The half-dead of earth

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Abstract. Our earth must accommodate about 381 million tons of waste per year. Indonesia's waste burden per se has increased 190-fold in just 65 years in 2015. Of this total, Indonesia accounts for around 64 million tons of waste per year, and not until 5% is recycled, and the rest is burned, thrown into the landfill, and the sea. Waste is an environmental issue that affects the economic sector, health, social welfare, and to the existence of a country in the global political ecology map. Therefore, it needs to be addressed seriously. The potential of world waste production contributed by the Southeast Asian region, and more precisely, Indonesia is a phenomenon under study. This research then employs a literature review method and use concepts and theories about the environment as a global issue in International Relations (IR) and International Development studies as analytical tools to explore the issue qualitatively. This research then found that Indonesia has shown its commitment to deal with the plastic waste problem by implementing Indonesia's National Action Plan (RAN) in Marine Waste Management up to 2025, with a target of reducing waste by 30% and waste management by 70%. Seriousness is needed in implementing this solution. One of them is more serious in the development of landfill gas in the world Waste to Energy (WtE) project. It is a pivotal step to eliminate the risks of the social cost of development and to realize the targets of environmentally sustainable development. Indonesia, thus, must be brave enough to contribute to helping the earth, which is half-dead in serving human progression.

1. Introduction
The world to date has been in a waste emergency state, and plastic waste mainly is the upmost viral discourse in public. BBC News even mentions that the amount of plastic waste circulating in the world's oceans reaches 8 million tons annually [1]. This figure is an average estimate of the amount of waste generated in 2010, ranging from 4.8 to 12 million tons per year. This amount is only a small part of the total amount of waste produced in the world. Even, if the minimum threshold of waste circulating in the sea is accounted, which is 4.8 million tons per year, this figure is still more than the amount of tuna caught at sea in 2010 [1].

These environmental issues affect the economic sector, health, social welfare, down to the existence of a country in the global political map. Recently, in 2015, Jambeck (2015), a researcher from the University of Georgia, published his research on waste, encompassing descriptive data about
the most popular countries contributing on plastic waste to the sea. His research exposed that Indonesia is the second-largest contributor of waste in the world after China [1,2].

After all, there has been a significant increase in waste production in the world. Data from Science Mag states that the amount of waste produced by the earth was only 2 million tons per year in 1950. Meanwhile, in 2015, our earth was already burdened with 381 million tons of waste per year. This number increased 190-fold in just 65 years with an average increase of 5.8 tons per year [3]. The increase in waste productivity goes hand in hand with world population growth, and the progression of development in developing countries, especially in Asia.

The earth does not sleep. Despite the time continues, humans age, generations change, but the earth stays the same to serve human activities through its available resources. Therefore, the human needs to always look after the earth, aiming not only to realize its sustainability but also to ensure the availability of the earth's resource potentiality. It is crucial since the earth is half-dead in serving humans, who are preoccupied with fighting only for their lives, families, and relatives in the world.

2. Methodology
International Relations (IR) is a field of science facilitating the study of issues in the world, such as politics, economics, social, culture, and others. In the perspective of the scientific study of International Relations, there are two major views in viewing global discourse, namely the perspective of classic and contemporary IR. Environmental issues per se are one of the discourses discussed through contemporary IR perspective where the actors involved are not only the state but also the non-state actors. Kristen Hite and John Seitz differentiate global issues and international problems qualitatively in their book entitled “Global Issues: An Introduction” [4]. They argue that the global problem arises from international interdependency amongst the states, occurring both directly or indirectly, that connects their problems. Meanwhile, global issues are events or activities involving the government, economy, politics, and other sectors of various countries.

One of the global issues that need serious attention is environmental problems. Kate O'Neil categorizes environmental issues into three groups, encompassing global environmental common issues, trans-boundary environmental issues, and local-cumulative environmental issues [5]. Environmental issues in the study of IR are often analyzed using the Political Ecology approach. The Political Ecology approach refers to the efforts of combining a political economy approach with a more ecological or human-ecological understanding [6]. The results of the analysis are a resource management policy in an area that takes into account micro and macroeconomic factors, as well as local cultural identity in the development strategies.

The idea of development began to be popular after World War II, a time when many developing countries escaped from colonialism along with the end of the colonial regime itself. Alexander stated that development is a process of change covering all social systems, such as the economy, politics, infrastructure, defence, education and technology, institutions, and culture [7]. Tikson also discusses arguments about changes in the social system in his book entitled the “Theory of Development”. He concluded the concept with the meaning that development is a process of change planned to improve various aspects of people's lives [8].

To address the issues mentioned above, the author employed a qualitative research method in the form of a literature review. Qualitative research is a research used to examine data from the observations by utilizing existing theories as explanatory material blended with an argument. In it, the real phenomena become the objects needed to be understood descriptively. Accordingly, Creswell states that a literature review means about placing and concluding studies on a particular topic. These studies are often research studies, but they can also include articles or thoughts, providing a framework for explaining a topic [9].

The potential of the world’s waste production, especially in the Southeast Asian region, more precisely in Indonesia, is a phenomenon to be explored in this research. The concepts and theories about the environment as a global issue in IR and International Development discipline become the tool of analysis. Therefore, the research framework can be seen in the following figure.
3. Results and discussion

The process of social system change planned to improve various aspects of life is often practically implemented in the form of infrastructure and resource development. Indonesia began its development in the New Order regime through the Five-Year Development Plan (Repelita) (1966-1994) focusing in the field of urban development and industrial sector. The first period of Repelita in 1969 emphasized the efforts to achieve GNP growth. This effort was achieved with an annual growth rate of GNP of 10% during the first long-term (25-year) development period occurring in 1969-1994. Such development was a form of industrialization accompanied by the level of migration of a large number of people to other areas, particularly the urban coastal areas. This phenomenon resulted in a more balanced growth in urban development, thus contributing in the increasing number of urban workforces[8,10]. Nevertheless, it cannot be fully accommodated in the employment of manufacturing and service industries. Consequently, informal employment sectors grew, including vendors, street vendors, public transportation, and others. The government had given attention to the informal work sector through various capacity building programs. Also, several other forms of development policy in Repelita, endured for the 25-year as Indonesian Development Plan, encompassing: integrated urban infrastructure development, water supply, and sanitation, and village development programs. Such rhythm of Indonesia's economic growth and development heavily burden the central government’s managerial and financial resources. As a consequence, it pursued the policy solution of improving the managerial and financial capabilities of the local government, especially at the municipal level, through taxes. The property and income taxes then became the source of income for local government. Furthermore, the local government authorized and paved the way for private sector participation in the provision of infrastructure and urban services[10]. The hope was that it could maintain the cash-flow that enables its contribution towards the financing of national development. Additionally, the industry was also expected to increase added value and expand employment and business, and to provide goods and services for the community, increase exports, enhance regional development, and optimize the use of natural, human, energy and various other development resources. Nonetheless, despite such urban development endeavours, various studies expose that urban cities in Indonesia have failed to transform themselves into modern cities.

The migration in the urban population growth (urbanization) does not bring positive influence in changes of urban society’s social environment, expected to be modern, advanced, with an environmentally friendly lifestyle. As a result, economic growth-oriented development, manifested in
urban development, only creates an unplanned and unanticipated city. Thus, our city was born in two faces, which were formal and informal, legal and illegal, traditional or modern [11].

Substantially, Indonesia progresses towards development by only considering the improvement of the economic sector, in the form of infrastructure and business areas expansion. The development, thus, is carried out only to centralize the country's economic resources, especially from the local government. That is why the government gives less attention to the social coaching and small production sectors as they are seen as having little contribution to the local government’s income. Believing that the development needs a large amount of capital, the government then depends on the abundant source as well to realize development. As a result, it always entertains the industries, businesses, and large investors’ interest so that they can continue to help to boost the state’s income. The social impact consequence from such state-market relations then is the widening gaps of social welfare between rural and urban areas, including the increasing disparities between the rich and poor classes in the society [10].

Development is not only about the capital collected to fund economic growth in the form of infrastructure and business areas, but also about the concurrent social cost incurred along with it. At the beginning of the Soeharto administration, economic reform was very successful because the key ministers from the technocrats understood the best practice policies, a low rent-seeking from the bad policies, and a very strong presidential authority. However, towards the end of his leadership, the state power was increasingly centralized on the president, who was also increasingly ignored the policy advice from his technocrat ministries. Concurrently, Soeharto's cronies had an impact on bad policies by further corrupting it with rent-seeking.

After the downfall of Soeharto and Indonesia eventually progressed towards reformation period, the proposed improvement of structural adjustments launched by the IMF exposing the coordination mechanism in economic policymaking, that were clean and free from rent-seeking, as well as had the capacity and authority in achieving technical matters related with it, was less welcomed in the country. In the microeconomic context, the main problem was its poor implementation due to the low the human resource capacity undertaking it on the ground. Also, there was a rejection of the involvement of IMF in the economic reform, considering it as a form in interference towards state authority.

During Susilo Bambang Yudhoyono (SBY) presidency, strategic policies were less impacted to the society’s betterment as the political and economic landscape was inclined to be divided. The problem was the ineffectiveness of actors with authority to implement the economic reform, as they are filled with those from political elites who lacked economic best practice capacity. Thus, the social consequences of widening gaps in the social welfare of rural and urban communities, as well as disparities between rich and poor classes, remain a major problem in Indonesia's national development agenda. The expectation to constitute an objective, rational character, and nationalist society in the national strategic development have not yet been realized.

Jakarta, the capital city of Indonesia, is an example of a region with a clear picture of social inequality. One from thirty of the world's population lives in Indonesia, with 257 million inhabitants in 2016. The population is spread out among 16,056 islands, consisting of 300 ethnic groups, 1,340 tribes, and 740 languages. Accordingly, they are spread out, but not evenly as about 60-70% of Indonesia's population is concentrated in Java, which covers no more than 7% of the total land area in Indonesia. In it lies the city of Jakarta, a small city with a high population density [12].

Indonesia is improving itself in development. Jokowi administration plans various reforms in the political-economic policy, especially on accelerating infrastructure projects, and on developing the maritime sector, and social security programs. The domestic economy focusing on the supply-side reforms becomes Jokowi's approach to development. He has calculated the social costs by planning and enhancing focus on Indonesia’s development. The second period of his administration then focused more on developing human resources. He argues that the social character of urban society needs to be shaped, especially in the current era of 4.0 Industrial Revolution.

Along with the current development mentioned above, the level of consumption of Indonesian people has increased. This can be seen from the monthly per capita expenditure data in urban areas
recorded by the Indonesian Central Bureau of Statistics (BPS) in the last five years. The BPS classifies the type of expenditure into “food” and “non-food.” From the type of food, there are groups of food and finished drinks that use plastic packaging. For non-food categories, there are many groups that have the potential to become waste after their use, such as various goods and services, clothing, durable goods, party and ceremonial needs, and others. If they are accumulated, the expenditure of urban society in 2018 reached Rp 16,206,288 per person. The food and beverage group contributed the most to the food consumption category in Indonesia [13].

**Table 1.** The Average Monthly Expenditures Per Capita in Urban Areas 2013-2018 (in Rupiah)[13].

| No. | Expenditure Category | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|-----|----------------------|--------|--------|--------|--------|--------|--------|
| 1   | Food                 | 356,435| 439,770| 457,312| 520,631| 590,082| 620,962|
| 2   | Non-Food             | 347,126| 538,948| 617,352| 647,500| 673,444| 729,562|

The data from BPS in 2018 states that there are 306 hotels in Jakarta, at least 1,955 large and medium factories, and 125 hypermarkets. Besides, many amusement parks and shopping centers have been built. It is said that there are no other cities in the world with as many shopping centers in Jakarta [12,13]. Thus, it is not difficult to imagine how difficult it is for poor people to get adequate space in urban areas. Despite receiving a government subsidy amounting of Rp. 300,000 every month, the poor people, with an income of less than Rp. 60,000 per week, are still insufficient to meet the payment of subsidized house rental fees [13].

Social problems become a case that is highly attached to the poor community on the coast of the city. Housing, health, employment, and several other cases are among the problems that have not yet found a way out. Social inequality, thus, is strongly felt in the dynamics of the Indonesian market, which has increased in its economic activity, but not accompanied by a healthy and environmentally friendly quality of consumers.

Indonesia has begun to improve, particularly in addressing the waste problem through its development plans. The National Action Plan (RAN) for Indonesian Marine Waste Management has then been implemented since 2017. Accordingly, the government has issued a budget of around USD 1 billion to eliminate the production and disposal of plastic waste at sea. The target is to reduce plastic waste by up to 70% by 2025.

The environmental issue, mainly related with plastic waste, is a global issue that requires a shared responsibility among the stakeholders at all levels, from global down to local stakeholders, and the global society at large. The utmost concern is the plastic waste disposed at seas and has traveled across the high seas. It is master-less waste originates from the rivers dividing the cities and villages, where poor people in the suburbs of major cities live and do activities. In the context of Indonesia, its water environment condition is worrisome. As an archipelagic country with a total water area around 6,400,000 km², it is polluted with microplastics found in 19 points spread across all Indonesian water areas, from Aceh down to Biak [1,14]. Clearly, the Indonesian sea has been polluted by waste and is threatened by microplastics and nano plastics [15]. This fact is very worrying since it can threaten the marine ecosystem and its biotas, which if they are consumed by human, they could jeopardize human’s health. The amount of plastic waste produced by Indonesia per se reaches 64 million tons per year, where less then 5% is recycled, and the rest is burned, thrown into the landfill, and the sea [16]. Therefore, it is reasonable that Indonesia is considered to pollute the environment with its abundant waste production. Before it ends at sea, the waste primarily needs to be managed first. To deal with and manage the massive amounts of waste, especially the waste in urban areas, a management model with a landfill gas energy project (Waste to Energy (WTE)) could be a best and creative solution. For
example, in the United Kingdom, there is a WtE Lakeside incineration plant which began operating in 2010 as a JV between Viridor and Grundon. The costs incurred around USD 245 million with a capacity of 410,000 tons of waste per year. Its annual output is around 250,000 MWh electricity to the national grid, 20,000 tons of iron, 100,000 tons of ash, and 10,000 tons of air pollution control residue. Also, there is another Shin-Moji WtE gasification plant in Kitakyushu City, Fukuoka, Japan, which began operating in 2007 and is operated by MNC Nippon Steel. This power plant is estimated to have a capacity of 216,000 tons per year with waste disposal limited to APC residues (0.85% of waste input). All ash and metals produced are collected and then recycled [17].

In Indonesia, WtE projects for incinerator plants have also been planned by various regions, including: (1) Solo, requiring around Rp 417 billion; (2) Bandung, requiring around Rp 1,650 billion; and (3) Batam, necessitating around Rp 1,500 billion. This budget needs cannot be fulfilled 100% only from the local government budget, which is not more than Rp. 100 billion per year. It is even difficult for Solo to realize it as it can only collect the local income of Rp. 6 million per year [17]. The high costs needed then become a significant obstacle in the development of landfill gas energy project. Besides, cross-sectoral coordination is also needed since its management requires national, provincial, and local sector cooperation. The government and private sector cooperation (acting as an investor) are also needed to ease the burden of planning and management costs. Significant capital in the WtE project is also needed for the renovation of available landfills and the procurement of technology/steam engine as a tool. Accordingly, waste has great potential as a source of energy, especially if the waste is sorted before it reaches the landfill. Basically, organic and non-organic waste can be processed into energy together, but the waste sorting is required to get the potential dry plastic waste. The dry plastic waste per se is so beneficial as it can produce more power due to its material substance comes from crude oil[17].

Eventually, the earth is half-dead accommodating waste from the production and consumption of the human around the world, who enjoys the progress and ease of development. The phenomenon of straws, for example, a small plastic used by people almost every day. The straws are ranked in the top 10 most types of waste found on the sea. Every day, globally, 500 million plastic straws are thrown into the sea [18]. Meanwhile, In Indonesia, there are 93 million plastic straws disposed at sea every day. If their usage is accumulated within a week and then they are stretched, their length could reach three times of the circumference of the earth, accounted for about 117,449 km.

4. Conclusion
The economy continues to grow, accompanied by a growing population, both in Indonesia and in the world. The story of a whale or a turtle that died with a bowel full of plastic waste is a sad one, but it is a common finding nowadays. Not only are whales and sea turtles threatened at sea, but small fish are also overshadowed by microplastic and nano plastic pieces of waste. They haunt almost every ocean and river point on earth. Also, many people have eaten fish contaminated by plastic waste. It is, of course, dangerous to human’s health.

The problem of waste has indeed become a global issue that requires a firm resolution. Therefore, Indonesia, as the second-largest contributor of waste in the world, needs to introspect itself and improve its performance in eradicating the plastic waste problem. The Indonesian National Action Plan (RAN) on Marine Waste Management 2025, with a target of 30% waste reduction and 70% waste management, requires seriousness in its implementation. One of the ultimate solutions is to give more focus on developing landfill gas in the world’s WtE project. In this regard, the government should not only carry out economic growth-based development but also carry out sustainable development. It is expected that sustainable development would diminish the potential social cost of development and further implement it with environmentally friendly ways. By implementing sustainable development, Indonesia would show its commitment and contribution to helping the earth.
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