



University Compliance toward Waste Management Obligations: Special Region of Yogyakarta Experience

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Abstract— Household waste from universities in Special Region of Yogyakarta is one of the contributors to the overcapacity of the Piyungan's Final Waste Disposal. The position of universities as regulated in the Waste Management Law are categorized as “people” who are obliged to conduct measurements such waste reduction and waste handling. This research is intended to examine how the efforts of 4 (four) state and private universities in Yogyakarta comply with 3 (three) mandatory waste management norm. This empirical research obtained data using interview and observation methods, The results found that not all universities complied to sorting the akind of house hold waste, and not all university build the waste sorting facility as regulated in the Waste Management Law and Government Regulation 81/2012. This non-compliance was caused by low legal cultural behavior and unclearness of the legal substance about the position of university in the waste management regulations.

Keywords: *Obligation; Special Region of Yogyakarta; University; Waste Management.*

I. INTRODUCTION

Indonesia citizens have right to good and healthy living environment as guaranteed in Article 28H of the 1945 Indonesian Constitution.[1] In order fulfill these right, the Government of Indonesia as duty bearer promulgated Law Number 18 of 2008 concerning Waste Management (Waste Management Law).[2] The enactment of Waste Management Law was triggered by waste as a global problem, a lack waste management could give a huge impact to the environment and human health.[3]

Most country not only developed but also developing countries are concern and struggling to manage waste disposal.[4] In 2022 Government of Indonesia published a national waste data, sourced from 202 districts/cities throughout Indonesia. The data shows that national waste stockpiled has reached 21.1 million tons. Those national waste is divided into: a) 65.71% (13.9 million tons) managed waste; b) 34.29% (7.2 million tons) remaining waste has not been managed well.[5]

The Special Region of Yogyakarta is one of the regions in Indonesia which is currently facing a waste crisis caused by the overcapacity of the Yogyakarta's Final Disposal Site that located in Piyungan, Bantul.[6] One of the biggest waste contributors to the Piyungan Final Disposal Site is the University. In

the Yogyakarta Special Region province there are 107 state and private universities. The wider and bigger the university, the more waste it produces.

The Waste Management Law regulates the legal position of universities as "person" entities, it described in Article 1 paragraph 10 that "person" is an individual, group of people, and/or legal entity. Waste produced by universities is classified as household waste. Because based on Article 2 paragraph (3), a kind of household waste originates or is produced from several areas such as commercial, industry, public social facilities and/or other facilities. Included in other facilities are educational areas, or university which is the object of this research.

Universities as educational areas which are included in other facilities that produce a kind of household waste have obligations as regulated in the Waste Management Law and Government Regulation Number 81 of 2012 concerning the management of household waste and a kind of household waste (Government Regulation 81/2012). Universities as educational institutions have the advantages and abilities to contribute significantly in developing, understanding and implementing sustainable waste management practices. Therefore, this research is aimed at examining compliance with waste management obligations from 4 (four) universities in Yogyakarta.

II. LITERATURE REVIEW

A. *Waste Management Obligation in University Area*

Each person as addressed in Waste Management Law are obligated to take actions in the form of in the form of efforts to waste reduction and handling.[7] As for the university, institution have comply to several obligations that must be carried out in the area, including:

- a. Shorting Waste Obligation (Article 17 paragraph (1) of Government Regulation 81/2012);
- b. Providing Shorting Facility in University Area Article 17 paragraph (3) of Government Regulation 81/2012); and
- c. Providing Temporary Waste Disposal Site, 3R Waste Disposal Site, and
- d. Collection tools for shorted waste (Article 18 paragraph (2) Government Regulation 81/2012).

B. *The Used of 3R Method for University Waste Management*

The implementation of those obligation in the university area is very important for a more specific sorting process with the aim of simplifying the reuse and recycling process, including:[8]

- 1) Food waste, is organic waste including various biodegradable items originating from human consumption. Food waste production predominantly comes from university canteens. The process of sorting and reusing food waste has the opportunity for sustainable development.[9]
- 2) 2) Yard trimmings, including grass, leaves, trees and others garden waste collected from university area. The process of sorting and reusing yard trimmings using the composting method.[10]
- 3) Wood; can be reuse for manufacture and its residues used as raw materials for some industries, such as pulp industry, energy industry and others.[11]
- 4) Plastic; The types of plastic waste collected such as polyethylene terephthalate (PET), polyvinylchloride (PVC), polypropylene (PP), polystyrene (PS), polyethylene (PE) and hand others.[12] Some plastic waste management methods were established to guarantee health

- environment and adequate plastic waste disposal.[2] On of the plastic waste management method which support the sustainable environment and living is recycling plastic waste rather than landfill.
- 5) Paper and paperboard waste; recyclable waste paper also have circular economy aspect to be used as some products such as newspaper, printing paper, envelopes, carboard box, egg packaging, and other products.[13]
 - 6) Rubber, leather and textiles; the textile waste need to be managed to minimize the environmental impact. Recycling textile wasted is one of the strategies of its management, such as transform the textile waste into new products or materials, to reduce the need for virgin resource in the textile industry.[14]
 - 7) Metals; Metal waste is produced from electronic waste which still has economic value. recycling metal materials will be able to reduce the exploitation of low quality metal ore and save higher quality metal.[15]
 - 8) Glass; One technique in recycling glass waste is flameworking techniques, glass recycling is economically beneficial for the production of accessories, interior displays, and even construction materials.[16]

C. *Legal Compliance*

Legal compliance concerning about how person or entity conduct action(s) that adhere to provision of law and regulation. The legal subject compliance is influence by 3 (three) aspects as mention by Lawrence M. Friedman, they are legal substance, legal structure, and legal culture.

III. METHODS

This research is aim in assessing the waste management obligations of four universities in Special Region of Yogyakarta, they are Universitas Islam Indonesia (UII), Universitas Gadjah Mada (UGM), Universitas Negeri Yogyakarta (UNY) and Universitas Muhammadiyah Yogyakarta (UMY). This empirical legal research used interview and observation to obtain primary data, while literature study held to get the secondary data. The primary and secondary data's collected are analyzed descriptively-qualitatively to answer problem formulations.

IV. RESULTS AND DISCUSSION

A. *Compliance to Shorting Waste Obligation*

Universities as the first level of waste producers, to facilitate sorting and transportation to final disposal sites, are obligate to conduct waste classification. The classification of university's waste in terms of the original material is divided into two types, they are organic waste and inorganic waste.[17]

Sorting instructions are significant method to unsure waste are well shorted. In detail, shorting instructions are carried out by differentiating trash cans, colors and logos. This classification and instruction aim as endorsement by the institution to ensure the information is easy to understand and apply.[18]

Universities as legal entities have the obligation to sort waste in their areas as regulated in Article 17 paragraph (1) of Government Regulation 81/2012.[19] The compliance by four university delivered in the table below:

Table 1. Compliance to Shorting Waste Obligation

University	<i>Compliance to Shorting Waste Obligation</i>
UII	<p>Every unit at UII has waste bins based on organic and inorganic categories. As well as providing a depot in each unit for further transportation by a third party to the final disposal site. Transportation of waste in unsorted form.</p> <p>However, the legal culture of the academic community is remain low:</p> <ul style="list-style-type: none"> ● The academic community does not personally sort waste by category; And ● Cleaning officers when collecting waste mix organic and inorganic waste.
UGM	<p>Each unit at UGM has waste bins based on categories as organic, inorganic and residue. Waste originating from the unit is collected at the depot and is sorted in the form of:</p> <ul style="list-style-type: none"> ● Organic waste is brought by RINDU-PIAT (Recycling Innovation House-Agro Technology Innovation Center) ● Inorganic waste and residues are taken to the landfill through the management of the Assets Directorate. <p>Even though the academic community still tends to not comply with personal sorting when disposing of waste, institutionally there is a rule that unsorted will not be collected by RINDU-PIAT.</p>
UNY	<p>Each unit at UNY has waste bins based on organic, inorganic and B3 categories according to the unit location. However, the legal culture of the higher education academic community is remind low:</p> <ul style="list-style-type: none"> ● The academic community does not personally sort waste by category; And ● When collecting waste, cleaning officers mix the organic and inorganic waste again for disposal at the landfill directly through the management of the Assets Directorate.
UMY	<p>Every unit at UMY has waste bins based on organic and inorganic categories. However, the legal culture of the academic community is low, in the form of:</p> <ul style="list-style-type: none"> ● The academic community does not personally sort waste by category; And

University	<i>Compliance to Shorting Waste Obligation</i>
	<ul style="list-style-type: none"> ● When collecting waste, cleaning officers mix organic and inorganic waste. <p>The waste originating from the unit is taken to the University's Temporary Storage Place called "Pojok Rumah Sampah" to then be taken by a third party to the Final Disposal Site in unsorted form.</p>

Based on the table above, 4 (four) universities have carried out their obligations in the form of providing sorted waste bins. The sorted waste bins have been given sorting instructions such as differentiating the bins, bin colour and logo.

However, universities have not yet sorted their waste optimally, which is the obligation of universities as educational areas which are included in other facilities in the Waste Management Law. Apart from that, the academic community's low legal culture means that the waste is not sorted and is thrown directly into the landfill. On the other hand, throwing unsorted waste directly into the landfill can eliminate potential resources that are still contained in the waste. Therefore, the approach to sorting waste requires high involvement from waste producers (in this case the academic community) even though it requires slightly higher costs in carrying out collection, but at the processing stage it can result in lower costs.

B. Compliance to Providing Shorting Facility in University Area

Second obligation for university to manage their akind of household waste is to provide shorting facility in University Area as regulated in Article 13 paragraph (3) of Government Regulation 81/2012. The compliance by four university shown in the table below:

Table 2. Providing Shorting Facility in University Area

University	<i>Providing Shorting Facility in University Area</i>
UII	There is no sorting facility in university area scale
UGM	Each unit is obliged to sort waste at the waste collection point in each unit. There is a university area scale sorting facility managed by the Asset Directorate located on Agro Street
UNY	There is no sorting facility in university area scale
UMY	There is no sorting facility in university area scale

Based on the table above, the evaluation of the obligation to provide sorting facilities at 4 (four) universities in DIY has not been carried out properly. Only UGM has provided waste sorting facilities on a university scale. Meanwhile, 3 (three) other universities have not fulfilled their obligations by providing sorting places in university area scale. The absence of this facility is due to several aspects, such as:

- 1) lack of awareness that universities are obliged to provide waste sorting facilities and
- 2) lack of budget, facilities and infrastructure is the main reason why universities do build waste sorting facilities.

C. Compliance to Providing Waste Disposal Site, 3R Waste Disposal Site, and collection tools for shorted waste

The provision of a Temporary Waste Disposal Site by the University is carried out to accommodate waste before it is transported to be recycle and process at the final waste processing sites. Temporary Waste Disposal Site has technical criteria regulated by Minister of Public Works & Housing Regulation Number 03/PRT/M/2013:

- TPS area up to at least 200 m²
- Grouping waste into at least 5 types of waste in different places, namely organic, inorganic, paper, B3 and residue waste
- This type of waste storage is not a permanent container
- Easily accessible location
- Does not cause environmental pollution
- Placement does not disturb aesthetics and traffic
- Have a regular collection and transport schedule.

The university has the option to build a 3R Temporary Waste Disposal Site, the goals is to reduce number of waste and improve the characteristics of the waste before it is processed at the final disposal site. The tools and facilities that must be present at 3R Temporary Waste Disposal Site are a sorting room, organic waste composting, biogas producing unit, warehouse, buffer zone, and do not disturb aesthetics and traffic.[20]

Table 2. *Compliance to Providing Temporary Waste Disposal Site, 3R Temporary Waste Disposal Site, and collection tools for shorted waste*

University	Compliance to Providing Temporary Waste Disposal Site, 3R Temporary Waste Disposal Site, and collection tools for shorted waste
UII	None
UGM	Waste Disposal Site called DEPO, and Limited 3R Procedure done by RINDU-PIAT
UNY	None
UMY	Temporary waste disposal site called Pojok Rumah Sampah but there is no 3R Procedure were carry out

The results of the empirical research presented in the table above show that the obligation to provide Temporary Waste Disposal Sites, Reuse-Reduce-Recycle (3R) Temporary Waste Disposal Sites, and collection tools for shorted waste is not complied with by all universities. Only UGM provides a Waste Disposal Site called DEPO, and carries out limited 3R Procedures carried out by RINDU-PIAT, while the other 3 universities only have temporary shelters.

The non-compliance indicate that the general waste management regulation did not well enforce by the universities. If this problem analyzed using legal system theory by Lawrence M. Friedman, it shows that legal culture behavior to ensure the sustainable waste management is remain low.[21] The university's non-compliance in providing waste sorting facilities is due to 2 (two) main problems, limited land to build a

Temporary Waste Disposal Site or 3R Temporary Waste Disposal Site. Apart from that, there are also limited costs for operational waste management and the budget for providing waste sorting and processing equipment.

Beside that, the legal position of university as educational area who obligate to conduct waste reduction and handling remain unclear. This legal substance problem results in the university's ignorance of its obligations and the absence of a waste management policy at the university. So that, Universities prefer to collaborate with third parties without knowing how these third parties manage waste after it is transported from the university area.

V. CONCLUSION

The university has legal standing as a person entity and educational area according to the Waste Management Law. Based on this legal position, the University is obliged to reduce and handle waste. The compliance assessment of 3 (three) obligations as regulated in the Waste Management Law and Government Regulation 81/2012 shows a diversity of levels of compliance. UGM is the university with the highest level of compliance when compared to others, while the other 3 universities only carry out minimal obligations in providing waste sorting bins. In the context of optimizing universities' obligations to comply with waste management obligations, the results of this research can be continued to examine the efforts made by the government to increase universities compliance. Researcher also thought that its urgent to provide national level regulation as guidance for universities around Indonesia to comply with the obligations. So further study relates this finding is highly needed.

VI. REFERENCES

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