

Law and Economic Approach to Reduce Marine Plastic Litter in Indonesia

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Abstract- This article is to describe (1) the strengths and weaknesses of government regulation to reduce marine plastic litter in Indonesia and finding (2) suitable instruments based on the law and economic approaches to reducing marine plastic litter in Indonesia. This article can be categorized as a normative law method by using three approaches. The sources of research information used both primary legal materials and secondary legal materials. The technique of gathering information sources is done by using study literature and comparative analysis. Analysis of information sources and conclusions by using logical deduction. The conclusion of this article strongly stated that the majority of marine litter in Indonesia is derived from land-based waste or often called marine plastic litter so that increased effort is needed to stop the inappropriate disposal of waste plastics through a combination of education, economic-based instruments such as incentives/disincentives, adequate legislation, and strong law enforcement. It is recommended that regulators/policymakers understand more deeply the issues of marine plastic litter from various points of view so that the solution is not solely based on the legal aspects approach.

Keywords- *Law and economic approach, marine plastic litter*

I. INTRODUCTION

The issue of marine litter is a key environmental issue at the global and national levels and has become a major threat to marine and coastal biodiversity. [1] Marine litter is usually defined as any persistent, manufactured or processed solid material discarded, disposed of, or abandoned within the marine and coastal environment. [2] UN Environment confirmed that human pressure on marine health continues increased over the past decade; along with the growing human population and increased use of marine resources will have an impact on marine pollution. [3] Even, several research results also convey that the impacts of human activities on the oceans have serious social and economic implications [4], which directly and indirectly affect human health and well-being. Among research results, Jerneja Penja outlines a strategy of marine pollution by anticipating a set of concrete steps, mostly regulations, in various economic sectors. By moving from a linear model, with continuous leakage of waste to natural systems, to circular ones, the EU shows a decisive ambition in changing the direction of plastic care around the world and dealing with global marine waste. Although an internal EU document, this strategy is likely to stimulate each country's tighter approach, influence global policy processes that deal with

marine litter and create transformation throughout the supply chain. The challenge in the circular model is not to shift legal commitments to the waste hierarchy.[5] Concerning legal and policy perceptive, Ansje Lohr et al argued the effects of policies and other initiatives are still largely insufficient. The search for appropriate responses could be based on possible interventions and a profound understanding of the context-specific factors for success for reducing marine plastic litter. Moreover, the scope, timeframe, and dynamics of all initiatives are distinctly different and orchestration at all levels policy and regulation, in close cooperation with one another is currently lacking.[6]

In line with thinking Ansje Lohr et al, Marcus Haward echoing there remains several challenges in addressing the problem of marine plastic pollution. In 1967, calls for a refocus on the 'common heritage' of the world's seas and oceans led to concerted and revolutionary action by the world community to address concerns and challenges. In late 2017, the United Nations Environment Assembly resolution on marine plastic pollution serves a similar purpose. The meeting, with broad-based agreement from participating states and non-governmental organizations, may well provide the impetus for ongoing action to combat marine plastic pollution. International agreements are not easily developed and are often criticized for the time taken to reach agreements and the tendency for a minimum tolerable consensus to shape outcomes. Despite these criticisms, the international framework for ocean governance continues to evolve. International initiatives addressing marine plastic pollution need to be supported by strong and focused scientific research, the engagement of business and community organizations, as well as engaged and committed government action on different scales, supporting community-based programs that address the use and disposal of plastics.[7]

Looking at the conditions in Indonesia, the issue of marine plastic litter also illustrates the problem that is not much different from other countries at the level of developing countries. If examined more closely, the main problem of marine litter which is predominantly composed of plastic waste as a negative excess of human activity or often called with marine anthropogenic litter[8] can be clearly seen through the following illustration below.



Fig. 1. Leakage of plastic waste from the mainland to the ocean

Media information lately so aggressively preach the issue of marine litter, ranging from the reporting of dead whales in the stomach found plastic waste weighing 5.9 kilograms in the waters of Wakatobi, polluting the Muara Angke conservation area due to 50 tons of trash which is mostly rubbish plastic from the sea, until the concern of the Minister of Maritime Affairs and Fisheries Susi Pudjiastuti regarding the potential of marine litter that threatens the sustainability of marine ecosystems in Indonesia. Furthermore, the latest research conducted by the LIPI Oceanographic Research Center in 2018 shows that the type of waste found in all eighteen monitored coastal areas is the category of plastic and rubber, metal, glass, wood (processed), fabric, others, and materials dangerous, so with a simple assumption it is estimated that 100,000 to 400 thousand tons of plastic per year belonging to the Indonesian people go into the sea.[9][10][11] This condition is reinforced by The World Bank's report which states the facts from among the top polluters, Indonesia ranks second behind China. In 2010, Indonesia had a coastal population of 187.2 million living within 50 km of the coast generating 3.22 million tons per year of mismanaged waste, leaking an estimated 0.48-1.29 million metric tons of plastics waste into the ocean annually.[12]

Plastics as a major contributor to marine litter is an unsurprising phenomenon because global plastic production has increased dramatically from 1950 which only ranged from 50 million metric tons to 2015 totaling 350 million metric tons. However, only 1-3% of the total global plastic production can be recycled and the remainder is waste.[13]

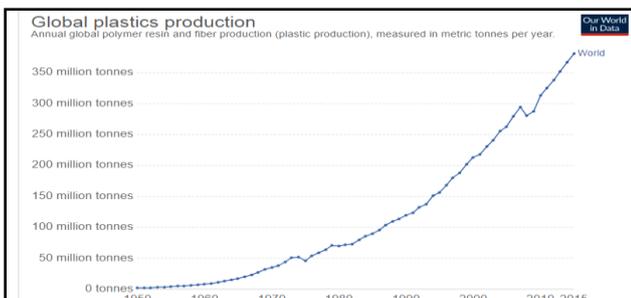


Fig. 2. Global Plastic Production.[14]

Plastic production has increased exponentially as a result of the industrialization era, which in turn

contributes both directly and indirectly to the disposal of plastic waste resulting in pollution of plastic waste into the ocean. Increasing on plastic production can be grouped into the distribution of human use through the following illustration below.

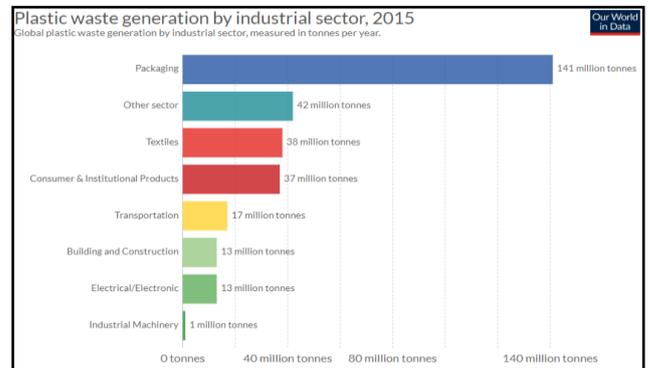


Fig. 3. Plastic use by sector

The packaging was the dominant use of primary plastics, with 42 percent of plastics entering the use phase. Building and construction was the second-largest sector utilizing 19 percent of the total. Primary plastic production does not directly reflect plastic waste generation (as shown in the next section) since this is also influenced by the polymer type and lifetime of the end product. Packaging, for example, has a very short 'in-use' lifetime (typically around 6 months or less). This is in contrast to building and construction, where plastic use has a mean lifetime of 35 years. Plastic packaging is, therefore, the dominant generator of plastic waste, responsible for almost half of the global total pollution.

Responding to the problem of marine plastic waste, the Indonesian government afterward issued Presidential Regulation on Marine Litter Handling Number 83 the Year 2018. Enthusiastically, the Indonesian government is targeting to reduce marine litter by 70 percent until 2025. This ambition certainly needs to be criticized, because looking at the efforts of the Indonesian government does not show a serious and measurable effort in dealing with plastic marine litter. Latest information obtained from studies at the Coordinating Ministry of Maritime Affairs, Ministry of Maritime Affairs and Fisheries, and Ministry of Environment and Forestry explains interesting facts that (1) Indonesia government currently does not provide access to integrated and real-time information that presents accurate data on the amount of waste tonnage in the Indonesian ocean; (2) There is no clear funding mechanism related to the handling of marine litter in Indonesia; (3) There are no concrete steps such as participatory policies, indigenous peoples involvement, and determining regional priorities in overcoming the problem of marine litter in Indonesia; (4) There is no clear oversight mechanism and law enforcement effort related to handling marine waste in Indonesia; and (5) There is a need for holistic research that discusses the synchronization between central-regional regulation and policies related to the implementation of Presidential Regulation on Marine Litter Handling Number 83 the

Year 2018. Connection with this issue, this article will examine the strengths and weaknesses of the legal approach used by the Indonesian government to reduce marine plastic litter and also offering a different approach from various aspects as an effort to reduce marine plastic litter.

II. RESEARCH METHOD

This research provides a systematic exposition of the rules governing a particular legal category, analyzes the relationship between rules, explains areas of difficulty and, perhaps, predicts future development concerning marine plastic litter. One approach alone is not sufficient to analyze many problems in a research, therefore this research chooses to use three research approaches namely conceptual approach, legislative approach, and comparative approach. The use of the three approaches is seen as relevant to complement one approach with another in the framework of answering several issues formulated in this research.

Legal materials used in this research are divided into two, namely primary legal materials and secondary legal materials. Primary legal material is material that is authoritative, which consists of regulations/policy, official records, minutes in legislation making-process. Secondary legal material as a support of the research information sources used in this research is textbooks written by legal experts, legal journals, scientific articles, research reports relevant to the issue of plastic waste, research results of other authors, publications, working paper, and other legal materials. Techniques for collecting legal information sources use content analysis and comparative analysis of other countries that have successfully overcome marine plastic litters. Analysis of legal information using deductive logic, which starts from the basic principles and concepts of the law and economics approach as the major premise then connecting to the problems of marine pollution, especially marine plastic litter as the minor premise that lead to the conclusion

III. FINDINGS AND DISCUSSION

The results of the law and economics approach to reduce marine plastic litter are explained as follows.

1. *The Strength and Weakness of Indonesian Government Regulation and Policies.*

First, important to understand that the legal approach referred to in this article is intended to be the approach that has been commonly used by the Indonesian regulation and policy, namely the command and control approach. It can be seen that command and control regulations have top-down and instructive characteristics, in which the community is required to implement what is written in the laws and regulations according to the interpretation of the Government. For this reason, community and industry approaches and controls are not encouraged or given incentives to behave in an

environmentally friendly manner. Other characteristics of the command and control approach are rigid and bureaucratic. In this context, rules are made in detail, starting from the law to the level of implementation instructions and technical instructions. This rigidity, for example, results in the development of environmental management technologies and systems. On the other hand, the rigidity of the command and control approach also results in being very bureaucratic, so that officials often act more in the bureaucratic interests than in improving environmental conditions.[15]

Back into the issue of plastic waste in a national context, regulations on marine litter are scattered in several rules including Law on Solid Waste Management Number 18 Year 2008, Law on Management of Coastal Areas and Small Islands Number 27 Year 2007, Law on Tourism Number 10 Year 2009, Law on Maritime Affairs Number 32 Year 2014, Law on Local Government Number 23 Year 2015, and Law on Environmental Protection and Management Number 32 Year 2009. Specifically, the regulations governing marine waste are formulated in Presidential Regulation on Marine Litter Handling Number 83 the Year 2018. Tracing deep into the Presidential Regulation on Marine Litter Handling Number 83 the Year 2018, whereas derivation from this regulation giving a mandatory instruction for drafting National Action Plan on Marine Litter Handling. This Action Plan [16] which consist of five main pillars as follows:

(1) Improving Behavioral Change.

Stakeholder awareness should lead to an efficient and effective involvement in managing marine plastic debris due to a huge number of stakeholders spread out in all regions while showing co-ownership in solving the problem will be the reflection of nongovernment stakeholder's engagement. Collaborations amongst ministries for the inclusion of non-government stakeholders and cross-sector collaborations nationwide regarding the National Plan of Action has been initiated by Coordinating Ministry for Maritime Affairs. For long-term solutions to the challenge of eliminating plastic waste from the world's oceans and waterways would include improving the behavioral change.

(2) Reducing Land-Based Leakage.

Plastic debris could come from city streets or housings carried into the ocean from the storm-water drains. The effects of marine pollution have on ecosystems and humans are starting to be well documented. Marine scientists have found harmful consequences of marine pollution to sea life, ecosystems and humans. Plastics leach cancerous toxins. After being consumed by marine species, they enter the food chain, eventually ending up in fish we eat. Research and production of alternative materials to plastic use are being encouraged to curb new plastic production.

(3) Reducing Sea-Based Leakage.

Garbage found in the ocean could come from many places; including ships, fishing lines, and pleasure boats. Bilateral and regional collaborations are being a pursuit to control marine plastic debris from their sources. These efforts will be done through monitoring and collecting the plastic debris from the ocean employing relevant technologies to guarantee results. Improving environmental awareness through education while also improving waste management facilities in ports, small islands, and coastal areas would also be a big part of this management effort.

(4) Reducing Plastics Production and Use.

Manufacturers of plastics and related products have not all been involving themselves actively in the efforts of managing plastic wastes. The Action Plan is designed to encourage these manufacturers to use recycled plastics as input materials as much as possible, while at the same time producing more biodegradable plastics.

(5) Enhancing Funding Mechanisms, Policy Reform, and Law Enforcement.

Funding mechanisms for the National Plan of Action is expected mainly coming from regional and national budgets, and supported by another program such as "polluters pay principle" and innovation's through the use of environmentally friendly materials. Strategic Funding from International organizations and partnering countries can be expected to finance the common efforts in controlling the marine plastic debris. Collaborations amongst ministries for the inclusion of non-government stakeholders and cross-sector collaborations nationwide would encourage widespread support for this action plan towards its success. Standardization and establishing a standard procedure for Marine Waste Management is for further prevention of the waste overflow into the ocean. It is projected that without waste management infrastructure improvements, the cumulative quantity of plastic waste available to enter the ocean from land is predicted to increase by an order of magnitude by 2025.

Clearly stated in this position, the Indonesian government has occupied the same level of other countries in the context of having regulations that have the substance for combating marine litter. [17] Nevertheless, it can be said aloud that desired behavior change through the national action plan is not visible. For example, the Ministry of Industry is currently targeting an increase in the amount of plastic production in terms of pursuing achievement and investment. National plastic consumption in 2019 is predicted to grow 6% compared to 5.5 million tons this year. Failure to change behavior also impacts the use of plastic packaging is always present in meetings either the central or regional government areas. It can be said that the National Action Plan's pillar is merely jargon not carried out seriously enough. Comparing with EU strategy how they change the attitude toward plastic litter, The European Parliament and Council are now working on their reaction to the Plastics Strategy, which will further shape future actions from the Commission. The Parliament's Environment Committee is

leading on the file. The Rapporteur Mark Demesmaeker (ECR – Belgium) released his draft report on 27 March and provided broad support for the Commission's approach. It suggests that the Commission's ambitious recycling targets for packaging should be achieved through voluntary business initiatives. The rapporteur also specifically opposes the introduction of an EU-wide plastics tax.[18]

Examine the funding mechanism in the handling of plastic litter; once again it is also difficult to measure. Seeing the amount of regional budget allocation for waste management is still in a subordinate position. Budget allocations tend to be allocated for consumption expenditure and infrastructure to support economic development. Illustrations budget allocation in each region can be observed in the following figure.

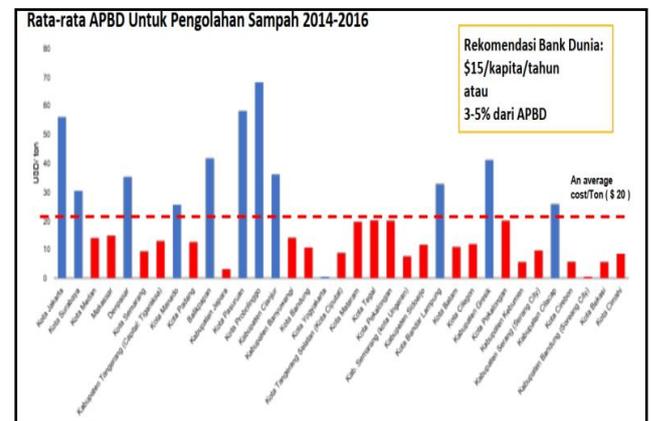


Fig. 4. Regional Budget Allocation on Waste Management

Exposure data above illustrate that the World Bank directives related to the regional budget allocation of waste management are still not fully conducted. Shifting economic development paradigm that leading to sustainable development seems not yet fully adopted by the regional government.[19] Moreover, the green budgeting instrument, which is a mandatory order as instructed in Article 45 and Article 46 of Law on Environmental Protection and Management Number 32 the Year 2009 has not seen any detailed guidelines such as Government Regulations, Ministerial Regulations, or Regional regulations that provide a detailed explanation regarding environment budgeting. Try to compare it with the application of green budgeting in Bologna, Italy. The concept of green budgeting in Bologna is the core of the environmental management system and the communication tool for Local Agenda 21 plans for each institutional instrument. The main focus of the application of the concept of green budgeting is aimed at sustainable city development by respecting the scarcity of resources. The key element lies in spatial and urban planning which also involves community participation. Communities and groups of stakeholders can be involved in each phase of the green budgeting cycle, but to approve the various activities, targets, actions, and resources used ultimately remain the authority of the City Council. In addition being successful in planning environmental budgets, this

concept specifically plays a role in facilitating environmental budgeting so that it runs transparently, integrated, effectively and strategically, and also bridges the government of Bologna with its community for spreading issues of natural resources, spatial and city planning, and socialization on impact the anthropogenic environment.[20]

In terms of law enforcement, the problem of plastic waste is also difficult to enforce. Weak sanctions become one of the obstacles, where operational costs to enforce the law are more expensive rather than the value of the waste itself. The legal process related to violations of waste pollution requires a very long duration from the prosecution process to the judge's decision, even the sanctions provided it is not causing a deterrent effect. It can be said that the command and control approach in reducing plastic waste is inefficient and unsatisfactory. Summarize the above criticisms and lessons learned from other countries, [21][22][23]the time has come for the Indonesian government to change regulations and policies through a multi-faceted approach.

2. Reducing Marine Plastic Litter in Indonesia through Law and Economic Approach.

Seeing the umbrella rule in dealing with the plastic litter in the ocean is already clearly visible both internationally and nationally. At the global level, it's can be referred to United Nations Law of the Sea Convention (UNCLOS) Part XII (articles 192–237) is dedicated to the protection and preservation of the marine environment. States are required to take all measures "that are necessary to prevent, reduce and control pollution of the marine environment from any source, using for this purpose the best practicable means at their disposal and in accordance with their capabilities, and they shall endeavor to harmonize their policies in this connection"(Article 194). It also sets out the responsibilities of states and necessary measures they need to undertake to minimize pollution their own and other states' jurisdictions. Other umbrella rules also recognized from UNEP/EA.3/Res.7 Resolution on Marine Litter and Micro Plastics.

There is an interesting point from the two rules, namely 'states are required to take all measures'. This phrase implies that efforts to combat marine plastic litter can be pursued using a variety of approaches. Through this lens, law and economic approach is a suitable and measurable instrument which can be applied to Indonesian government policy and regulation to reduce marine plastic litter. The mindset offered through this article is known as smart regulation as developed by Gunningham et al.[24] as stated by Gunningham, intelligent regulation refers to regulatory pluralism as a form of social control that is flexible, imaginative, and innovative. Form of pluralism here is defined as a regulation that encourages the involvement of the government, business actors, and the community (third parties) in the preparation and application of regulations. In this context, if regulations usually only focus on the relationship between two parties, namely the government

as a regulator and business actors as regulated communities, smart regulation is based on the idea that various parties can influence the behavior of regulated communities, both formally and informally.[25] Thus, smart regulation will see not only the relationship and combination of one compliance instrument with other compliance instruments, but will also explain that the involvement of government, business actors, and the public (both commercial and non-commercial) in the implementation of these instruments.

Based on the argument that marine waste is a very complex issue, the involvement of the government, meaningful public participation (including indigenous peoples), and the business actors need to be synergized with a legal instrument to be combined with an economic mechanism and social approach. This choice needs to be taken considering that each instrument both legal and economic instruments have their advantages and disadvantages, therefore the use of instruments together is believed to be able to effectively address marine litter problems today.[26] Strategic steps are taken through a combination of the law and economic approach in several ways, among others

(1) Regulatory and market-based incentives.

A recent analysis highlighted the effectiveness of small incentives in reducing waste mismanagement in Australia and the United States. An incentive of as little as 5–10 cents through container deposit legislation (CDL) or cash for containers was effective in reducing beverage container waste. The proportion of beverage containers found in coastal surveys from states with incentives was approximately 40% less than in states without incentives—and was consistent between the two countries. Importantly, the reduction in beverage containers was greater in areas with lower socioeconomic status, where debris loads are highest, providing strong evidence that incentives are particularly effective where incomes are lower. This suggests that putting a price on plastic would likely be effective in terms of material recovery and would reduce loss rates to the environment. We already see this with material such as aluminum, steel, and copper, as these materials are valuable and can be sold back into the market.[27]

(2) Public Learning and Education.

Education is also a key to strengthening community support and understanding of the impact of plastic on the marine environment. In 2017 United Nations Environment (UN Environment), in cooperation with the Open University of the Netherlands, will launch the 2nd Massive Open Online Course (MOOC) on Marine Litter. The MOOC has been created to stimulate leadership and offers opportunities for actionable and change-oriented learning related to marine litter within the framework of the Global Partnership on Marine Litter. The MOOC will be disseminated through the Global Universities Partnership on Environment and Sustainability (GUPES)

which currently comprises of over 520 universities globally.[28]

(3) Product certificates and ecolabels.

Certification and labeling initiatives encourage industry best practices that influence shareholders and the market (such as sustainability labeling, green labeling, etc. Moreover, certification and labeling can add another layer of legitimacy for community groups in providing their social license to operate. The legitimacy of third party certifiers can be removed at any time if the community decides not to accept the standards or organization. Certification schemes can, therefore, be considered "new markets of governance" through their organizational setup, consultancy services, and contractual arrangements.[29]

(4) Corporate Social Responsibility (CSR)

Corporate Social Responsibility is becoming an increasingly important priority for some companies involved in the development, distribution and life cycle of plastics. According to Steurer,[30] "new governance and CSR are complementary concepts that both fundamentally reshape the roles of the public and the private sectors in similar directions." CSR can be driven by community support through social license or government regulation. Solutions to plastic pollution can be driven by willing industry and their use their CSR policies to gain consumer confidence and to demonstrate their commitment to social and environmental issues. The Australian Packaging Covenant is but one co-regulatory nongovernment organization that partners government and industry intending to help its industry-based signatories realize CSR opportunities.

IV. CONCLUSION

The conclusions in this article were: (1) regulations and policies implemented by the Indonesian government through Presidential Regulation on Marine Litter Handling Number 83 the Year 2018 have strengths and weaknesses. The strength of this regulation is the product of government law so that it is imperative and has sanctioned, but on the other side of this regulation is not yet touched the economic approach and public meaningful involvement so that the level of success is difficult to measure; (2) through smart regulation, the Indonesian government efforts to reduce plastic waste need to use a combination of legal and economic approach, with the use of instruments of market based incentives, public learning and education, product certificates and ecolabels, and Corporate Social Responsibility (CSR).

REFERENCES

- [1] C.-L. Chen, Regulation and Management of Marine Litter. In M. Bergmann, L. Gutow & M. Klages (Eds.), *Marine Anthropogenic Litter* (pp. 398–432). Berlin: Springer, 2015. https://doi.org/10.1007/978-3-319-16510-3_15
- [2] <https://www.unenvironment.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/marine-litter>.
- [3] UN Environment (Ed.), *Global Environment Outlook – GEO-6: Healthy Planet, Healthy People* (pp. Iii-V). Cambridge: Cambridge University Press, 2019. <https://doi.org/10.1017/9781108627146.001>
- [4] S. Newman, E. Watkins, F. Farmer, P. Brink, Schweitzer JP., The Economics of Marine Litter. In: Bergmann M., Gutow L., Klages M. (eds) *Marine Anthropogenic Litter*, Berlin: Springer, 2015. https://doi.org/10.1007/978-3-319-16510-3_14
- [5] J. Penca, European Plastics Strategy: What promise for global marine litter?, *Marine Policy*, 2018. <https://doi.org/10.1016/j.marpol.2018.06.004>
- [6] A. Lohr, Heidi Savelli, Raoul Beunen, Marco Kalz, Ad Ragas, and Frank Van Belleghem, *Solutions for Global Marine Litter Pollution*, *Current Opinion in Environmental Sustainability*, 2017. <http://dx.doi.org/10.1016/j.cosust.2017.08.009>
- [7] M. Haward, Plastic pollution of the world's seas and oceans as a contemporary challenge in ocean governance, *Nature Communications*, Volume 9, Article number: 667, 2018. <https://doi.org/10.1038/s41467-018-03104-3>.
- [8] L.B. Pandjaitan, , Implementation of the National Action Plan for Sea Waste Management by the Ministry of Environment and Forestry, delivered at Meeting on Implementation of Presidential Regulation on Marine Litter Handling Number 83 the Year 2018, Jakarta, January 21st, 2019, pp. 8.
- [9] M. Cordova, and A. Wahyudi, Microplastic in The Deep-Sea Sediment of Southwestern Sumatran Waters, *Marine Research in Indonesia*, 41(1), 27-35. 2016. <https://doi.org/10.14203/mri.v41i1.99>
- [10] A. Kunzmann, Z. Arifin, & C. Baum, Pollution of Coastal Areas of Jakarta Bay: Water Quality and Biological Responses, *Marine Research in Indonesia*, 43(1), 37-51, 2018. <https://doi.org/10.14203/mri.v43i1.299>
- [11] M. Cordova, T. Purbonegoro, , R. Puspitasari, & D. Hindarti, , Assessing Contamination Level of Jakarta Bay Nearshore Sediments Using Green Mussel (*Perna viridis*) Larvae, *Marine Research in Indonesia*, 41(2), 67-76. 2017. <https://doi.org/10.14203/mri.v41i2.130>
- [12] J.R. Jambeck, R. Geyer, C. Wilcox, T.R. Siegler, M. Perryman, A. Andrady, et al., Plastic Waste Inputs From Land Into The Ocean. *Science* 347, 768–771, 2015. <https://doi:10.1126/science.1260352>
- [13] Geyer, Roland., R. Jenna, Jambeck, and L. Kara, Production, use, and the fate of all plastics ever made, *Law Law Sci. Adv.* 2017;3: 2017. <https://doi:10.1126/sciadv.1700782>
- [14] <https://ourworldindata.org/plastic-pollution#global-plastic-production>
- [15] Soemarwoto, Otto, *Atur Diri Sendiri: Paradigma Baru Pengelolaan Lingkungan Hidup. Pembangunan Ramah Lingkungan: Berpihak pada Rakyat, Ekonomis, dan Berkelanjutan*, Yogyakarta: Gajah Mada University Press, 2001.
- [16] The Government of the Republic of Indonesia, *Executive Summary Indonesian's Plan of Action on Marine Plastic Debris 2017-2025*, Jakarta: Coordinating Ministry of Maritime Affairs, 2019.
- [17] D. Xanthos, T.R. Walker, International policies to reduce plastic marine pollution from single-use plastics (plastic bags and microbeads): A review, *Marine Pollution Bulletin*, 2017. <http://dx.doi.org/10.1016/j.marpolbul.2017.02.048>
- [18] https://ec.europa.eu/environment/waste/plastic_waste.htm

- [19] Des Gasper, Ethics and Development, in Desai, Vandana and Robert B. Potter (Editor), *The Companion to Development Studies Third Edition*, New York: Routledge, 2014.
- [20] International Council for Local Environmental Initiatives (ICLEI), Municipality of Bologna, Italy, *Local Governments for Sustainability*, Bologna: ICLEI, 2007.
- [21] Q, Schuyler, Economic incentives reduce plastic inputs to the ocean, *Marine Policy*, 2018, <https://doi.org/10.1016/j.marpol.2018.02.009>
- [22] Vince, Joanna, and Britta Denise Hardesty, Plastic pollution challenges in marine and coastal environments: from local to global governance, *Ecological Restoration*, Volume 25, Issue 1, 2017, pp. 123-128. <https://doi.org/10.1111/rec.12388>
- [23] M. Landon-Lane, Corporate social responsibility in marine plastic debris governance, *Marine Pollution Bulletin* 127, 2018, pp. 310–319. <https://doi.org/10.1016/j.marpolbul.2017.11.054>
- [24] Gunningham, Neil, Peter Grabosky, and Darren Sinclair, *Smart Regulation: Designing Environmental Policy*, Oxford: Oxford University Press, 2004.
- [25] Gunningham, Neil, "Enforcement and Compliance Strategies", in Robert Baldwin, Martin Cave, and Martin Lodge (eds.), *The Oxford Handbook of Regulation*, Sep 2010, <https://doi:10.1093/oxfordhb/9780199560219.003.0007>
- [26] Gunningham, Neil, and Darren Sinclair, *Regulatory Pluralism: Designing Policy Mixes for Environmental Protection*, Law and Policy, Volume 21, Nomor 1, 1999. <https://doi.org/10.1111/1467-9930.00065>
- [27] Vince, Joanna and Britta D. Hardesty, Governance Solutions to the Tragedy of the Commons That Marine Plastics Have Become, *Front. Mar. Sci.* 5:214, 2018. <https://doi:10.3389/fmars.2018.00214>
- [28] https://www.ou.nl/documents/40554/72652/MOOC_Marine_Litter_2017_leaflet.pdf/5d520cb2-b334-488e-826b-e19284916935
- [29] Foley, P., and Hébert, K., Alternative regimes of transnational environmental certification: governance, marketization, and place in Alaska's salmon fisheries, *Environ. Plan. A* 45, 2734–2751, 2013. <https://doi:10.1068/a45202>
- [30] Steurer, R., Disentangling governance: a synoptic view of regulation by the government, business and civil society, *Policy Sci.* 46, 387–410, 2013. <https://doi:10.1007/s11077-013-9177-y>