

Indonesia's Sustainable Development Goals Resolving Waste Problem: Informal to Formal Policy



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<https://doi.org/10.18280/ijstdp.170230>

ABSTRACT

Received: 24 July 2021

Accepted: 7 January 2022

Keywords:

formal policy, informal policy, sustainable development goals, waste problem

Indonesia declares itself as a country-oriented towards sustainable development. However, sustainable development goals are not clearly realized in every government policy, particularly on the environmental issue. This problem invites the important question of how Indonesia realizes or constructs public policy regarding waste problems. This paper aims to examine Indonesian public policies, both initiated by the community (informal policy) and government programs (formal policy). Based on the review of the amount of data and literature, this paper finds two arguments. First, the objectives of sustainable development are substantially stated in the Indonesian regulations. This legal policy is a government action in fulfilling citizens' rights regarding the good environment as guaranteed in the Constitution of the Republic of Indonesia. However, this formal policy has not been implemented proportionally. Second, the inefficiency of formal policy is actually patched by informal policies such as policy on personal drinking bottles, policy on the use of organic packing and shopping bags, etc. Nevertheless, in reality, the waste problem in Indonesia is far from what have been expected and still requires more sophisticated solutions both in the formal and informal sectors.

1. INTRODUCTION

Indonesia's large along with a high growth rate population fertilizes the increasing volume of waste. In addition, people's consumption patterns contribute to the creation of increasingly diverse types of waste, including plastic packaging waste that is dangerous and/or difficult to decompose by natural processes. In managing waste, the community relies on the end-of-pipe approach. Namely, waste is collected, transported, and disposed of to the final waste processing site [1]. In fact, heaps of waste with large volumes at the location where the final waste is processed dangerously can release methane gas [2], increasing greenhouse gas emissions and contributing to global warming.

Plastic output has increased steadily over the previous sixty years, from 1.5 million tonnes in 1950 to 322 million tonnes in 2015, with an annual growth rate of roughly 8.6% [3]. The regions where the majority of plastics are produced (28 percent, 19 percent, and 19 percent, respectively) and consumed (20 percent, 21 percent, and 18 percent, respectively) are China, North America, and Western Europe [4]. One of the critical reasons for the rising volume of plastics manufacturing throughout time is its unquestionable advantages: it is a low-cost, lightweight, and simple-to-manufacture material. Because of these factors, plastics are used in a wide range of applications and categories. Packaging (30 percent), building and construction (17 percent), and transportation (14 percent) are the three most common uses of plastics [5]. Despite its many advantages, plastic is a sophisticated substance that takes excessive time to disintegrate. Some plastics can take hundreds of years to decompose. In other words, if proper

plastic waste management is not implemented, the vast amount of plastics utilized poses a severe threat to human life and other living beings [6].

According to a study conducted by Jambeck, Geyer, Wilcox, Sieglar, Perryman, Andrady, Narayan, and Law (2015) on plastic pollution in the marine environment, 275 million metric tons of plastic waste were generated in 192 coastal countries in 2010, with 4.8 to 12.7 million metric tons leaking into the ocean [7]. Unfortunately, the study's findings revealed that Indonesia ranks second among the top 20 countries rated by the amount of mismanaged plastic garbage, right behind China. Furthermore, according to a World Bank synthesis report on Indonesia's marine debris, roughly 85 thousand tons of rubbish are produced every day in Indonesia, with a rise of up to 150 thousand tons per day in 2025, implying a 76 percent increase in ten years [8]. The data show how critical this issue is in Indonesia. As a result, this article focuses on examining various solutions, including specially formulated informal policies and regulations that bind the society to implement, beginning with government institutions, schools, and universities due to their ease of implementation and then influencing the environment [9].

Gusti Muhammad Hatta, Indonesia's Minister of Research, Technology, and Higher Education stated Djajadiningrat, Famiola, and Hendriyani (2011), green economy is a necessary solution to avoid the destruction of civilization caused by environmental damages and pollution, such as climate change and global warming. Meanwhile, the United Nations' Sustainable Development Goals (SDGs), which consist of 17 goals with 169 measurable indicators across particular time periods, are a global plan for the enhancement

of human life and the environment [10]. The goals are arranged by cross-governmental countries in a United Nations Resolution released on October 21, 2015, as a shared development aim till 2030 [11].

Being the world's largest archipelago with hundreds of islands and vast marine and forest resources, Indonesia should be the first and most important country to defend itself against natural and environmental disasters. Indonesia is one of the world's mega-biodiversity countries, with biodiversity and high levels of endemism or ecological uniqueness, as well as organisms in very high geographic structures that can be used as one of the essential capitals of sustainable development [12]. However, raising awareness about the need to preserve life in this environment must be spread worldwide, including among Indonesians. It must be initiated by government institutions in a comprehensive and long-term manner, formulated in clear and detailed regulations that can then be derived into the rules of agencies or other organizations to carry out the innovative policies discussed in this paper to achieve a green or environmentally friendly constitution in Indonesia.

2. INDONESIA'S SUSTAINABLE DEVELOPMENT GOALS

According to Article 1 point, 13 of Law no. 32 of 2009, the definition of environmentally sustainable development is a conscious and planned effort to use and manage resources wisely in sustainable development to improve the quality of life. Environmentally sound development requires an arrangement so that natural resources can continuously support development, now and in the future, generation after generation, and especially in improving the quality of life of Indonesian people. The principle of sustainable development includes thinking about environmental aspects as early as possible and at every development stage that considers the carrying capacity of the environment and development below the threshold value [13].

Sustainable Development Goals (SDGs) is a sustainable development program that contains 17 goals with a set deadline. The SDGs are a world development agenda that aims for the welfare of humans and planet earth. The SDGs were made on October 21, 2015, replacing the previous program, namely the Millennium Development Goals (MDGs). This common development goal was agreed upon by many countries in the United Nations (UN) resolution forum. Therefore, the development framework related to the changing world situation that previously used the MGDs concept is now replaced with the SDGs [14]. The SDGs represent an agreement on sustainable development priorities among the 193 Member States. As previously stated, the SDGs have specific goals and objectives. The goals of the SDGs are global and universally applicable, taking into account different national realities, capacities, and levels of development and respecting national policies and priorities. The goals and targets of the SDGs do not stand alone, and there needs to be an integrated implementation [15].

Indonesia is committed to implementing and is determined to be a pioneer and role model for the world in implementing the SDGs to transform a more just, peaceful, prosperous, and sustainable global civilization as a manifestation of the implementation of free and active policies on the world stage [16]. This is because the implementation of the SDGs achievement is vital for Indonesian people and is also a form

of Indonesia's contribution to the global community. The SDGs are also an instrument for increasing regional cooperation as a manifestation of Indonesia in the lower-middle-income country category. This commitment is realized by the enactment of Presidential Regulation Number 59 of 2017 concerning the Implementation of Achieving Sustainable Development Goals [17].

Presidential Regulation Number 59 of 2017 confirms that the President of the Republic of Indonesia will personally lead the implementation of the SDGs as Chair of the Steering Committee, and the Minister of National Development Planning (BAPPENAS) is appointed as the Implementing Coordinator. In the Cabinet Session in December 2015, the President of the Republic of Indonesia directed the coordinating role of BAPPENAS by involving all parties (government, parliament, mass organizations and media, philanthropy and business, experts, and academics) to work together, both strategically and operationally [18]. The BAPPENAS coordinates the preparation of the SDGs Roadmap as a document for the stages of achieving the SDGs for 2016-2030. The preparation of the SDGs National Action Plan is a five-year document. Presidential Regulation Number 59 of 2017 mandates the preparation of the National Action Plan to be completed within six months of the Government Regulation being ratified and the preparation of Regional Action Plans and Roadmaps to be completed within one year [19].

Efforts to achieve the SDGs target are a national development priority, requiring synergy of planning policies at the national, provincial, and district/city levels. The SDGs targets in Indonesia are in line with the 2015-2019 National Medium-Term Development Plan (RPJMN) in the form of programs, activities, measurable indicators, and indications of their financing support [20]. The SDGs are a refinement of the more comprehensive Millennium Development Goals (MDGs) by involving more countries, both developed and developing countries. The Indonesian government has achieved most of the MDGs targets, namely 49 of the 67 MDGs indicators. However, there are still several indicators that must be continued in the implementation of the SDGs. Some of the indicators that must be continued include reducing the poverty rate based on the national poverty line, increasing minimum consumption below 1,400 kcal/capita/day, reducing the maternal mortality rate (MMR), overcoming HIV/AIDS, providing clean water and sanitation in rural areas and the disparity in target achievement between provinces is still vast [21].

In implementing the SDGs together with the community, BAPPENAS formulates the SDGs Action Plan (Renaksi) as a reference for all stakeholders both at the national level (National Action Plan/RAN) and at the regional level (Regional Action Plan/RAD). The SDGs Renaksi is a 5-year work plan document for implementing various activities that directly and indirectly support the achievement of national and regional targets. Presidential Regulation of the Republic of Indonesia Number 59 of 2017 concerning Implementation of the Achievement of SDGs states that the RAN (National Action Plan) on SDGs must be established six months after the Presidential Regulation takes effect (January 10, 2018) [22]. The Provincial Government must have determined the SDGs RAD (Regional Action Plan) no later than 12 months after the Presidential Regulation takes effect (July 10, 2018). Local governments are expected to map and integrate SDGs targets and indicators into the RPJMD development agenda. Regions

are also expected to allocate regional development programs and budgets in line with the SDGs [23].

Sustainable Development Goals (SDGs) are developments that maintain the continuous improvement of the community's economic welfare. The principle of this development is to maintain the sustainability of the community's social life, the quality of the environment, ensure justice, and the implementation of governance that can maintain the improvement of the quality of life from one generation to the next [24]. There are at least seventeen goals of the SDGs according to Presidential Regulation Number 59 of 2017, namely: (1) end poverty in all its forms everywhere (2) eliminate hunger, achieve food security, improve nutrition, and promote sustainable agriculture; (3) ensure a healthy life and improve welfare for all residents of all ages; (4) ensure inclusive and equitable quality education and increase lifelong learning opportunities for all; (5) achieve gender equality and empower women; (6) ensure the availability and sustainable management of water and sanitation for all; (7) ensure access to affordable, reliable, sustainable and modern energy for all; (8) promote inclusive and sustainable economic growth, productive and comprehensive employment opportunities, and decent work for all; (9) build resilient infrastructure, promote inclusive and sustainable industries, and encourage innovation; (10) reducing intra and inter-country disparities; (11) make cities and settlements inclusive, safe, resilient and sustainable; (12) ensure sustainable production and consumption patterns; (13) take urgent action to address climate change and its impacts; (14) conserve and sustainably utilize marine and oceanic resources for sustainable development; (15) protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, stop desertification, reverse land degradation, and stop biodiversity loss; (16) strengthen inclusive and peaceful societies for sustainable development, provide access to justice for all, and practical, accountable, and inclusive institutions at all levels; (17) strengthen the means of implementation and revitalize the global partnership for sustainable development [25].

3. INDONESIAN ACTION ON THE WASTE PROBLEM: INFORMAL POLICIES

3.1 Policy on personal drinking bottles

Based on the data about the threat of environmental damage caused by plastic bottle waste, the first recommended policy solution is to establish a policy requiring all government employees and students in Indonesia, particularly civil servants, State-Owned Enterprises (BUMN) employees, teachers, contract employees, and others, to bring personal drinking bottles, both disposable and permanent. In the office, school, or campus setting, including formal and casual activities, this policy prohibits using disposable plastic bottles or any other drinking kind of equipment that can increase the volume of plastic trash. Based on the facts shown in Figure 1 below, this approach decreases the risk of environmental damage [26].

According to Figure 1, roughly 1 million drinks bottles are purchased every minute by people all over the world, equating to approximately 20 thousand bottles of drinks per second circulating in the environment, with no way of knowing whether or not the bottles are properly recycled. According to the data, only around half of the empty beverage bottles were

collected for recycling, and only 7% were recycled into new bottles. This implies that every minute, about half a million bottles are thrown away, polluting the environment. Indonesia produces roughly 5.4 million tons of rubbish each year, according to the Indonesia Solid Waste Association (2014), reported in Mery (2017). According to figures from the Jakarta Environmental Management Agency, plastic waste accounts for almost 13% of Jakarta's 6000 tons of rubbish per day [27].

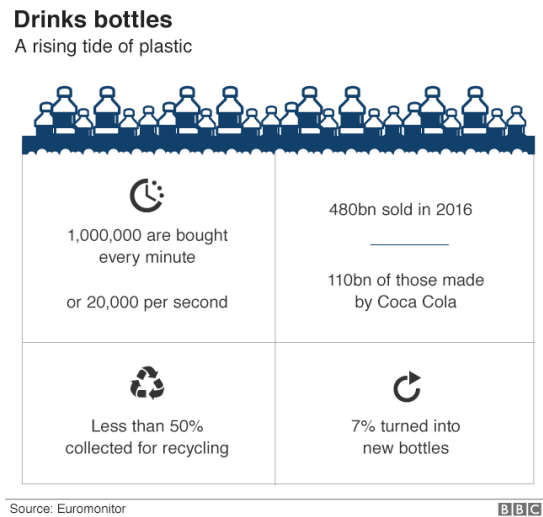


Figure 1. Drinking bottles

Furthermore, according to Makmuri (2019), Jakarta Region (DKI) produces around 8000 tons of rubbish every day. It means that if the government does nothing to reduce garbage from now on, the waste mounds at Bantar Gebang could reach 30 meters in height by 2020. On June 28, 2019, an interview was conducted with Makmuri, the Technology Application and Assessment Agency's Planning and Finance Bureau Director [13].

"Bantar Gebang in Jakarta covers 318 hectares. If not processed by 2020, it will pile up because one day is roughly 8000 tons. If we do not start now, there will be no trash reduction by 2020. Bantar Gebang is full of 30-meter-high garbage. So now DKI is working nonstop to attract investment in waste management. We are working on it. Because DKI produces 8000 tons of garbage per day, we are making it DED for 2000 tons so that it will not be centralized in the future, for example, in South Jakarta and West Jakarta, or South Jakarta and somewhere else in Jakarta with the capacity for 2000 tons of garbage..."

Several countries, including Indonesia, have begun to investigate actions to restrict the consumption of plastic bottles to address the problem of environmental contamination caused by plastic bottle waste. For example, the United Kingdom plans to implement a scheme to purchase plastic bottles and provide accessible drinking water facilities in key cities, including London. One option in Indonesia is to make it a policy to bring ecologically friendly personal drinking bottles to offices, schools, and institutions [28].

3.2 Policy on organic (non-plastic) shopping bags and environmentally friendly packaging bags

The use of organic shopping bags is the following policy that should be implemented to address the issue of plastic waste in the environment in Indonesia and around the world.

The Indonesian government, through the Minister of Trade and Industry of the Republic of Indonesia or other authorities in each region, such as the governor, mayor, and regent, must establish formal rules requiring all supermarkets, stalls, shops, minimarkets, and supermarkets to use bags made of natural materials such as paper, cloth, and leaves [29].

This is especially important because plastic shopping bags endanger the ecology and nature's preservation. According to Euromonitor (2019), over 10 million tons of plastic are dumped in the water each year. It also reveals that scientists from the University of Georgia's National Center for Ecological Analysis and Synthesis calculated that 8 million tons of trash entered the sea each year in 2010, with forecasts that this number will rise to 9.1 million tons by 2020 [30]. Faced with this problem, many countries around the world are now promoting the use of natural materials such as paper, cloth, and leaves for shopping. In one of Thailand's shops, here is an example of how raw materials are used to pack vegetables.



Figure 2. Vegetables are wrapped in natural materials (banana leaves) at Rimping Supermarket in Thailand

Figure 2 demonstrates how Rimping Supermarket, a supermarket in Chiangmai, Thailand, uses fresh banana leaves to pack its items. Supermarkets, food stalls, businesses, and supermarkets in Indonesia may all adopt this strategy to reduce plastic bag pollution in the environment. According to Azanella (2019), this strategy is implemented to limit the usage of plastic, which is difficult for the earth to digest and causes environmental damage, according to Rimping Supermarket [31]. Onions, cucumbers, kale, leeks, chili, beans, long beans, leeks, red spinach, mustard greens, and ginger are just some of the veggies and spices wrapped in banana leaves and sold on a chilling machine. Although this type of packaging is not suitable for all commodities, it does help to limit the usage of plastic and the risk of contamination [32].

In addition, the policy implemented by supermarkets in Chiangmai, Thailand, is consistent with the concept of society 5.0, which describes a shift in human life orientation from initially. It focuses on technological development such as virtual space without considering natural or authentic world factors or the quality of human life to more balanced and harmonious communities as defined by Figure 3, depicts a more detailed view of civilization 5.0. Society 5.0 is a futuristic concept "A human-centered society that uses a system that tightly integrates the internet and physical space to balance economic progress with solving social problems. Cyberspace (virtual space) and physical space have a high degree of convergence in Society 5.0. (realspace) [33].

Various measures, such as reducing greenhouse gas (GHG) emissions, increasing production and reducing food loss, mitigating costs associated with an aging society, supporting sustainable industrialization, redistribution of wealth, and correction of regional inequality, have become necessary, but achieving both economic development and solutions to social problems at the same time has proven difficult." (see Figure 3).

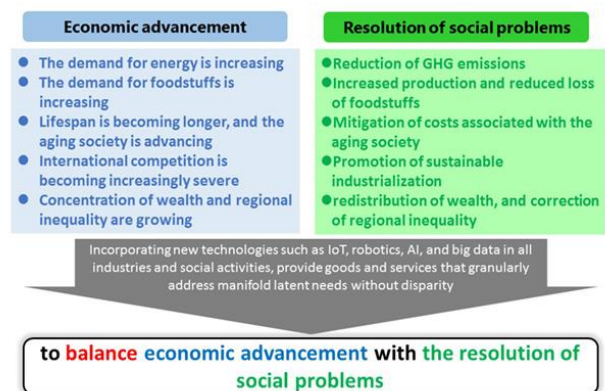


Figure 3. Balancing the economic development and social issues resolution

Following Indonesia's policy of utilizing plastic-free shopping bags, the government must also supply goods (non-plastic bags) for community usage; this point is linked to the industry sector's incentive to begin making plastic-free bags. The government must advocate and encourage the industrial sector, through laws and regulations, to begin transitioning from plastic shopping bags to more eco-friendly bags made of paper, fabric, leaves, tubers, or cassava, which has just been invented, in order to limit the usage of plastic bags [34]. Several parties are now undertaking research and developing biodegradable bags as a replacement for plastic bags, according to Fathoni (2019), a researcher at the Indonesian Institute of Science's Biotechnology Study Center whose research focuses on starch biosynthesis metabolic engineering. ENVIPLAST, for example, began making packaging bags using cassava starch raw materials in 2012. One method for overcoming environmental difficulties caused by the overuse of plastic bags is to use cassava starch as a raw material for creating packing bags that are easily decomposed [35].

Despite the fact that packing bags made from starch cassava are extensively accepted on the market, particularly in foreign markets, Fathoni (2019) claims that there are production challenges relating to the consistency of raw material quality. As a result, this product's research and development are critical. The Biotechnology Research Center of the Indonesian Institute of Science collaborates with ENVIPLAST to discover a solution to the prior issues. The Indonesian Institute of Science's Biotechnology Research Center will work with ENVIPLAST as a research institution to use the diversity of cassava genetic resources at The Indonesian Institute of Science and find raw material sources that are most suited for this packaging bag application [36].

Figure 4 demonstrates that, on a factory scale, green bags can be produced based on cassava material and commercialized in the marketplace in order to reduce/replace plastic bags. The existence of these green packaging bags must be backed up by solid legislation and regulations in order to push mass production and used in a sustainable manner by the community. The final expectation is that plastic bags will be

totally phased out because there have been already a more environmentally friendly alternative.



Figure 4. Examples of shopping bags made from cassava

3.3 Refilling policy for food and household items (liquids, powders, and flour)

The policy connected to replenishing food and home products in liquid, powder, or flour in stalls, shops, minimarkets, and supermarkets, is the following wise policy presented as a solution to the waste problem and minimizing plastic materials in the society. Although this regulation appears to be outdated, it is a viable option for reducing plastic waste. Because supermarkets and stores utilize a massive amount of plastic packaging to pack sugar, flour, oil, biscuits, snacks, and other items, it is easy to envision how much plastic can be raised or decreased whether this regulation is implemented or not. This regulation will prohibit the use of disposable plastic packaging for liquid, powder, and flour goods. Buyers must instead bring their containers to the stores, such as bottles or jerry cans. The community will be able to make numerous plastic savings as a result of this.



Figure 5. Example of jerry cans for liquid products

Figure 5 illustrates an example of jerry cans as house equipment which is easily found in Indonesia. It is reusable and safe on daily basis. The mass use of jerry cans reduces the use of plastic packaging (plastic bottles), especially for liquid products. Therefore, appropriate regulation is required to support the use of reusable jerry cans.

3.4 Policy for organic straws (bamboo, wood, stainless, etc.)

In addition to encouraging policies that encourage the use of plastic-free bags in stores, supermarkets, and minimarkets throughout Indonesia, the government must also issue guidelines and regulations that encourage the food industry, including all types of restaurants, to begin using non-plastic straws such as bamboo, wooden, stainless, and other organic-based materials.

The organic straw industry and efforts to limit the usage of plastic straws should be promoted. Several parties are already transitioning from plastic straws to organic straws made of wood and bamboo, one of which is bamboo straw created by Lembaga Pengelola Dana Pendidikan (LPDP) awardee and Chairperson of Mata Garuda, LPDP, Bali, Brasika /Mas Nara (2019). BooBali is the name of Mas Nara's bamboo straws. This bamboo straw business, he claims, is a socio enterprise (a company with a social goal rather than just a profit motive) that focuses on making environmentally friendly products [37].

BooBali, a company that tries to limit the usage of plastic straws, offers bamboo straws as one of its products. Bamboo, according to Mas Nara, has a number of advantages, including its ability to conserve water. The usage of bamboo straws is intended to attract a large number of people to cultivate bamboo, which will, in turn, save water indirectly through the existence of bamboo plants. Bamboo reeds from North Bali, with a marketing area in Gianyar, are the type of bamboo used. The bamboo straws made by BooBali are shown in Figure 6.



Figure 6. Examples of bamboo straws by BooBali

3.5 The policy sanctions for littering

The government's next essential step in ensuring that waste management is managed correctly is implementing stringent norms and rules regulating sanctions against people who litter on land, rivers, or oceans. According to Cordova, as stated in Tempo (2018), the amount of plastic garbage generated in 2050 is expected to outnumber the number of fish. Figure 7, 8, 9 summarizes data from a variety of sources about the problem of plastic waste in the oceans.

The examples showed in Figures 7-9 demonstrate how littering in the oceans, land, and rivers endanger living creatures' lives. As a result, those who like to litter must face severe and punitive penalties. Depending on the crime done, the punishment might range from severe to minor. If the littering conduct is caught directly, for example, the punishment can be imprisonment. Fines or social punishments are other options for dealing with places with much waste in their environment. The government and the international community, particularly Indonesia, must educate the public that littering is a crime because it negatively influences the

lives of other living beings.

In each district and city in Indonesia, the following sensible strategy is establishing a regular and integrated waste management system. Despite the presence of rubbish, boxes are not necessary for every regency or city in Indonesia nowadays. The government must adopt a nationwide policy mandating garbage cans on every street and sidewalk in every town and regency. In Padang, Indonesia, it would be preferable to be supplied every 15 meters on each street or sidewalk. In addition to roadways, trash cans must be available on all agencies, offices, shops, and dwellings from cities to villages. Assume that the agency, organization, city, regency, or lodging does not supply garbage cans. In that instance, a sanction such as a written warning or the withdrawal of their operating permit may be imposed.



Figure 7. A whale swallowed 7 kg of plastic waste



Figure 8. Plastics straw inside a turtle nose



Figure 9. Bottles caps inside the bird carcass

Digital technology plays an unquestionable role in almost every aspect of modern life. As a result, legislation to address waste and pollution should also consider this digital aspect. To collect home waste, the government must establish a

computerized application system. The digital program may resemble Gojek, Traveloka, Grab, or Uber, and it would be loaded on telephones to provide shuttle services. It would be preferable if the government managed this digital application, as the costs would be lower and more affordable. This approach can be supported by existing cleaning infrastructure, such as rubbish transport vehicles owned by the local government.

Education is a critical component that will help to support all long-term environmental preservation activities. The government's next objective is to create an environmental education curriculum that will be taught at all levels of education in Indonesia, from elementary schools to universities, with the primary goal of explaining waste types, hazards, waste management, and recycling processes. Some environmental education projects, such as one day without plastic waste in schools or government agencies where individuals are encouraged not to use disposable plastics in their activities, can be implemented in Indonesia.

4. INDONESIAN REGULATION ON WASTE MANAGEMENT: A WEAK FORMAL POLICY

Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia gives the right to everyone to have a good and healthy environment. The mandate of the Constitution has the consequence that the government is obliged to provide public services in waste management. This has legal consequences that the government is the authorized and responsible party in the field of waste management even though operationally, its management can partner with business entities. In the context of implementing integrated and comprehensive waste management, fulfilling the rights and obligations of the community, as well as the duties and authorities of the government and regional governments to carry out public services, a legal umbrella is needed in the form of a law [38].

To answer the waste problem, the government and the Representative House passed Law Number 18 of 2008 concerning Waste Management. This law consists of 18 chapters and 49 articles, all of which regulate how the waste is managed to be useful for life in the future. Law Number 18 of 2008 concerning Waste Management is based on nine principles, namely (a) the principle of responsibility, (b) the principle of sustainability, (c) the principle of benefit, (d) the principle of justice, (e) the principle of awareness, (f) the principle of togetherness, (g) the principle of safety, (h) the principle of security, and (i) the principle of economic value. Based on this law, waste management aims to improve public health, improve environmental quality, and make waste a resource [39].

Through Law No. 18/2008 concerning Waste Management in Article 20, the Indonesian government explains that waste reduction can be implemented through waste recycling or waste reuse. The regulation is an opportunity for business actors to manage their production waste, and thus, it does not become waste that will only be disposed of but can be used as a new renewable energy source [40]. Law 18/2008 concerning Waste Management intends that waste management aims to improve public health and environmental quality and make waste an energy resource. The main policy in the law mentioned above is about the implementation of integrated and comprehensive waste management, the fulfillment of the

rights and obligations of the community, as well as the duties and authorities of the government and local governments to perform public services [41]. Article 12 of the Law states that waste management is the obligation of every individual and every stakeholder to reduce and manage their waste. Therefore, by cooperating with various elements in society to cultivate plastic waste, the government is expected to support the government's program to reduce circulating plastic waste. Later, plastic waste can be used as a new renewable energy source to support national energy sovereignty. Finally, Indonesia is no longer dependent on fossil energy sources which sooner or later will run out and cannot be reproduced [42].

The concept of sustainable development and environmentally sound development integrated into Law Number 32 of 2009. In law Number 32 of 2009, it is explained that:

"Sustainable development (environmentally friendly) is a conscious and planned effort that integrates environmental, social, and economic aspects into a development strategy to ensure the integrity of the environment as well as the safety, capability, welfare, and quality of life of present and future generations."

Nationally, Law No. 23 of 1997 is currently Law No. 32 of 2009 concerning the protection and management of the environment. Based on the above laws, several policies have been made that address development and environmental issues. The policies made include Government Regulation no. 27 of 1999 concerning Environmental Impact Analysis, Government Regulation no. 26 of 2008 concerning the National Spatial Plan, and Government Regulation no. 19 of 1999 concerning Control of Marine Pollution or Destruction. Substantially, from the various policy products made by the government, there are still policy formulations that cannot be implemented. This can be seen from the high rate of environmental pollution and balanced by the number of developments that continue to increase every year. Infrastructure development will be in more detail if we discuss the issue of Government Regulation no. 26 of 2008 concerning the National Spatial Plan [43].

Law No. 32 of 2009 concerning Environmental Protection and Management (known as UUPPLH) has regulated crimes related to the environment. According to this law, environmental crimes can be divided into 2, namely, independent environmental crimes and crimes related to permits. An independent crime is a material crime whose elements of causality must be proven first. For example, the death of fish, damage to plants, causing sick people, and death must be proven as a result. Meanwhile, criminal acts related to permits are criminal acts that first violate the provisions of business and or activity licenses. UUPPLH states that the formal proof system, as stated in Article 14 paragraph (1), aims "to ensure the preservation of environmental functions, every business and or activity is prohibited from violating quality standards and standard criteria for environmental damage." What is meant by the environmental quality standard is a measure of the limit or level that exists or must exist or a pollutant element whose presence is tolerated in a particular resource as an element of the environment. With such provisions, polluters or environmental destroyers can be found guilty without proving the consequences of their actions [44].

In practice, many environmental crimes are committed by corporations. If an environmental crime is committed by a legal entity, company, union, foundation, or other organization,

the criminal threat is increased by one-third. This environmental crime also imposes disciplinary actions against such legal entities, companies, associations, foundations, or other organizations and against those who give orders to commit such crimes or who act as leaders in such acts or against both. This criminal instrument is fundamental in enforcing environmental law to anticipate environmental destruction and pollution [45].

More specifically, in Law no. 32 of 2009, there are two types of criminal acts: material offenses and formal offenses. Material offenses (generic crimes), namely acts against the law that causes environmental pollution or destruction. Such unlawful acts do not have to be associated with violations of administrative law rules, so that this material offense is also referred to as Administrative Independent Crimes. Formal offenses (specific crimes) are defined as acts that violate the rules of administrative law. Therefore, formal offenses are also known as Administrative Dependent Crimes. In UUPPLH formulated several acts that are classified as crimes: (1) intentionally committing an act that causes environmental pollution; (2) intentionally committing an act that causes damage to the environment; (3) negligence in carrying out actions that result in environmental pollution; (4) negligence in carrying out actions that result in environmental destruction; (5) intentionally releasing or disposing of hazardous substances, energy and or other components; (6) intentionally providing false information or omitting or concealing or tampering with the information required concerning item (e); and (7) negligence in carrying out the actions as mentioned in points (e) and (f) above [46].

Criminal sanctions in environmental protection are used as an *ultimum remedium*, where criminal prosecution is the end of a long chain. It aims to eliminate or reduce adverse effects on the environment. The links in question are (a) policy determination, design, and planning, environmental impact statements; (b) regulations on minimum standards or guidelines for licensing procedures; (c) administrative decisions on violations, determination of deadlines and the last day for the rules to be obeyed; (d) civil lawsuits to prevent or hinder violations, investigation of fines or damages; (e) public claims to compel or urge the government to take action, claims for compensation; and (f) criminal charges. The functionalization of criminal law to overcome the problem of environmental pollution is realized through the formulation of criminal sanctions in the applicable laws and regulations. There are at least two reasons why criminal sanctions are needed. First, criminal sanctions are not only intended to protect human interests such as property and health, but also to protect environmental interests such as property and health, as well as to protect environmental interests because humans cannot enjoy their property and health properly if the basic requirements regarding environmental quality are not fulfilled. Second, the use of criminal sanctions is also intended to provide fear to potential polluters. Criminal sanctions can be in the form of imprisonment, fines, orders to restore a polluted environment, closure of business premises, and announcements through mass media that can degrade the excellent name of the polluter concerned [47].

If this act of environmental pollution is associated with the role or function of the criminal law, then the role or function of UUPPLH is social control, which is to force citizens to comply with the applicable rules. In this case, the rules pertaining to the environment. When connected with the building community, it can be said that the role or function of

criminal law is a means of support for sustainable development.

If we refer to law no. 32 of 2009 concerning the protection and maintenance of the environment and Law no. 18 of 2008 concerning waste management, it can be concluded that Indonesia has a strong regulatory basis in an effort to realize sustainable development in the environment. However, after conducting a fairly comprehensive study, these laws target perpetrators of environmental crimes on a large scale, for example, environmental destruction by mining companies. In a narrow sector, these two laws do not become the basis for individual discipline in waste management, for example, in the household sector. As mentioned in the previous sections, the data on waste is mostly caused by small actions of the people who ignore the principles of environmental health. For example, the small actions in question are the actions of community members throwing garbage in rivers or in places that are not supposed to be [48].

Nationally, Law no. 18 of 2008 became the legal umbrella for waste management in Indonesia. This law was later revealed to be local regulation in every city/regency in Indonesia. These lower-level regulations form the legal basis for waste management in various parts of Indonesia. However, it is a general fact that these local regulations are not implemented optimally because of weak supervision and law enforcement of government officials and law enforcers.

5. CONCLUSIONS

Indonesia as a legal state aims to provide a healthy environment for its citizens and is obliged to maintain green world order. Therefore, all policies should have been aimed at the welfare of the people in the context of the environment. To achieve this goal, Indonesia projects sustainable development policies. Sustainable development policy has been manifested in two forms, namely informal policy and formal policy. Informal policies are actions taken by the community, private action, which support the agenda of sustainable development goals led by the government, in this context, overcoming the waste problem. This informal sector is a separate part of government policy. The initiative is the private sector. Although in reality, it still has something to do with government policy.

Sustainable development is actually guaranteed by formal policies in the form of laws and regulations related to the environment. The 2009 Environmental Law (UUPPLH) has provided a solid basis for lower regulation. However, this law does not yet have a fairly strict norm in mandating green environmental problems, especially related to waste problem. Waste problem itself has been regulated in 2008 through the Waste Management Act. These two laws are relatively strong legal umbrellas but has not been well implemented. Therefore, both formal and informal sector policies are not enough to solve the waste problem in Indonesia.

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