JinYoung Park from National Institute of Biological Resources.

Dr. Sunwook Hong, Head of the OSEAN, presenting at celebration of 10th anniversary of EAAFP Secretariat (©EAAFP Secretariat)

Everyone uses plastic in daily life, and we all have the responsibility to tackle this global problem. The simplest way is to reduce, reuse and recycle plastics. People can also join clean up activities and campaigns. People can spread the message to their friends and family. These things are easy to carry out in daily life.

In addition, The EAAFP Secretariat also produced promotional videos for World Migratory Bird Day:

English; https://www.youtube.com/watch?v=ub5zliYU3zY
Korean; https://www.youtube.com/watch?v=ofMSkU8L9Ts

We also collaborated with OSEAN to produce the factsheet for the public to download (https://www.eaaflyway.net/wp-content/uploads/2019/06/Fact-sheet-0506-final_no-frame.pdf).

EAAFP World Migratory Bird Day promotional video (©EAAFP Secretariat)

Further information:

About EAAFP work for World Migratory Bird Day: https://www.eaaflyway.net/project/world-migratory-bird-day-2019/

About World Migratory Bird Day: http://www.worldmigratorybirdday.org/

[EAAFP 10th-anniversary event – Conference Sketch Part III] Celebrating 2019 World Migratory Bird Day
https://www.eaaflyway.net/eaafp-10th-anniversary-event-conference-sketch-part-iii/

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OPINION

Marine Litter News
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Asia Pacific Civil Forum on Marine Litter

From plastic waste trade war to circular economy

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In a world reliant on global trade, plastic waste has become toxic. The heady mix of plastic waste, global damage, and national interest has sparked two sparring matches, and another is set to begin. What does it mean and what are the business take-outs?

How it all started

Western countries have relied on trade under the guise of exporting recyclable resources, when in fact this process was "easy off-sharing" of domestic plastic waste liabilities. As much as 40 percent of every bale shipped was not able to be recycled in the importing nation, therefore often entering the environment via dumping or toxic and open-flame burning.

Underlying the trade in plastic waste is the harsh reality that few countries participate in circular economics, and much of the world lacks the needed processes and infrastructure to create Second Life markets for their own local collection. Ironically, this includes two of the world's wealthiest cities - Singapore and Hong Kong. While both have virtually 100 percent collection coverage, limited local processing options means that half of the recyclables goes to landfill or incineration, while export markets are sought for the rest, if they are collected, sorted, and recovered properly in the first place, which is not common.

Round recap

In "Round 1" of the plastic pollution fight in early 2017, China announced its intention to cease accepting scrap plastic imports. Western industry insiders had been saying that this would never happen, which turned out to be a grave miscalculation. China successfully lodged the action with the World Trade Organisation citing human and environmental damage. In 2018, China ceased importing waste plastic, leaving plastic exporting nations with, what they declared a "plastic waste crisis".

With China's borders closed, "Round 2" saw Western countries turning quickly to new export markets - Malaysia, Thailand, Vietnam and Indonesia. Like China, these countries felt, and feared, the harsh impacts of poor quality, contaminated imported plastics with nowhere to go except into the environment. In the end, they closed their doors too.

"Round 3" is on the way. Diplomats are considering a proposal to add mixed plastic waste to the *Basel Convention* list of materials requiring the recipient country's informed

acceptance. If successful, trading mixed plastic waste resources will change from being organised via business-led buying and selling, to one of government determination. Plastic waste exporting countries will need the informed consent from recipient countries (like Malaysia, Thailand, Indonesia, or China) in order for importation to be approved.

The problem grows

While waste plastic trading has existed under the banner of doing environmental good, its impacts on recipient nations have previously been swept under the carpet. Times have now changed, with the awareness of the health and environmental impacts of plastic pollution hitting a tipping point, supported by knowledge that plastic in the ocean is entering our food chain.

Global calls for local action – from "Me" to "We"

In recent *Plasticity Forums* which always focus on business-led plastic circular economy solutions, there has been a consistent theme. One size does not fit all, and we need to move beyond theory into localised strategies.

Given that most companies or nations often cannot reuse all resources that are consumed, trade is essential. Trade, however, needs to be responsible, and the transfer of materials should only happen if they are needed for the creation of economies of scale from smaller markets to larger ones, while transferring only value instead of burden (waste).

The challenge we face is not whether plastic waste resources should be traded for valuable reuse, but instead, the challenge is shifting the discussion from "me" to "we," meaning that it is not just each individual or entity which is responsible, but that we work collaboratively in new ways, in order to create both local and global circular economies which can harness today's waste streams.

Optimising plastic's second life potential - the 5-Point-Plan

1. Complementary competitive advantage: There are many collaborators today who use their combined skills to create competitive advantage – from countries (regions like ASEAN), to country (financial capital), to industry (e.g. tourism). Consider the impact and results if a country like Singapore applied the same vigour it has used to becoming the region's tech start-up hub and leveraging its capital markets, engineering and technical expertise to facilitate Asian collaboration in the new plastics circular economy.

The region has ample manufacturing capacities which could lead to innovations that open viable pathways for recovered plastic to compete with new materials. Which companies and countries will be the first to reap these rewards as they shun their outdated linear business models?

2. Not a recycling business: The collection of waste plastic, and its transformation into new goods for sale, should not be considered a "recycling business." Instead, the use of recovered plastic should be considered a manufacturing operation, or an efficient use of materials by a brand. By focusing on fulfilling a customer need for a product and service, rather than simply trying to make a new "eco-product" that might not be needed, regular market forces come into play, functioning based on supply and demand.

The product is still the "hero" in the game in this case, while the material used for that product is "a support player," but not deemed inferior because it is made of Second Life material (in fact, in some cases, it may now be appreciated as being a superior material due to its circular origin).

3. Policy: Governments and businesses wield much power through their procurement policies, and the adoption of policies which favour recovered content can easily be catalysts for change. Equally, waste management policies can favour high-quality, fit-for-purpose material that fits into Second Life markets, either at home or abroad.

Almost all materials can have a Second Life of some sort, if the capacities exist to pull them back into the market. This is where policy leadership is critical if innovation, job creation, and communal betterment are of interest to those in power.

4. Manage plastic to the hierarchy of value: Some plastics are highly valuable, and are likely to be recovered. Many others, due to low volume, weight or contamination,

are perceived to be worthless. Creating value from so-called "tragic plastic" is a growing field of innovation that can be turned into a business, industry, and country-level competitive advantage.

Its "tragic" nature today is mainly due to outdated recovery systems or policies (both socially and technically), which are not tailored to complement the value that plastic waste can represent on any level of the value hierarchy. If materials are perceived to be "too hard to recover," then they should be reduced from use in the market.

5. Apportion blame: Often we want a villain to blame. The sad truth is that we are ALL to blame, and we need to share the solution. Yes, governments can (and should) do more; but businesses play the biggest role, as they guide research and development, innovation, and consumer engagement. Communities can also make an impact, as they now have even more power to have their voices heard by governments, impact businesses via purchasing decisions, and encourage their communities to be showcases of global pride.

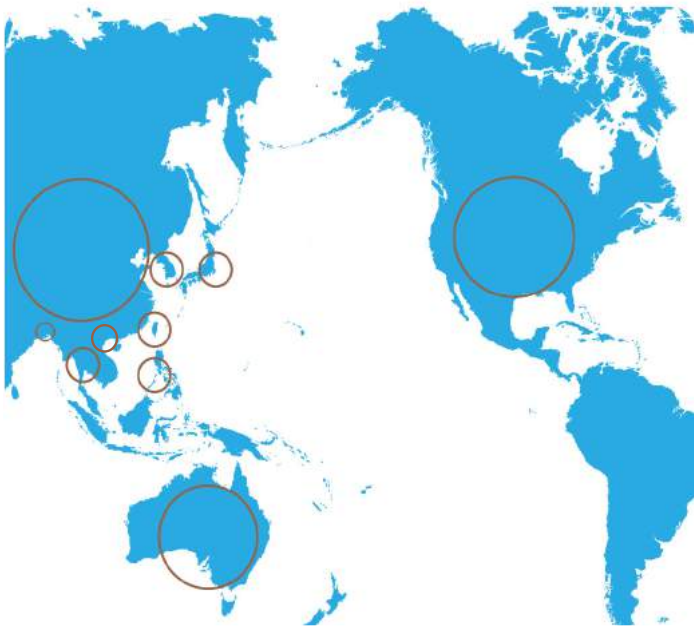
Above all else, new collaborations and shared responsibility can be created across business sectors and help to shift thought into action.

About the authors

Douglas Woodring is Founder of *Plasticity Forum*, a global forum bringing about applied plastic circular economies, and the Founder of *Ocean Recovery Alliance*, a solutions focused NGO dedicated to a better Ocean. He is a sustainability economist with more than 20 years' business, finance and circular economy experience across the globe, but with deep roots in Asia where he is based.

Trish Hyde is Founder of The Plastics Circle (a circular economy innovation and application firm) and Founder of PlastX (a Tech Startup for businesses to buy the specific recovered plastic they need, direct from a community of paid collectors). She is an accomplished business leader and adviser with global knowledge and expertise in circular economies and operational performance.

Douglas and Trish invite readers to join industry leaders and influencers at the next world-leading action-based plastic circular economy forum - Plasticity Amsterdam, June 19th, 2019.



What is Asia Pacific Civil Forum on Marine Litter?

Asia Pacific Civil Forum on Marine Litter is a network established in 2009, made of NGO groups dedicated to protection of marine environment from marine litter in Asia Pacific countries.

Network member groups are:

Japan Environmental Action Network (JEAN)
Our Sea of East Asia Network (OSEAN)
Taiwan Ocean Cleanup Alliance (TOCA)
Shanghai Rendu Ocean NPO Development Center
Kewkradong Bangladesh
ICC Philippines
Tangaroa Blue Foundation
Ocean Conservancy
Greenhub

To the readers,

East Asian countries are connected to each other environmentally, geographically, historically, or culturally through shared regional seas. The East Asian region is one of the most dynamic economic centers with some of the busiest shipping lanes in the world. With the spread of mass production and consumption over the last decades came the huge increase in solid waste generation. There are, however, not enough waste treatment facilities and management measures, which makes the region vulnerable to marine debris pollution.

Entering the seas in large amounts, floating debris has become a source of concerns and conflicts among some neighboring countries. This transboundary environmental problem requires concerted efforts of all the relevant stakeholders beyond sectoral and political boundaries. In this regard, OSEAN (Our Sea of East Asia Network) and JEAN (Japan Environmental Action Network), the marine debris NGOs in Korea and Japan, have shared a vision in which people in the East Asia could act together as one community in protecting our precious marine ecosystems. We believe that NGOs in the East Asian countries have an important role in sharing experiences and acting together to address the marine debris issue in the region from the bottom up.

The city governments of Shimonoseki and Nagato, and JEAN co-organized '2009 Marine Litter Summit - Shimonoseki•Nagato Meeting' on October 16-18, 2009, in Shimonoseki, Japan. OSEAN suggested in the meeting to start an 'East Asian Civil Forum on Marine Litter' through which relevant NGOs and organizations in the East Asia could share experiences and information and work together on the marine debris problems. OSEAN and JEAN have reached a consensus to launch the forum and publish biannual newsletters. So we have launched the East Asian Civil Forum on Marine Litter and we are delivering marine debris news from member countries via e-mail to people who are concerned with this problem on local, national, and regional levels. In late 2012 now, we have four members above. We hope that the forum could provide a venue for all of us to share our vision, experiences, and creative actions.

This is the first effort to link the East Asian people beyond geographical and language barriers to a common goal of protecting our seas from marine debris pollution. NGOs and organizations that have interests and passion to make our seas clean and healthy are more than welcome to join us. For more information, you can contact us at osean@osean.net. Please let us know if you have any problem in receiving the newsletter. These articles are also available online at http://cafe.naver.com/osean.

Secretariat,
Sunwook Hong (OSEAN) and Kojima Azusa (JEAN)

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