

Environmental Waste Management System in Effort Creates Sustainable Semarang

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Abstract. Environmentally sound waste management is an area of Semarang city government efforts to manage the waste. The existence of good waste management, will make a sustainable environment in accordance with Act No. 18 Of 2008 on Waste Management. Research methods sociological jurisdiction is law as the law in action, described as an empirical social phenomena. The findings of the study (1) Implementation waste management in the city of Semarang has been carried out by means of environmentally sound The program concept of 3R (Reduce, Reuse, Recycle), in cooperation with PT. Narpati Agung Lestari Karya Persada (2) Barriers to the realization of environmentally sound waste management systems, barriers: factors of population, The quality and quantity of human resources (HR) is still inadequate, operational factors. Solution: Conduct a training program, the training of human resources, increase its fleet of waste management.

Keywords : Waste Management; Act No. 18 In 2008; A Sustainable City.

1. Introduction

The existence of the Act No. 18 of 2008 on Waste Management and Government Regulation No. 81 Of 2012 on the Management of Household Waste and Waste Household Waste kind instructing the government to carry out the national strategy policy efforts in the area of waste management. Determination of the Act No. 18 of 2008, and then conducted a study and evaluation of policies that must implement the 3R system (*Reduce, Reuse, Recycle*) On waste management, it is still found a number of problems in waste management. Implementation of the 3R system aims to utilize waste society, one of which is the composting of organic material to the needs of its own plants, sorting goods that are still worth taking.³

Contained in Articles 14 and 15 of Act No. 18 of 2008 which affirmed the role and responsibilities of manufacturers in managing waste.⁴ This Article requires the manufacturer or businesses to reuse the packaging of products deemed unfit for use. With this approach aims to reduce production costs for the recycling process of waste materials. Due to the current waste management system is still far from the target is indicated by a number of indicators, namely from the aspect of community participation in terms of awareness of waste disposal negative impact on the environment.⁵

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³ Ministry for Economic Affairs of Indonesia 2015 Assessment of National Policy and Strategy to Accelerate Waste Management PT. Arkonin Engineering p.1-2

⁴ Articles 14 and 15 of Act No. 18 Of 2008 on Waste Management

⁵ Ministry of Environment 2012 Indonesia 2012 Environmental Status: Pilar Environment of Indonesia KLH-RI Jakarta p.81

One indicator of a healthy environment is the absence of a violation of the rights of living beings by human activity whether intentional or not on purpose. Environmental damage is not always a result of an unlawful act by humans is also not a human error, where the role of the community is needed.⁶ The environment damage as a result of community action against the law, it is often not negligence but conscious and aware of the consequences, but because of lack pedulianya. while according Kastman (2007) stated that the challenges facing waste management, among others:⁷

- Low public awareness to participate and keep cleaning surrounding environments,
- Paradigm community about waste management responsibilities by the government alone.
- Collection and disposal of land that is still limited, funds, and preparing freight transport which is not proportional to the volume of garbage per time

Arrangements concerning environmental protection law that specifically regulates and ensures their waste management shall be carried out with all the risks for a good intents and purposes. One of the causes of environmental damage allegedly now is rubbish.⁸ The issue of garbage is now a global issue seriously enough. Trash as considered as a part of life and the development of a city. The growing waste problem is increasing the volume, type and complexity of the problems posed.⁹

The provisions of article 1 paragraph (1) of Act No. 18 Of 2008 on Waste Management, "rubbish is the rest of the daily activities of human and / or natural processes in the solid form." Referred to specific waste is waste that due to the nature, concentration and / or the volume require special management.¹⁰ In the Indonesian Government Regulation No. 81 of 2012 concerning the management of household waste and similar garbage, household waste is waste from daily activities in a household that does not include specific feces and garbage.

Governments have a benchmark for waste management in accordance with Act No. 18 Of 2008 on Waste Pengelolaam as follows:

- Waste management is a systematic, comprehensive and sustainable which includes waste reduction and handling.
- Waste management is organized based on the principle of responsibility, sustainable principles, the principle of the benefit, the principle of justice, the principle of consciousness, the principle of solidarity, the principles of safety, security principle and the principle of economic value.
- Waste management aims to improve public health and environmental quality as well as to utilize waste as a resource.
- The government and local government are to ensure terselengga good waste management and environment, among others, by:

⁶ Budhy Tjahjati Sugijanto Soegijoko (eds.) 2005 *Bunga Rampai Pembangunan Kota Indonesia Dalam Abad 21* Lembaga Penerbit Fakultas Ekonomi Universitas Indonesia Jakarta, p.71

⁷ Kastman R dan A. M. Kramadibrata 2007 *Sistem Pengelolaan Reaktor Sampah Terpadu*. Humaniora Gramedia Bandung p.9

⁸ Kementerian Negara Lingkungan Hidup 2012 *Status Lingkungan Hidup Indonesia 2012: Pilar Lingkungan Hidup Indonesia* KLH-RI Jakarta p.81

⁹ Adrian R. Nugraha 2009 *Menyelamatkan Lingkungan Hidup Dengan Pengelolaan Sampah* Alumni Bekasi p.4

¹⁰ Tim Penghimpun 2008 Act No. 18 of 2008 on Waste Management

- Developing and increasing public awareness in waste management.
- Conducting research, technological development and waste reduction.
- Facilitate, develop and implement reduction measures, handling and use of waste.
- Implement waste management and facilitate the provision of waste management facilities and infrastructure.
- Encourage and facilitate the development of sewage treatment outcome benefits.
- Facilitating the application of specific local technology developed at the local community to reduce and manage waste.
- To coordinate inter-agency, community and industry towards an integrated waste management.
- In the implementation of waste management, the government has the authority to, among other things:
 - Establish policies and strategy of waste management.
 - Sets norms, standards, procedures and criteria for waste management.
 - facilitating and fostering inter-regional cooperation, partnership and networking in waste management.
 - Coordinate, develop and supervise the performance.
 - Local Government in waste management.
 - Establish inter-regional dispute resolution policy in waste management.

The trash problem is often considered directly proportional to the growth and development of a city as a result of lifestyle, consumption patterns and increasing population. The impact of urban living patterns lead to the depletion of natural resources. On the other hand the city is the object of concentrating government, where good productivity infrastructure, communities, public facilities, commerce, welfare, culture, and social civilized. The dependence of the nation's future came from the city, it would be disastrous if the problem of traffic congestion, flooding, pollution (air, water, soil), kesenjangan social economy, unemployment, crime, zoning, transportation, garbage and sewage.¹¹

Sustainable city not only advanced in terms of technology use in facilitating outreach and communication, but also must be able to be empowered and given incentives to motivate and mobilize the community, social capital as well as based infrastructure for the continuation of sustainable urban waste management.¹² Therefore preserve the environment to create a comfortable city and livable is the desire of every citizen.

Research Methods

This type of research is a field research the research done directly in the field, in the hope of researchers can obtain information and data as close as possible to the conditions in the field, so the results of field research can take advantage of good results.¹³In this study, the authors specify to the socio-judicial, sociological juridical

¹¹ Nirwono Joga dkk 2015. *Kota cerdas berkelanjutan* Gramedia Bandung p.14

¹² *Ibid*

¹³ Restu Kartiko Widi 2010 *Asas Metodologi Penelitian* Yogyakarta Graha Ilmu p.52

approach that is studying the interrelationships between legal and social style. It is used because the subject berkaitan with juridical law, while sociology is to measure the extent of implementation of the regulations in force as well as awareness of the law is enforced.¹⁴

The approach in this study, using the legal research carried out using sociological jurisdiction. Sociological juridical approach of law as *law in action*, described as a social phenomenon that is empirical. Thus the law is not only given meaning as a tangle of values, the decisions of officials, a tangle of rules and norms, positive law is written, but it can also be given meaning as a system of doctrine of reality, the behavior of regular and steady, or law within the meaning of the officer.¹⁵ The hope is to use this approach, apakah waste management in the city of Semarang has made environmentally sustainable manner.

2. Results And Discussion

2.1. Waste management in the city of Semarang has been done environmentally

Increased activity and population growth resulting in an increase in the volume of waste. Habits of people's behavior in these conditions led to low public awareness is not matched by an increase in the management system so that the management do not always able to achieve the desired goals. Waste management, the public has a unique position, as a society are private individuals means that whatever is done against the waste is completely up to his will. But when the garbage was dumped into non-private area (neighborhood) then turned into a public nature, so that the waste turns into public affairs, which can be interpreted as the government affairs.¹⁶

Society as a source and receiver results of waste management has a very important role to the success of waste management. Where as the source of their means can determine what kind of garbage they produce. So far, most people still consider waste as the rest of the useless and not as a resource that should be utilized. Waste management is not in accordance with the methods and techniques of environmentally sound waste management, causing a negative impact on public health and the environment.¹⁷

The environment is a very important part of human life, not least waste management. Sustainable waste management and environmentally sound is a systematic, comprehensive, and continuous covering waste reduction and handling.¹⁸ In the waste management in the city of Semarang is handled by the local government and accountable directly to the local government. Based on Act No. 18 of 2008 on waste management, essential substance of this law is all the municipality / county must change the waste disposal system into a system of waste management. The paradigm of waste management, which is based on final approach was time for abandoned and

¹⁴ Soerjono Soekanto dan Purnadi Purbacaraka 1979 *Perihal Penelitian Hukum* Alumni Bandung p.65.

¹⁵ *Ibid* p.65

¹⁶ Teguh Kristiyanto 2008 *Pengelolaan Sampah* Jurnal Magister Pembangunan Wilayah & Kota Universitas Diponegoro Semarang p.17

¹⁷ *Ibid*.

¹⁸ Article 1 (1) of Act No.18 of 2008 on Waste Management

replaced by a new paradigm in waste management. The new paradigm of looking at waste as a resource that has economic value and can be used, for example, energy, compost, fertilizer and industrial raw materials. Waste management is carried out comprehensively from the upstream before it produced a product that has the potential to be trash, to downstream,¹⁹

New paradigm of waste management is implemented with waste reduction and handling. Waste reduction activities include restriction, reuse, and recycling, while waste management activities include the segregation, collection, transportation, processing and final processing. In addition, the Regional Regulation No. 06 Of 2012 on Waste Management in Semarang confirms that waste management in the city of Semarang is not only the responsibility of the Department of Hygiene and alone, but the responsibility of the entire community of Semarang.²⁰

The local government itself has a stabilizing function, innovators, Modernisator, pioneers, and the actor or the conduct of its own.²¹ In Handling of waste management in the city of Semarang is handled directly by the municipality in this case is the Department of Hygiene and Semarang. Handling solid waste and environmentally sound is the duty of Local Government in accordance with Act No. 18 of 2008.

This is done by the Regional Government of Semarang through the Department of Hygiene and Pertamanam in order to environmentally sound waste management as well as the responsibility Local Government in the collection and waste management of residential, industrial and modern market adequately. Results of research and observation in the Department of Hygiene and the city, that the government's efforts to maintain the cleanliness of Semarang City with some of the programs that have been carried out as follows:

- The government made a policy one of the efforts in waste management, environmentally sound in Semarang through the concept of 3R (Reduce, Reuse and Recycle), which is to reduce waste generation, reuse of materials of potential garbage and recycle waste both organic waste such as food scraps, vegetables, types of waste that can be produced into liquid and solid organic fertilizer, either manually or using the composter. While non-organic trash such as pieces of glass, paper, metal, plastic, rubber and other non-organic materials can also be recycled.²²
- Government-run programs Semarang in addressing the waste problem has a strategy in environmentally sound waste management, to levels downstream Semarang city government in collaboration with a third party (private), namely PT. Narpati Agung Lestari Karya Persada in waste management. This cooperation is timed for 25 years. PT. Narpati as private parties who manage waste into compost and not only compost but also in the form of granules in the form of granules. It is an effort to address the problem of litter local government in the city of Semarang.
- Pengelolaam environmentally sound waste with community participation programs through Bank Trash. This effort Semarang city government in order to create public awareness on environmentally sound waste management into useful materials. In

¹⁹ Explanation of Act No.18 Of 2008 on Waste Management

²⁰ Act No. 6 of 2012 on Waste Management

²¹ Siagian Sondang P 2005 *Manajemen Stratejik*. Jakarta: PT Bumi Aksara Jakarta p.142

²² The interview with the Department of Hygiene and Semarang June 4th 2018

addition, the bank became part of the implementation of this garbage Regulation No. 06 of 2012 on waste management in the city of Semarang.

Environmentally sound waste management and keberlanjutan can not be run without the willingness and awareness of society. One of the fundamental problems for waste management in the city of Semarang is the large amount of waste generated by the community. In addition to waste management, the public was partly responsible for penangananya due to garbage generated from community activities.

2.2. Factors that become barriers realization of environmentally sound waste management systems, and solutions to create waste management system in the city of Semarang with environmental and sustainable

Waste management in the city of Semarang can be said to be still classified using a simple concept that embraces the concept of gathering, transport and waste. The management system is still being used because people do not know how good waste management. The fundamental difference between traditional management with ekosentris management lies in how to look and use of the role of the environment on human needs. Traditional management is still based on the utilization of the full environment to meet human needs without thinking about the future of the environment in the future. While ekosentris management is a balanced form of utilization of the natural environment and using sustainable principles.²³

Application of waste management in the city of Semarang today by creating community-based waste management system consisting of a waste management aimed at reducing the amount of volume of waste going into the landfill. Garbage is a consequence of human activity. The number or volume and types of waste comparable to the level of our consumption of materials used in everyday life. That the quantity and quality of waste materials is strongly influenced by a variety of activities and standard of living. Some important factors that affect the garbage, among others:

- The population that with more and more people, it will be the more waste produced by the population.
- Socio-economic situation, the higher the socio-economic condition of society, the more the per capita amount of waste dumped every day. Sampahnyapun quality more and more non organic or can not rot. Changes in the quality of this waste, depending on the materials available, existing regulations as well as public awareness of the problem of waste disposal.
- Advances in technology, that technological advances will increase the quantity and quality of the garbage, because the use of raw materials is increasingly diverse, the way of packing and manufacturing increasingly diverse product may affect the amount and type of waste.²⁴

Efforts Department of Hygiene and Semarang rated also not optimal in environmentally sound waste management in accordance with Nomo Act 18 of 2008 on Waste

²³ Keraf AS 2010 *Etika Lingkungan Hidup* Kompas Media Nusantara Jakarta p.63

²⁴ Rahadyandan Widagdo A.S 2002 *Peningkatan Pengelolaan Persampahan Perkotaan Melalui Pengembangan Daur Ulang Materi Lokakarya 2 Pengelolaan Persampahan Di Propinsi DKI Jakarta* p.4

Management. One factor seen from the number of population density, the participation of society, as well as facilities and infrastructure of waste management in the city of Semarang. Research in the Department of Sanitation and the city, that the factors become an obstacle in environmentally sound waste management in Semarang:²⁵

- Population growth The garbage problem in the city of Semarang, which increased the volume of each year, due to the increase in population numbers. Semarang city dwellers month recorded 1,658,552 million in December 2017 increased from the previous year of 1,648,279. This reflects the linearized between population growth with an increase in the volume of waste. The rapid population growth resulted in increased amount of waste generated. Increasing the amount of waste that is not followed by improvement of waste management infrastructure resulting waste problem becomes complex.
- The quality and quantity of human resources (HR) is still inadequate. This can be seen by the number of field workers who are not proportional to the area of Semarang. Besides production of waste in the city of Semarang is not comparable with the infrastructure managers of cleanliness.

Solutions to overcome obstacles in environmentally sound waste management in Semarang:

- Training programs that better waste management systems and economic value. It shows the number of residents in the city of Semarang should provide training for citizens of society. Because the measure of success of the waste management back to the community participation in solid waste Semarang. The higher the number of communities where people are aware of waste management is good, then a region will also be good anyway.
- The training of human resources and procurement execution of business HR Garbage new, more capable in the field of waste management to be placed. So that waste management is expected by the community are maximized. Another thing to do with dissemination to the public of Semarang on a sustainable waste management, so that the creation of community participation in implementing the habit of making use of waste back.

3. Conclusion

The implementation of environmentally sound waste management by the government of Semarang with way in pengelolaam waste concept Program 3 R (Reduce, Reuse and Recycle), in cooperation with PT. Narpati Agung Lestari Karya Persada, realizing people's participation with the Bank Trash. Then Factors that become barriers: The population of the city of Semarang that more and more, low public awareness, HR executive is still minimal. Solutions Training programs that better waste management systems and economic value, hold training for HR implementation business HR Procurement Waste and a new, more capable in the field of waste management to be placed.

²⁵ The results of interviews with the department of Hygiene and Semarang June 2018

4. Bibliography

- [1] Adrian R. Nugraha 2009 *Menyelamatkan Lingkungan Hidup Dengan Pengelolaan Sampah* Bekasi: Alumni.
- [2] Ali Zainudin 2009 *Metodologi Penelitian Hukum* Jakarta: Sinar Grafika.
- [3] Budhy Tjahjati Sugijanto Soegijoko (eds.) 2005 *Bunga Rampai Pembangunan Kota Indonesia Dalam Abad 21* Lembaga Penerbit Fakultas Ekonomi Jakarta: Universitas Indonesia.
- [4] Kastman R dan A. M. Kramadibrata 2007 *Sistem Pengelolaan Reaktor Sampah Terpadu. Humaniora* Bandung: Gramedia.
- [5] Keraf AS 2010 *Etika Lingkungan Hidup* Jakarta: Kompas Media Nusantara.
- [6] Moleong Lexy J 2005 *Metode Penelitian Kualitatif* Bandung: PT Remaja Roadkarya.
- [7] Nirwono Joga dkk 2015. *Kota cerdas berkelanjutan* Bandung: Gramedia.
- [8] Restu Kartiko Widi 2010 *Asas Metodologi Penelitian* Yogyakarta: Graha Ilmu.
- [9] Siagian Sondang P 2005 *Manajemen Strategik*. Jakarta: PT Bumi Aksara.
- [10] Soerjono Soekanto and Purnadi Purbacaraka 1979 *Perihal Penelitian Hukum* Bandung: Alumni.
- [11] Soekanto Soerjono 1986 *Pengantar Penulisan Hukum* Jakarta: UI Press.
- [12] Teguh Kristiyanto 2008 *Pengelolaan Sampah* Jurnal Magister Pembangunan Wilayah & Kota Diponegoro University (UNDIP) Semarang.
- [13] Kemenko bidang perekonomian RI 2015 *Kajian Kebijakan dan Strategi Nasional Percepatan Pengelolaan Persampahan* PT. Arkonin Engineering.
- [14] Rahadyandan Widagdo A.S 2002 *Peningkatan Pengelolaan Persampahan Perkotaan Melalui Pengembangan Daur Ulang* Paper in Lokakarya 2 Waste Management in DKI Jakarta.
- [15] Kementerian Negara Lingkungan Hidup 2012 *Status Lingkungan Hidup Indonesia 2012: Pilar Lingkungan Hidup Indonesia* KLH-RI Jakarta.
- [16] Constitution NRI 1945
- [17] Act No. 18 of 2008 on Waste Management
- [18] Act No. 6 of 2012 on Waste Management