

LEGAL STUDY OF ECO-COMMUNITY WASTE MANAGEMENT CONCEPTS THROUGH THE DEVELOPMENT OF ECO ENZYME AS A SOLUTION WASTE MANAGEMENT IN POPULAR CITY

Mas Subagyo Eko Prasetyo
Universitas Nasional Jakarta

ARTICLE INFO

Keywords:

Waste management, Eco enzyme development, Legal studies

E-mail:

massubagyoekoprasetyo@yahoo.co.id

ABSTRACT

Garbage is discarded and unused goods and only takes up space to be accommodated and causes human health to decline over time, and as a result of the impact of waste that has no value and will only add to problems when its management is not appropriate. According to Law Number 18 of 2008 concerning Waste Management (Waste Law) it is stated that district/city governments have an obligation to manage waste properly and with an environmental perspective and improve waste management from an open dumping system to a sanitary landfill system. The type of research carried out in this research is normative legal research, which is a scientific research procedure carried out to find the truth based on scientific logic from the normative side, then the results of this study explain that, In Indonesia, regulations regarding waste management are regulated in various laws and regulations that applies starting from the 1945 Constitution of the Republic of Indonesia, the Regional Government Law, the Environmental Law, the Waste Law, and various other regulations. However, in reality waste management in Indonesia is still very dependent on the end pipe system, where waste is collected, transported and processed to the Final Disposal Site (TPA). This causes the accumulation of waste in very large quantities in the TPA which can harm the environment or even humans around it. Whereas in the Waste Law it is explained that one way to handle waste is to reduce waste by recycling or reusing it.

Copyright © 2022 Economic Journal. All rights reserved.
is licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License \(CC BY-NC 4.0\)](https://creativecommons.org/licenses/by-nc/4.0/)

A. INTRODUCTION

Increased development activities in developing cities have resulted in uneven population growth. The high rate of population growth that is not matched by the provision of comparable infrastructure, facilities, and standards in environmental services has the potential to reduce environmental quality. In other words, the increase in population will be directly proportional to the production of existing waste piles, so the idea arises to process the waste so as not to interfere with the preservation of living things.

Garbage is discarded and unused goods and only takes up space to be accommodated and causes human health to decline over time, and as a result of the impact of waste that has no value and will only add to problems when its management is not appropriate. In environmental health science (refuse) is a part of objects or things that are considered not to be used, not used, not liked or should be thrown away, in such a way that it does not interfere with survival. In health science, the whole of objects or things that are considered not to be used, not used, not liked or should be thrown away are called waste objects or used objects (waste).

In the Academic Paper of the Draft Law on Waste, it is stated that waste is the residue of a business and or activity in the form of solid or semi-solid in the form of organic or inorganic substances that are biodegradable or non-biodegradable which are considered no longer useful and are disposed of into the environment.

According to Law Number 18 of 2008 concerning Waste Management (Waste Law) it is stated that district/city governments have an obligation to manage waste properly and with an environmental

perspective and improve waste management from an open dumping system to a sanitary landfill system. The use of the sanitary landfill system has several advantages including the following: (1) cheap, does not require large investments, sufficient to fulfill large areas far from settlements; (2) requires a short preparation time; (3) accommodate various types of waste; (3) methane gas that comes out of the waste can be used as fuel to drive turbines; (4) reduce air pollution because waste is buried in the ground.

However, in addition to the advantages as mentioned above, the sanitary landfill system also has several disadvantages including: (1) water pollution due to organic or chemical waste that produces hazardous liquids and seeps into the ground; (2) explosion of methane gas resulting from soil decomposition that is not drained; (3) requires a large area of land in a large and densely populated city area. Population growth and changes in people's consumption patterns lead to an increase in the volume, type, and characteristics of increasingly diverse waste. Humans carry out various activities to fulfill their welfare by producing food, beverages and other goods from natural resources. These activities also produce waste material called garbage. Waste management in urban areas is a system that is interrelated to form a specific goal, namely the waste management system of a city aims to serve the population of the household domestic waste it produces, which indirectly maintains public health and also creates environmentally sound waste management.

The waste problem is an important problem that can damage the balance of the environmental ecosystem. Based on Bappenas calculations in the Indonesian infrastructure book in 1995, it was estimated that waste generation in Indonesia was 22.5 million tons and will more than double in 2020 to 53.7 million tons. Based on these data, the need for TPA in 1995 was 675 hectares and increased to 1610 hectares in 2020. This condition will become big problem with limited vacant land in big cities. According to BPS data in 2001, the waste generated only reached 18.3%, 10.46% was piled up, 3.51% was composted, 43.76% was burned and the rest was dumped in riverside yards or 24.24% vacant land.

Data from the State Ministry of the Environment states that as many as 47% of TPAs are not equipped with waste processing systems, 42% of TPAs have waste processing systems that function properly, 10% of TPAs have waste processing systems that do not function properly. To overcome the waste problem as above, the application of 3R or reuse, reduce, and recycle is a good program to put forward. Solving waste problems by solving problems from the source can ultimately support the achievement of a healthy, clean and comfortable environment. However, waste segregation has not been implemented in an integrated manner. Waste that has been sorted at the household level will not necessarily be handled separately until it reaches the TPA. This is the reality that occurs in most landfills in Indonesia.

Determination of standardization in waste processing must be developed again so that the process of returning waste to the environment can be carried out safely and does not have a negative impact on humans or other living things. Reducing waste that goes to landfill is one way that can be used to process waste into more useful products. One of the most effective ways to do this is by making eco-enzymes that are applied at the household level. The specialty of this eco-enzyme is that it does not require a large area for the fermentation process as in the composting process, even this product does not require a composter tub with certain specifications. Bottles of mineral water and other products that are not used can be reused as eco-enzyme fermentation tanks. It also supports the concept of reuse in saving the environment. Eco-enzyme only requires media the size of a bottle so it can save processing space and can be applied at home. In addition, eco-enzymes have many benefits such as being used as plant growth factors, a mixture of floor cleaning detergents, cleaning pesticide residues, descaling, and reducing car radiator temperatures.

Based on this background, the author will discuss the legal study of the concept of eco community waste management through the development of eco-enzyme as a solution for waste management in densely populated cities.

2. METHOD

The type of research carried out in this research is normative legal research, which is a scientific research procedure carried out to find the truth based on scientific logic from the normative side. Normative research is a process of finding laws, legal principles, and legal doctrines, in order to answer

the legal issues faced. This normative legal research is carried out to produce new arguments, theories or concepts as prescriptions in solving problems at hand.

The initial step taken by research in the implementation of this normative research is to conduct research on the existing laws and regulations in Indonesia and the collection of materials is carried out through literature studies in the form of books, journals and so on to study the sources or written materials used. can be used as material in writing this research.

To answer the problem, the collection of legal materials is carried out by identifying and taking an inventory of the positive legal rules that apply in Indonesia, researching library materials such as books, scientific journals, and research reports, and other sources of legal materials relevant to the issues raised. research will be conducted. The analysis of legal materials used in this research is by using descriptive methods, namely methods that focus and focus on problem solving, presentation, interpretation, and analysis so that it is expected to produce conclusions based on legal materials that can be accounted for.

3. RESULT AND DICSUSSION

1. Positive Legal Waste Management Arrangements in Indonesia

A healthy environment is the right of every Indonesian citizen that must be maintained by the Government. The 1945 Constitution of the Republic of Indonesia (UUD NRI) in Article 28H paragraph (1) states that everyone has the right to live in physical and spiritual prosperity, to have a place to live, and to have a good and healthy living environment and have the right to health services. Environmental problems are getting bigger and bigger and become global level problems. The impact on the environment is a link that is interconnected with various other aspects, so the concept of a healthy environment is needed in environmental law.

Law Number 32 of 2009 concerning Protection and Management of the Environment as amended by Law Number 11 of 2020 concerning Job Creation (Environmental Law) in Article 1 Number 1 states that the notion of the environment is unity with all objects, power, conditions, and living things, including humans and their behavior, which affect nature itself, the continuity of life, and the welfare of humans and other living creatures. In the above understanding the phrase "including humans and their behavior" refers to the notion that the environment also includes humans and nature or the environment based on the value that humans give to themselves or to nature. According to Drupsteen, environmental law (*milieurecht*) is law relating to the environment or nature (*natuurlijk milieu*) in a broad sense. Thus, there is also civil environmental law (*privaatrechtelijk milieurecht*), constitutional environmental law (*staatsrechtelijk milieurecht*), criminal environmental law (*strafrechtelijk milieurecht*), as long as it contains provisions relating to environmental management.

Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia as mentioned above has consequences for the government to have the obligation to provide public services in managing waste. Although in its implementation it can involve the business world and the community engaged in waste. In carrying out the government's obligations in managing waste in an integrated and comprehensive manner, a legal umbrella is needed in the form of statutory regulations that regulate.

Article 2 of the Environmental Law regulates the principle of state responsibility, participatory principles, principles of good governance; and the principle of Regional Autonomy. Therefore, waste management is the responsibility of the State through the Government and Regional Governments as well as for community participation. In addition, Article 63 of the Environmental Law regulates the authority of the Government and Regional Governments in carrying out environmental protection and management. The Waste Law in Article 19 regulates the management of household waste and waste similar to household waste. The article divides the management of household waste and similar types of household waste into waste reduction and waste management. Waste reduction in Article 20 includes the following activities: (1) limiting waste generation; (2) waste recycling; and/or (3) waste reuse. Article 20 paragraph (2) stipulates the obligations of local governments as follows: (1) to set a target for reducing waste in stages over a certain period of time; (2) facilitating the application of environmentally friendly technologies; (3) facilitate the application of environmentally friendly product labels; (4) facilitate reusing or recycling activities; (5) facilitate the marketing of recycled products.

Furthermore, Article 20 paragraph (4) regulates the role of the community in carrying out waste reduction activities by using materials that can be reused, recycled, and/or easily decomposed by natural processes. Article 22 of the Waste Law regulates waste management, which includes the following activities:

- a. Sorting in the form of grouping and separating waste according to the type, amount and/or nature of the waste;
- b. Collection in the form of collection and transfer of waste from waste sources to temporary shelters or integrated waste management sites;
- c. Transportation in the form of carrying waste from the source and/or from temporary waste storage sites or from integrated waste management sites to the final processing site;
- d. Processing in the form of changing the characteristics, composition and amount of waste; and/or
- e. Final processing of waste in the form of returning waste and/or residue from previous processing to environmental media safely.

Law enforcement in constitutional life is carried out by the Government and by the Court. Both carry out law enforcement functions in different ways. The government carries out its law enforcement function in an active manner to ensure that citizens behave according to the law. The ways in which they are carried out are providing legal counseling and guidance. Courts carry out law enforcement functions by passively waiting for people to submit disputes to court to obtain legal decisions.

Enforcement of environmental law is the most important part of environmental law, because through law enforcement it can be seen the level of compliance of the community and business actors in implementing the applicable provisions through licensing instruments, supervision and application of sanctions. Seeing this, the effectiveness of environmental law enforcement must be in line between the government and the judiciary for the realization of justice, certainty and legal benefits.

Environmental criminal law liability is criminal legal liability imposed on individuals, groups or corporations, whether intentionally or unintentionally, pollutes or damages the environment which results in losses to the community. The Environmental Law adheres to a double track system in the application of sanctions. Article 98 and Article 118 which regulate criminal sanctions for environmental crimes in the form of imprisonment and fines. Furthermore, Article 119 states regarding the confiscation of profits obtained from criminal acts, closing of all or part of business premises and/or activities, repairs due to criminal acts, obligation to do something that is neglected without rights and/or placing the company under the care of a maximum of 3 (three) years.) year.

The Environmental Law regulates the use of criminal law facilities in addition to administrative law and civil law. The criminal provisions are regulated in Articles 116 to 120. In the Environmental Law, the principle of strict liability is also applied. Strict liability is liability without fault, which means that the maker can be punished if he has committed an act as formulated in the law regardless of his inner attitude. The application of the principle of strict liability to perpetrators of environmental crimes has implications in proving environmental crimes at trial. This will make it easier to prove by the public prosecutor because there is no need to prove a mistake in the form of intentional or negligence on the part of the perpetrator of the crime.

Enforcement of environmental law in the field of waste management aims to maintain and maintain environmental conditions so that people get a good and healthy environment. The implementation of the Waste Law has not been effective. This is evidenced by Indonesia being the 2nd ranked country producing domestic waste, which is 5.4 million tons per year. In addition, the weight of waste piles in Indonesia nationally reaches 200 thousand tons per day or equivalent to 73 million tons per year and is dominated by household waste as much as 48 percent, traditional markets 24 percent, commercial areas by 9 percent, the rest from public facilities, schools, offices. , roads and so on.

Basically, law enforcement is influenced by several factors that are interconnected with one another. These factors include:

- 1) The legal factor itself;
- 2) Law enforcement factors, which include the apparatus or institutions that form and apply the law;
- 3) Factors supporting law enforcement;

- 4) community factors;
- 5) Cultural factors, namely as a result of work, creativity and taste based on humans and social life

2. Eco-Community Waste Management Concept Through Eco-Enzyme Development as a Solution to Waste Problems in Densely Populated Cities

Today's waste management in Indonesia still relies on the end-of-pipe approach, namely waste is collected, transported and disposed of for final processing. This has a negative impact, one of which is the heap of waste with a very large volume which has the potential to release methane gas which increases greenhouse gas emissions and contributes to global warming. It is time for the paradigm of waste management with the final approach to be abandoned and replaced with a new paradigm in waste management. A new paradigm that views waste as something that has economic value and can be used, such as for energy, compost, fertilizer, or industrial raw materials. Household organic waste occupies the largest proportion of total waste production with the following composition: organic (25%), paper (10%), plastic (18%), wood (12%), metal (11%), cloth (11%), glass (11%), other (12%). So far, there has been no effort to process waste, it's just that the processing system is less integrated so that it cannot be used optimally.

Eco-enzyme is the result of fermentation of organic kitchen waste such as fruit and vegetable pulp, sugar (brown sugar, brown sugar or granulated sugar), and water. It is dark brown in color and has a strong sweet and sour fermented aroma. Eco-Enzyme was first introduced by Dr. Rosukon Poompanvong who is the founder of Thai Organic Farming. Eco-enzyme products are products that are environmentally friendly as well as functional, easy to use, and easy to manufacture. The materials used are simple and widely available around us. In its manufacture, eco-enzymes only require water, sugar as a carbon source, and organic vegetable and fruit waste. The sugar used is brown sugar to minimize the possibility of residues of chemical compounds used. In addition, the price is more economical than the price of granulated sugar.

Eco-enzymes are made from leftover fruit or vegetables, water, and brown sugar. Its manufacture requires containers made of plastic, the use of glass containers needs to be avoided to prevent the container from breaking due to microbial fermentation activity. The method of making eco-enzyme is as follows: (1) add water as much as 60% of the container; (2) add sugar 10% of the amount of water; (3) put in vegetable or fruit waste until it reaches 80% of the container; (4) close the container for 3 (three) months and open it every day for the first 1 (one) month to release gas.

As mentioned above, Article 19 of the Waste Law states that the management of household waste and similar household waste consists of reducing and handling waste. Furthermore, Article 20 paragraph (1) of the Waste Law states that the reduction of waste in question is the limitation of waste generation, recycling of waste and/or reuse of waste. Article 22 paragraph (1) states that sorting in the form of grouping and separating waste according to the type, amount, and/or nature of the waste, collection in the form of taking and transferring waste from the source of the waste to a temporary shelter or integrated waste processing site, transportation in the form of bringing waste from the source and/or from temporary waste storage places or from integrated waste processing sites to the final processing site, processing in the form of changing the characteristics, composition, and amount of waste, and/or residues resulting from previous processing into environmental media in a safe manner.

The regulations as mentioned above are in line with the concept of eco-community which can bridge the interests of the community for financial needs and the need for a clean and healthy environment as well as integration between the community, government and the environment. The eco-community referred to above is focused on managing household organic waste into eco-enzymes and then distributing it commercially such as selling it as organic fertilizer to be used on agricultural lands around the area. However, if there is no agricultural land or the need for organic fertilizer, the eco-enzyme produced can be distributed commercially to other areas in need. In addition, eco-enzyme can also be used as a mixture of floor cleaner and descaling detergent.

The implementation of eco-community through the development of eco-enzymes is a form of integration between the local government and the community by optimizing its role in the environmental sector as regulated in Article 18 paragraph (2) and paragraph (5) of the 1945 Constitution

of the Republic of Indonesia giving the mandate to the Regional Government to regulate and take care of Government Affairs themselves according to the Principle of Autonomy and Co-administration Tasks and are given the widest possible autonomy. The article and its explanation state that the administration of regional government must be based on the principles of decentralization, deconcentration and co-administration. Law Number 23 of 2014 concerning Regional Government as amended several times, most recently by Law Number 11 of 2020 concerning Job Creation (UU Pemda) authorizes local governments (concurrently) to carry out mandatory government affairs that are not related to Basic Services. one of which is the environment.

The establishment of an eco-community is carried out in stages. The first thing to do is cadre. This stage is marked by a team building process that involves a group of people with the same interests and visions, especially towards eco-enzymes and love for the environment. The academics work together with community leaders or RW heads, RT heads, and village heads to provide counseling, training, and internalization to the community. In a persuasive way, the community's awareness is grown on an environmentally friendly lifestyle first. The second stage is the internal strengthening of the eco-community, which includes incubation and internalization of the values held by the community in discussion forums, hearings for government and community leaders, accompanied by comparative studies in similar communities. The third stage is forming an administrative system and maturation of the concept of community management, because good management is the main pillar in the movement of a community. This is done by means of internal training and/or sending community delegates to training events related to administration and management. The fourth stage is to build a network with potential parties to become sponsors or volunteers. Sponsors are not only in the form of funds, but can be in the form of forgings or land that can be used. The fifth stage is by publishing and promoting as well as educating the public about the eco-community that has been formed.

The structure that can be used to form a community (eco-community) in eco-enzyme management is as follows:

- a. Chief
The supreme leader who holds the coordination between the parts as a whole. Coordination is carried out by means of consensus deliberation to conceptualize future steps.
- b. Secretary
Take care of all community needs related to administration, correspondence, proposals and reports. In addition, the secretary also records the results of eco-enzyme production.
- c. Treasurer
Take care of matters related to community finance and record them in the books to be accountable for the use of funds in the future.
- d. Research and Development Section
- e. Researching the effectiveness of eco-enzyme production, looking for alternative materials that can be used more effectively and efficiently. In addition, this section is tasked with providing training and guidance to members who produce eco-enzymes.
- f. Production Department
Facilitate the facilities and infrastructure needed for production and collection of products to be stored before being sold.
- g. Marketing Department
Manage the marketing of eco-enzymes produced by the community.

The prospect of developing eco-enzymes can be implemented by integrating villages. Through Law Number 6 of 2014 concerning Villages (Village Law) and the Regional Government Law, it has clearly placed the village as a government organization or political organization that has certain authorities. The authority is to regulate citizens and manage the interests of the community/community based on origins and customs. The village is the smallest unit of the state that is close to the community and in real terms directly touches the community's needs for prosperity. The village is obliged to carry

out both physical development and human resource development as an effort to improve the quality of life and life for the maximum welfare of the village community.

BUM Desa as a legal entity is formed based on legislation and according to the agreement of the village community in the hope that all potentials contained in the region can be managed optimally. Article 1 point 6 of the Village Law states that BUM Desa is a business entity whose capital is wholly or most of the capital is owned by the Village through direct participation originating from Village assets which are separated in order to manage assets, services and other businesses for the maximum welfare of the Village community. BUM Desa can be used as an agency tasked with managing and distributing eco-enzymes produced by the community.

The role of the Government, especially local governments, is very important during the process of forming an eco-community. Article 5 of the Waste Law states that the Government and Regional Governments are tasked with ensuring the implementation of good and environmentally sound waste management. The role of the government or local government can be carried out in the form of granting recognition or activity permits to the community. In addition, community leaders also have a role to educate the public and increase public sensitivity to be active in the eco-community movement.

4. CONCLUSION

In Indonesia, regulations regarding waste management are regulated in various applicable laws and regulations, starting from the 1945 Constitution of the Republic of Indonesia, the Regional Government Law, the Environmental Law, the Waste Law, and various other regulations. However, in reality waste management in Indonesia is still very dependent on the end pipe system, where waste is collected, transported and processed to the Final Disposal Site (TPA). This causes the accumulation of waste in very large quantities in the TPA which can harm the environment or even humans around it. Whereas in the Waste Law it is explained that one way to handle waste is to reduce waste by recycling or reusing it. One way that can be done to carry out the mandate of the Law is by utilizing eco-community to reuse household organic waste to be made into eco-enzymes. The role of the Government or Local Government to realize community participation in waste management is to provide recognition or activity permits to the community (eco-community) to carry out organic waste management activities into eco-enzymes that not only reduce the amount of household organic waste but also reduce the amount of household organic waste. can be an alternative income for the community.

REFERENCES

- [1]. Budiman Chandra, Pengantar Kesehatan Lingkungan, Jakarta: EGC.
- [2]. Hardjosoemantri, K. (2002). Hukum Tata Lingkungan. Yogyakarta: Gadjah Mada University Press.
- [3]. Hardjosoemantri, K. Harry, S. (2014). Sejarah Perkembangan Hukum Lingkungan. Jakarta: Universitas Terbuka.
- [4]. Juli Soemirat Slamet, Kesehatan Lingkungan, Cetakan Kedelapan, Yogyakarta: Gadjah Mada University Press, 2009.
- [5]. K.E.S. Manik, Pengelolaan Lingkungan Hidup. Jakarta: Kencana Prenada Media, 2016.
- [6]. Marzuki, Peter Mahmud. (2011). Penelitian Hukum, Edisi I, Cetakan 7. Jakarta: Kencana.
- [7]. Nurlinda, Ida. (2016). Kebijakan Pengelolaan Sumber Daya Alam Dan Dampaknya Terhadap Penegakan Hukum Lingkungan Indonesia. Bina Hukum Lingkungan. 1(1): 1-6.
- [8]. Ridwan HR. 2011. Hukum Administrasi Negara Edisi Revisi. Jakarta : PT. Grafindo Persada.
- [9]. W. Arya, Dampak Pencemaran Lingkungan, Yogyakarta: CV. Andi Offset, 2014.
- [10]. Wiharyangti, D. (2011). Implementasi Sanksi Pidana Dan Sanksi Tindakan Dalam Kebijakan Hukum Pidana Di Indonesia. Pandecta. 6(1): 80-85
- [11]. Arliman, L, S. (2018). Eksistensi Hukum Lingkungan Dalam Membangun Lingkungan Sehat Di Indonesia. Jurnal Lex Librum. V(1): 761-770.
- [12]. Kementrian Negara Lingkungan Hidup. 2008. Statistik Persampahan Indonesia Tahun 2008. Jakarta : KNLH & JICA (Japan International Cooperation Agency).

- [13]. Mulyanto. Oktober 2013. “Sistem Pengelolaan Sampah Terpadu (Sipengestu) Kelurahan Serengan dalam Kajian Sosiologi Hukum”. Jurnal Parental. Volume I Nomor 2 Tahun 2013.
- [14]. Mungkasa. 2004. Di dalam Nisandi, Pengolahan dan pemanfaatan sampah organik menjadi briket arang dan asap cair. Seminar Nasional Teknologi 2007 (SNT 2007) ISSN : 1978 – 9777. Yogyakarta, 24 November 2007.
- [15]. Nurmardiansyah, Eko. (2014). Eco-Philosophy Dan Implikasinya Dalam Politik Hukum Lingkungan. *Melintas*. 30(1): 70-104.
- [16]. Triningsih Anna.(2015). Pengadilan Sebagai Lembaga Penegakan Hukum (Perspektif Civil Law Dan Common Law).*Jurnal Konstitusi*.12(1): 135-153
- [17]. Anonym. 2006. Mengolah sampah bernilai tambah. www.balitbangjatim.com.
- [18]. Anonim. 2009. What is Garbage Enzyme. www.waystosaveenergy.net.
<https://laundry.drop.id/blog/d-laundry/apa-yang-dimaksud-dengan-sanitary-landfill/>
- [19]. <http://m.liputan6.com/health/read/831503/sampah-di-indonesia> palingbanyak-berasaldari-rumah-tangga
- [20]. <https://zerowaste.id/zero-waste-lifestyle/eco-enzyme/>