Exploring program on ocean plastic pollution management: Case of NGO in Jakarta

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Abstract. As an urbanized city, Jakarta's ocean is worsening every year due to the geographic location. This paper attempts to address the role(s) of NGOs in Jakarta ocean plastic management and factor contributing to the community participation in ocean plastic waste. A qualitative design utilizing in-depth interviews will be conducted to gather all the necessary data from participants. Five selected respondents are representative from NGOs: Trash Hero Jakarta, Divers Clean Action, Sea Soldier Jakarta, Osoji Jakarta, Yayasan KEHATI. All of the respondents represented their NGOs have a community involvement program because people and community have an important role to fight against ocean plastic waste management. 2 respondents fight waste in the land because it is easier and since Jakarta has 13 rivers that are connected to the ocean, waste management program in the land proves to be one of the main issues that need to be taking care of to reduce ocean plastic waste. All of the non-profit organization community programs are educating participants about waste management and how to do the recycling process. The existence of a non-profit organization in Indonesia proves to be very helpful for Indonesia's government to fight against waste production in Indonesia especially Jakarta. The recommendation was Indonesia's government taking the waste issue as a big problem and giving a stricter regulation and implementation. Further, Indonesia's island needs to have its waste bank and recycling system so the local citizen did not litter in the ocean anymore.

Keywords: ocean, plastic waste, pollution, non-government organization

1. Introduction
The National Conference on Waste to Energy has emphasized Indonesia as a maritime country and one of the biggest countries and the largest archipelago state in the world, with more than 17,000 islands and over 6 million kilometers square of water with more than 91,000 kilometers of coastal lines. Indonesia has three zones which are WITA, WIB, and WIT, 10 neighboring countries (ASEAN) which are Malaysia, Singapore, Thailand, Myanmar, Laos, Cambodia, Brunei Darussalam, Timor Leste, Papua New Guinea, and the Philippines. Because of its strategic location and natural wealth, 23% of global mangroves, 30,000 square kilometres of seagrass, and 75% of all-accounted marine life is located in Indonesia. Further, Indonesia is known as the critical chokepoint for global navigation.
However, it comes with its faults, Indonesia continuously faces challenges in the sea and ocean which are fighting poachers who want to illegally take Indonesia resources, armed robbers in the ocean, hijackers in the ocean, slavery in the ocean, human trafficking in the ocean, the problem with mitigating climate change effect, the health of the ocean and governmental services to remote islands. All of these issues will become a burden to Indonesia’s national budget because government priority has to be shifted elsewhere.

The consequences of marine debris are not limited to these areas, this invades more coastal areas of many tourist popular destinations. Previously pristine beaches are now getting contaminated with an exponential amount of plastic waste. It affects human health as well as biodiversity, sampled that one-third of commercial fish in Jakarta is contaminated or has consumed plastic or microplastic. Figure 1 presents numbers and facts concerning waste, plastic waste and solid waste state in Indonesia. Most of the waste found in Indonesia dominates by organic waste by 44% followed by diapers (21%), plastic bags (16%), other plastics (9%), plastic packaging (5%), glass and metal (4%), and plastic bottles (1%) [1].

Indonesia’s solid waste is increasing by almost 1 million tons every year from 2015 to 2019 and it will increase even more in the future if there are no major changes towards waste treatment. However, to do major changes towards solid waste treatment, the cost will become a burden for Indonesia. Further, to reduce more waste without using a bigger cost, everyone should make changes. This includes the effort of non-profit organizations and individuals.

Organic waste composition in Indonesia dominates 56% of all waste. However, solid waste is still considered very high, which is 44%, accounting for around 27 million tons. Further, plastic waste contributes 13% or around 9 million tons every year. The problem of plastic waste is apprehensive and can only be averted with everyone’s participation. Table 1 provides information on solid waste management which gives an insight into where the solid waste went.

**Figure 1.** The Composition of Marine Litter
Source: [1]
Sixty-nine percent of solid waste management is stored in a landfill. However, 10% of solid waste buried in the soil. Further, only 7.5% of solid waste got recycle into a product. A very bad comparison as, 5% of solid waste is burned openly and causes toxic pollution, which will also affect human health, 8.5% of un-managed solid waste usually goes into the sea and it damaged the ocean ecosystem. The below figures present the trend of plastics waste generation in big cities.

Indonesia nowadays is known as the “world's second-largest plastic polluter with 10 billion plastic bags in the country alone dumped into the environment each year [3]. In an attempt to reduce plastic waste in the ocean, Indonesia's successfully gathered 20 thousand citizens to clean up the mess in August 2018. There are 20 thousand citizens gathered at 76 different locations across the Southeast Asian country to participate in a massive clean-up of plastic trash” [4].

1.2 Non-profit organization involved in managing ocean conservation
Non-governmental organizations (NGO) become the “third sector on the landscapes of development, human rights, humanitarian action, environment, and many other areas of public action. NGO is also active in a wide range of other specialized roles such as democracy building, conflict resolution, human rights work, cultural preservation, environmental activism, policy analysis, research, and information provision” [7]. Trash Hero is a global volunteer movement, led, supported and governed by Trash Hero World founded in Thailand, 2013. It consists of 177,023 volunteer worldwide and their clean-up programs reach 5,269 places worldwide. Trash Hero currently extends to 12 countries around the world: Indonesia, Thailand, Malaysia, Myanmar, Laos, Singapore, Czech Republic, Romania, Serbia, Switzerland, USA, and Australia. Trash Hero operation cost is covered by a bottle & bag program and partnership with companies that contributing the company staff in the clean-up process [8].

INSWA: Indonesia Solid Waste Association is a professional organization engaged in the management and technology of waste management. INSWA is oriented towards non-profit, non-partisan and independent and is based on a new paradigm in waste management. A new paradigm of waste management encourages waste management from sources with the main goal of creating a clean and healthy area. The use of waste management in the form of energy, fertilizer or industrial raw materials is an added value [9].

Divers Clean Action (DCA) is a youth NGO and community focusing on marine debris issues. DCA has been partnering in researching with some universities [10]. On the other hand, DCA also
implements the environmental collaborating program with diving institutions, takes the role of a facilitator for coastal community development, and does various campaigns and training. All the activities were done in the last 3 years with more than 1000 volunteers across Indonesia. DCA was established in 2015 by SwieteniaPuspa Lestari, Nesha Ichida, and M. Adi Septiono. Now, DCA has 12 team members.

Another non-profit organization that managing waste and combating marine debris in Jakarta oceans is KEHATI (Kehadiran Yayasan Keanekaragaman Hayati Indonesia) founded in 1994 with goals to manage all of Indonesia's resources efficiently. KEHATI foundation has developed a new vision for 2019 – 2023 which is sustainable nature for future generations of Indonesia. KEHATI always maintains accountability and transparency in its effort to be a trusted and influential agent of change in achieving its vision and mission for the conservation of biodiversity and its sustainable use for the welfare of society [11].

1.3 Society empowerment on marine plastic debris
“Economic development and people's changing patterns of consumption and production have led to a drastic increase in plastic wastes all over the world. Plastic waste disposal harms the environment and poses a threat to human health. Hence, there is a great desire to reduce plastic wastes. To reduce plastic wastes, education is of utmost importance as education can change people's knowledge, attitude, and behaviors toward plastic waste management” [12].

“The rapid urbanization and economic growth in different countries have led to a drastic increase in plastic production and consumption around the globe. Owing to the low recycling value of plastic and the lack of technological support, the recovery rate of plastic waste remains very low. Most of it is washed into the ocean. To reduce plastic waste, the popularity of plastic waste management among the public has to be enhanced by changing people's knowledge, attitudes, and behaviors toward plastic waste management” [12].

“Is anything that lacks utility or object or substance that the owner either voluntarily or involuntarily relinquishes ownership of waste management is the collection, removal, processing, and disposal of materials considered as waste that are generated through human activities” [13].

In people and social empowerment, the government or institution can take initiative and facilitate a program by establishing a procedure for the collection, transporting and disposal of waste products that are economically feasible and environmentally viable [14]. “The term empowerment has different meanings in different sociocultural and political contexts and does not translate easily into all languages” [15]. Today, governments have admitted that managing waste will require society and people's participation and involvement and therefore has created a practice of waste management as part of the social empowerment program. Waste management practices for society considered by the government as including waste recovery, recycling, reuse and treatment which serve as income to people. By creating the benefit so it can attract people to be more involve and participative in reducing the waste that leads to marine plastic debris and the nation and environment could benefit from this program.

Although some efforts have been done to reduce ocean plastic waste in Indonesia, there is a need to understand the factors that influence the plastic pollution in Jakarta ocean and the initiative from government and non-profit organizations for social empowerment in managing plastic waste. The following questions are used as guidelines to achieve the research objectives.
1. What is the role(s) of NGOs in Jakarta ocean plastic management?
2. What factors contribute to and challenge community participation in ocean plastic waste?
3. What are the programs and initiatives run by NGOs that involves the community in ocean plastic management in Jakarta?
2. Literature review

The use of plastic in today's world seems to grow rapidly and unconsciously that it makes humans rely on plastic more and more. Plastic waste in Indonesia has reached 64 million tons per year and 3.2 million tons of plastic waste is thrown into Indonesia's ocean [17]. Plastics that are thrown to the ocean could become small particles called microplastics with a size of 0.3 - 0.5 mm.

Ministry of Environment and Forestry (KLHK) assess the waste matter is troubling. Indonesia is ranked second in the world to produce plastic waste into the sea [2]. Data from KLHK shown that from 100 stores or members of the Indonesian Retail Entrepreneurs Association (APRINDO) within 1 year will produce 10.95 million wastes of plastic. Director-General of Waste Management and Bahan Beracun Berbahaya (B3), KLHK, Tuti Hendrawati Mintarsih stated that the total of Indonesia's waste in 2019 will reach 68 million tons and plastic waste is estimated to reach 9.52 million tons or 14% of the total waste [18].

Indonesia has joined the Kyoto protocol with the main purpose of reducing greenhouse gas emission including landfill gas emission [19]. The rising number of Clean Development Mechanism (CDM) projects in the waste sector in Indonesia is one of the proofs that waste management in Indonesia is an important priority at the national level. However, the level of awareness, policy, budget, and private participation on waste management is still low and it became the main reason for the low level of service in Municipal Waste Management (MWM). Further, the condition of solid waste management is far from adequate Level of Service (LoS) (p. 2).

Non-government organizations (NGOs) are part of civil society, a wide and growing range of non-government and non-market organizations through which people organize themselves to pursue shared interests or values in public life [20]. Non-profit organizations' role in plastic management gives a positive impact on Indonesia's environment. Their role to help Indonesia's environment are through executing clean-up programs, education for the young generation about the problem that Indonesia's facing and helping Indonesia's government to solve the waste issue. The "IYMDS (Indonesia Youth Marine Debris Summit) program is a fully-funded youth training and development program which collects 70 young leaders across Indonesia and work on marine debris issues [10]. Another organization that fights against waste in Jakarta is the Trash Hero organization. Trash Hero organization is a world organization with 12 branches across the world and one of them located in Jakarta.

Empowerment is the expansion of freedom of choice and action [15]. It means every individual has their right to control the resources and taking a decision by themselves as long as it only affects their life. However, for poor people, their choices are extremely limited due to their lack of assets, education, and their powerlessness to negotiate better terms for themselves. However, this behavior may be caused by the available access of the people to education, awareness, and importantly to economic cost to manage their home waste or garbage. It means that the higher level of education an individual receives correlates with the positive attitude and behavior towards waste management. Since the standard level of education in developed countries is higher than Indonesia, their waste management is better and more people earn a living from waste management [12], [21]. The Ministry of Waste Management has implemented the 3R program to reduce un manage waste in Jakarta [22]. Currently, there are 94 areas in Jakarta implemented with the 3R program. From 94 areas, several communities are supporting and helping the neighbourhood waste management such as Rajawati community. Rajawati ward is located in Pancoran district, South Jakarta. 686 households reside in Rajawati ward that is involved in the community waste management scheme. From their average data, each household produces around 2.67 kg. It consisted of 60% organic waste, 28% inorganic waste, 2% hazardous waste, and 10% paper waste.

Community participation is often seen as an inseparable part of community development efforts [23]. By looking at community participation as a whole in the community development process, it will be known that the root of the development of ideas about community participation in waste management will be related to the community system. The Indonesian government has committed to overcoming the problem of garbage in the ocean by collaborating with a non-profit organization [24].
Maritime Deputy Coordinating Ministry for Maritime Sovereignty stated that "There are a lot of parties trying to reduce ocean waste in Indonesia, however, the parties doing it separately and the government intended to collaborate. The ideal solution is to reduce waste or zero waste. However, there are a lot of challenges to implementing the idea and it is necessary to find a business that fits our needs. Further, some strategies will help to reduce waste which are:

1. Changing citizen behavior by educating the youth generation to be more concern towards the environment
2. Reducing plastic waste from household by sorting out garbage that can be utilized
3. Reducing the leakage from many activities in the ocean

These strategies could be done by improving reception facilities at the port by holding bilateral and regional collaboration. The law and funding also one of the important aspects that need to be improved to implement these strategies" [25].

3. Methodology
The nature of this research is exploratory research because exploratory studies result in a range of causes and alternative options for a solution to a specific problem [26]. Furthermore, this research intends to give deeper information about the plastic pollution issue in Jakarta ocean and how to control it. A qualitative design utilizing in-depth interviews will be conducted to gather all the necessary data from participants. The objective of the qualitative research approach is to provide an in-depth understanding. Purposive sampling is used to select the best representatives from each department. A purposive sample is a non-probability sample that is selected based on the characteristics of a population and the objective of the study. Purposive sampling is also known as judgmental, selective, or subjective sampling.

There will be 5 sources of respondents with characteristics having experience and expertise related to the plastic pollution and prevention program towards plastic waste specifically ocean plastic waste. The interview respondents were as follows:

1. Trash Hero Jakarta
2. Divers Clean Action
3. Sea Soldier Jakarta
4. Osoji Jakarta Yayasan KEHATI

This research uses a cross-sectional framework, where the data is going to be collected at a certain point and not repetitively [26]. The data will be collected on July 1st, 2019. This means that analysis done will provide a snapshot of efforts and impact made from the past to the date present, depending on the sample's program initiatives.

4. Data analysis
The narrative analysis will be implemented to analyze the data to reach the research conclusion. "Narrative is a pervasive form of communication in the social world. Stories provided an accessible way to understand the social context of conflict resolution and peace-making process. In a narrative analysis, theorizing and research from several experts are reviewed to focus, in turn, on interpretations of personal experience, identity, storytelling, and social circumstances" [27].

Data is collected from the interviews conducted with the representatives from founders or members of a non-profit organization. The subject of the questions is the same for both respondent types. The purpose of this arrangement is to gain reliable and accurate data from the person who is on the top of the hierarchical organization level, whose decisions have a direct or indirect influence on the issue which is plastic waste. The complete matrix of generated themes is illustrated in Figure 2.
As a non-governmental organization that works on ocean pollution management, they responsible to educate people that plastic pollution can be hazardous to the environment, and at the same time motivate people to reduce their dependency on using plastic.

Sub-Theme 1: Local on Shore

Remembering Indonesia as one of the biggest archipelagos in the world, there are plenty of people who lives near the shore. Hence, to manage plastic ocean pollution it is better to start from the locals. Locals were already motivated because they feel the impact of ocean pollution directly, and NGOs have a role to educate locals from their knowledge and at the same time bettering their life.

Trash Hero and KEHATI have a program to teach locals how to recycle their plastic waste and making a profit from it. Using this method, local citizen motivation can become higher and at the same time bettering their life cause of the income. Besides, cleaning their shore and ocean would bring more tourists coming and later can make income for locals.

Sub-Theme 2: Company

Reducing plastic usage can be challenging when producers still produce plastic products and people's plastic dependency usage high. NGO’s take a role in finding a solution where producer and consumer reducing their plastic usage to reduce plastic pollution. In 2017, many NGO’s collaborate to stop plastic straw usage on fast food company, this attempt was a huge success because the company gets the benefit by reducing their production cost. Even many of the attempt was done by NGO’s to reducing plastic waste, it is still cannot be done if the majorities of the people still have high plastic consumption. Hence, ocean pollution can be overcome when majorities of people participate. That is why community participation is very important to fight against plastic waste.
4.2. Theme 2: Community participation

Sub-Theme 3: The Activist

Managing plastic waste should be started by the locals who live near the shore. Other than locals, NGO’s working together with ocean activist whose care about the ocean environment. Diver Clean Action and Trash Hero often held a program that invites divers and volunteers to dive and cleaning the ocean at the same time. NGOs had to manage ocean environments that have been damaged by plastic waste pollution. In the recent April, Sea Soldier held a program to plant coral around the shore in thousand islands with around 200 volunteers. This program helping the ocean to recover their coral that has been damaged by plastic waste pollution.

Sub-Theme 4: Urban Citizen (participation)

Plastic waste in the ocean does not only come from people who live near the sea, but it also came from the city that brought by the river which will end up the ocean. Citizen participation is also needed for dividing their trash to organic and non-organic waste to help with managing plastic waste. Citizen participation can only be done by having a campaign in the crowd area and hoping people notice about it. That is why this program did not make an impact unless there is something that the citizen could get in return for their attention and participation. Trash Hero Jakarta has held a program with collaboration with an elementary school to educate children and at the same time motivating the student to collect plastic waste by giving them 10 points every 10 plastic bottles they get.

5. Discussions

Based on the in-depth interview analysis on qualitative research found that non-profit organization roles are very important and needed in Indonesia's ocean especially Jakarta. The first research question is “What are the role(s) of NGOs in Jakarta ocean plastic management?” From respondents’ perspectives, it is revealed that non-profit organization roles are very important roles to fight against the waste issue in Indonesia because without their contribution, Indonesia's will suffer more from unmanaged waste and it will be worse than now. Their roles also have a big contribution to the company's CSR program because the CSR program will not be effective if it runs by their own companies without using an expert on the issue. From Our Ocean Conference seminar, Mr. Bramantyo also appreciated non-profit organizations' effort because they help the government in solving ocean issues. Non-profit organization community program helps people to understand how to do the recycling process.

To answer the second research question “What factors contribute and challenge community participation on ocean plastic waste?”, from respondents’ perspectives, it comes out that the challenges from community participation on ocean plastic waste are because many Indonesia's lack of education on waste management and did not understand our worsening environment now, it is very hard to educate and build a habit of not littering. There are also many people did not care about our environment and it is very hard to educate an ignorant person. In Thousand Island, it is hard to create a waste bank due to a lack of material and money since the distribution channel is using ships. The government's lack of effort is one of the non-profit organization challenges to educate and campaigning non-profit organization programs.

To answer the third research question "What are the programs and initiatives run by NGO that involves the community in ocean plastic management in Jakarta?" from respondents’ perspectives, it is found out that from five non-profit organizations, all of them have a community involvement program because people and communities have an important role to fight against ocean plastic waste management. Two respondents fight waste in the land since it is easier. Moreover, since Jakarta has 13 rivers that are connected to the ocean, waste management program in the land proves to be one of the main issues that need to be taking care of to reduce ocean plastic waste. All of the non-profit organization community programs are educating participants about waste management and how to do the recycling process. They are teaching the community to do house recycling and generate income
with the main purpose which is reducing unmanaged waste that will end up in the ocean. Data from Divers Clean Action, Trash Hero, and KEHATI foundation gives a conclusion that household contributes 72% of Indonesia's waste. It proves that government and media involvements have an important role to encourage people and the community to join a non-profit organization program.

6. Conclusion

The existence of a non-profit organization in Indonesia proves to be very helpful for Indonesia's government to fight against waste production in Indonesia especially Jakarta. It alleviates the burden of Indonesia's government in combating waste and the education program from every non-profit organization proves to be a very successful and more young generation to understand more about the danger of unmanaged waste. Further, due to technological development, a non-profit organization also spreading awareness from social media such as Instagram, Twitter, Website, and movement. By using social media, more and more volunteer is joining a non-profit organization program to combating waste in the country and people are more concern about waste management. It also will generate income from companies' CSR and sponsor because they could promote their company by sponsorship in a non-profit organization. For example, Non-profit organization workshops, clean-up, and seminar programs posted and spread by their accounts and creating a hashtag (#). Further, when internet citizen opens the non-profit organization social media, they will see the companies that sponsor the organization.

As the second-largest ocean pollution producer in the world, Indonesia's non-profit organization burden is too heavy without government, people and community participation. All of us need to work together to solve the ocean pollution issue. Further, the government has taken action by implementing a strict regulation and supporting non-profit organizations from funding, sounding, and campaign. However, most of Indonesia's citizen did not consider waste as a problem that needs to be solved. From the five non-profit organizations' perspective, it concluded that the main problem from the community program is most of the people did not want to do business from recycling waste because the income from the waste business is not as big as their main income. Most of the community waste participants are full-time housewives or unemployed. Further, most of the community also did not have a waste bank and lack of education especially local citizens in Thousand Island. A non-profit organization needs to do extra works because they need to educate the local citizen and at the same time, doing their program from clean-up, recycling, and making a waste bank. Even though non-profit organizations have given their effort to solve the issue, government regulation and strict law are only written without the right implementation. Further, the environmental issue itself is not an interesting topic for local media because the crowd in Indonesia's media is more into comedy, drama, and gossip.

As for recommendation, it is advised to expand the objectives of the research by exploring insight from the community and government to deeper analyze from the root cause problem of plastic ocean waste. It is also to complement a quantitative approach to acquire more insight because this research is cross-sectional, and it is better for using longitudinal research to measure the impact and effectiveness of the program. For insight towards non-profit organizations and government, the authors recommend that both non-profit organizations and government improve their participation and support to make their effort more effective towards the waste issue. Data collection could be improved from the number of respondents, questions, comparison between cities in Indonesia facing a waste problem.

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