III. MAN AND BIOSPHERE

REVOLUTIONARY CONCEPT OF GARBAGE HANDLING IN KOTA KUPANG, INDONESIA

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Abstract: The potential for garbage production will continue to increase along with the population growth rate and behavior patterns of human life. If not handled properly, it will have an impact on changes in negative benefits due to pollution from garbage. Kota Kupang is an area that has not been well managed about its garbage management. Therefore, scientific reviews are needed so that maximum changes occur in handling garbage in Kota Kupang. For this reason, research has been carried out using descriptive methods, then were analyzed qualitatively and quantitatively using secondary data. This research was conducted for two months (November-December 2018), and preparation of reports is carried out by stages of research, namely data collection, data reduction, data presentation, and conclusion drawing. The results of the research indicate that changes of fundamental garbage management must be carried out by considering the household behavior in handling garbage, sustainability of the perspective on garbage as a useful material that starts from world of education, changes in conventional methods of handling garbage in Cleaning and Living Environment Office of Kota Kupang, and a revolutionary perspective on garbage is needed, from useless materials to be useful materials for the economy.

Keywords: revolutionary concept, handling garbage, Kota Kupang

INTRODUCTION

Garbage is the result of human activities which are considered useless anymore. Human awareness is still low, so that a lot of garbage is disposed of carelessly, and has an impact on increasing environmental pollution caused by garbage, such as floods, disturbed aesthetic values, deteriorating human health, and so forth. Therefore garbage must be processed so that it does not cause problems. Widiyanto et al. (2017) reported that the types of garbage that had the highest potential based on the composition of garbage were food scraps (26,43%), then paper (18,55%), residues (16,83%), and organic garbage (15,36%). While the most composition of garbage based on volume is paper garbage (38,46%), plastic bottles (15,88%), residues (14,64%), and organic garbage (10,93%). Whatever the composition of the garbage if it is not managed properly will have a negative impact on human life. The government's concern about garbage has been anticipated for a long time by issuing Law No. 18 of 2008 Concerning Garbage. However, due to the low public awareness, the garbage problem has not yet been resolved.

Garbage is a phenomenon of citizen awareness that is still a problem to date (both in urban and rural areas) that not yet can be overcome. Garbage is considered as a phenomenon of citizen awareness because unhealthy behavior of life that is shown by burning, stockpiling, littering, which has a negative impact on the environment and health. This requires handling and concern from the community to reduce, recycle, and process garbage into useful material.

Garbage as a phenomenon of citizen awareness, then very difficult to make changes naturally toward a community that cares about the environment if the community still maintains a pattern of garbage management that has been going hereditary so that it must be engineered through a method that is planned, systematic, and packaged in a program of community empowerment about handling garbage (Yuliarzo and Purwani 2018).

Community awareness can be packaged through a learning process towards ways of thinking and behaving so that they can actively participate in the action of garbage management according to local cultural values that are synergized with innovation. Community awareness can only be changed when the things they do have benefits for themselves and the environment.

One of the areas in Indonesia that is still problematic with handling garbage is Kota Kupang. Report from Cleaning and Living Environment Office of Kota Kupang in 2018 that garbage problems occur because of factor of low public awareness so that it has not properly utilized the available bins, and also because of the limitation of garbage transport equipment that has not been in accordance with the volume. If this garbage problem is not managed properly and correctly it will cause environmental disturbances, physical-chemical components of water and air, biology, social, economy, culture and health. For this reason, it is necessary to conduct a scientific research as a recommendation for handling garbage problems in Kota Kupang.

RESEARCH METHODOLOGY

This research used a descriptive method which was analyzed quantitatively and qualitatively. The data source used is secondary data, namely from statistical reports of Kota Kupang, scientific journals, magazines, and so on. Work procedures are carried out by dissecting information data from reliable reference sources, which can be traced to the Google Scholar Index, to identify relevant academic literature. In addition, this research was also carried out by analyzing various perceptions of waste management strategies used by researchers. This scientific research was carried out for 2 (two) months, namely November-December 2018. The process of preparing reports was carried out by referring to the stages of research, namely data collection, data reduction, data presentation, and conclusion drawing.

RESULTS AND DISCUSSION

1. POTENTIAL OF GARBAGE IN KOTA KUPANG

Every time someone always produces garbage from the activities they do. In addition, garbage production will continue to increase because it is influenced by the pace of population development and the lifestyle of the community. Mustofa (2016) reports that garbage always piles up and causes pollution due to the low public awareness that dispose of garbage carelessly. Standardization of National Indonesian Number 19-3983-1995 states that every person in a household produces garbage from 0,7-0,8 kg/person/day. Riwukore et al. (2019) reported that the average household consisted of 4,32 people. Thus, every household has the potential to produce garbage as much as 3,5 kg/household/day. Within a year each household produces of garbage as many as 1.261,4 kg/household/day. For more details, see Table 1.

Tabel 1. Waste production based on population development

No.	Year	Potential of garbage			
		Total population (people)	Garbage production (kg/person/day)	Total household (units)	Garbage production (kg/units/day)
1	2000	237.271	189.817	47.590*	166.565
2	2001	242.479	193.983	50.149	175.522
3	2002*	244.671	195.737	51.490	180.215
4	2003	251.170	200.936	52.760	184.660
5	2004	258.104	206.483	56.922	199.227
6	2005	271.405	217.124	53.532	187.362
7	2006	279.124	223.299	60.512	211.792
8	2007	286.299	229.039	61.728	216.048
9	2008	286.306	229.045	62.702	219.457
10	2009	291.794	233.435	64.980*	227.430
11	2010	336.239	268.991	65.789*	230.262
12	2011	349.344	279.475	69.543*	243.401
13	2012	365.348	292.278	73.634*	257.719
14	2013	378.425	302.740	79.892*	279.622
15	2014	384.112	307.290	85.986*	300.951
16	2015	390.877	312.702	92.557	323.950
17	2016	402.286	321.829	95.258	333.403
18	2017	412.708	330.166	97.725	342.038
19	2018	423.800	339.040	100.352	351.232

* estimated of numbers

Source: NTT in numbers (processed)

Data on the table 1 above shows that at any time there is a significant increase in garbage production due to population growth factors and an increase in the number of households. Therefore, engineering of garbage management policies must start when garbage is still on household or population. Mayangkara (2016) reports that garbage engineering in an integrated manner (sorting of wet, dry, and hazardous garbage) in Tuban district when the garbage is still on the household is able to reduce household garbage by 60-65%, and the rest (35-40%) are transported to landfill. Previously, Dwiyanto (2011) reported that community-based household garbage management in Kota Semarang based on the 3R principle (reduce, reuse, recycle) was able to reduce the volume of garbage by 70% which was disposed of to landfill. Furthermore, Assahary (2014) reported that the processing of household garbage into compost carried out by the people of Kota Padang was able to reduce the garbage that arrived at landfill of only 21,56%. Then Nizar et al. (2014) stated that the role of households in compost diversification is quite effective (82%) because it is economically beneficial. Garbage must be socialized and understood because have economic benefit and also the value of natural sustainability, therefore households (residents) need to be motivated continuously so that garbage management has economic benefits for the family. The government needs to provide facilities its.

Posmaningsih (2016) reports that facilities are the most dominant factor contributing to household participation in garbage management because the community is willing to do garbage sorting when given a trash can that suits needs (90,5%), and 26,67% of the people are not willing to do garbage management because they do not have tools. Fisher et al. (1984) op.cit. Posmaningsih (2016) explained that if there is a place to dispose of garbage around the household, it can reduce 15% of the effect of disposing garbage on any places, and 30% of the effect of disposing garbage on the highway. The shape of the trash can unique (colorful) is able to reduce waste by 14,9% which is disposed of in any place compared to the usual form of trash can because it only reduces 3,15%. Thus the low of participation behavior and social awareness of the community and/or households in the garbage affairs is due to the lack of maximally settings toward residents on garbage management starting from households towards trash can. The role of the government in the success of garbage management efforts in households needs to consider strengthening facilities, economic

benefits, local institutions, knowledge, and attitudes for household residents. The main objective of the government's role is to reduce household garbage by recycling or engineering garbage materials to minimize the amount of garbage disposed of in landfill or which will burned in incinerators.

2. CONCEPT OF GARBAGE HANDLING IN KOTA KUPANG

2.1. Garbage to be an extracurricular education in world education

Behavior or social activities that are sustainable in the future in a child are influenced by the development of knowledge and skills acquired when taking education. Utilization of garbage must be accustomed early to shape the character and wisdom of culture so that it stimulates the creativity and innovative abilities of children from an early age. Extracurricular education is an informal activity to develop the talents and imagination of school-age children, and garbage can be used as a source of development of talent and imagination. Local governments (Education Office) can play a role in stimulating garbage management as extracurricular education on Fridays or Saturdays. Education Office can allocate a budget or establish cooperation with companies/NGOs in utilizing corporate social responsibility (CSR) of funds to procurement trash cans of organic and inorganic in each school, or instruct schools to provide trash cans in each classroom, then begins with the introduction of the types of garbage and their sorting. Furthermore on Friday or Saturday be taught how to use of garbage to be a useful material for use in the school, such as paper flower pots, flowers from plastic bags, and so on. To make this activity a success, the Local Government needs to consider strengthening the capacity of teachers in the fields of arts and crafts. Extracurricular education about garbage can be strengthened by the Muatan Lokal of curriculum as a learning model in the classroom.

Posmaningsih (2016) gave an example of SMU 34 Cilandak-Jakarta Selatan which implemented extracurricular activities and Muatan Lokal of curriculum in their schools, was able to reduce paper garbage originating from teaching and learning activities because recycled into recycled paper and art paper. Organic garbage from flower plants, ornamental plants, and shade in the school yard is processed into compost using vermicomposting technical which is useful as fertilizer for medicinal plants in the medicinal gardens of school. While plastic garbage is addressed by the principle of reduce

and reuse. Assahary (2014) reported that the implementation of the concept of garbage management by the Regional Government at all levels of the school (SD-SM level) in Kota Padang had an impact on the participation of 40% of schools across all levels implemented programs of garbage reduction, and transmission continue to home and neighborhoods. Ninggarwati and Latianingsih (2014) reported the results of their studies at 15 schools in Kota Depok, that the garbage reduction program launched by the Local Government had stimulated schools to reduce waste by making pupuk (20% of schools), processed into handicraft materials (40% of schools), and collected for submitted to the Garbage Bank (20% of schools), and the rest (20% of schools) choose to pay the garbage transportation fee. The introduction of garbage management through extracurricular activities and Muatan Lokal curriculum in the world of education can change bad behavior towards garbage from the beginning.

2.2. Garbage standby of 24 Hour (Green Community)

Garbage standby of 24 hours through green community concept is an instrument for the development of a green city in garbage management by exploring the cultural wisdom of the local area. This is important because however modern the technology of management of garbage, if it is not accompanied by community participation (social engineering) it will provide benefits that are not good. Green community is considered by some researchers to be a fairly good approach because it uses a participatory approach that has an impact on aspects of community involvement and smoothness of influence (Suyanto et al. 2015). The involvement of all stakeholders and the community in a series of garbage management activities in a certain period of time with the local wisdom approach is able to reduce heap garbage.

Suyanto et al. (2015) reported that the involvement of Surabaya Mayor Tri Rismaharini in the green community of garbage management was able to reduce 30% heap garbage in each operating point. Pasmoningsih (2015) reported that citizen involvement in green community around the residence was able to reduce the heap volume of garbage with citizen involvement reaching 91,7%. Suyanto et al. (2015) reported that the pattern of mutual cooperation (the term local of mutual cooperation in the Banyumas community) in handling garbage by picketing together eradicating mosquito nests was able to free Kota Purwokerto

from the outbreak of dengue hemorrhagic fever (DHF) and get an award from the World Health Organization.

The Green Community needs to be considered by the Kota Kupang Government because of the results of basic health research (Riskedas) on one report that households that manage their garbage to be composted are only 0,9%, and the rest, 24,9% of households expect garbage to be transported by officers, 50,1% of households process it by burning, 3,9% of households process it by stockpiling garbage in the soil, 10,4% of households manage garbage by throwing it into rivers or the sea, and 9,7% of households manage garbage by throwing it carelessly.

The implementation of the green community by the Kota Kupang Government can be done by (1) launching garbage standby of 24 hour involving all governmental equipment start from the Offices upto lowest government equipment (Neighborhood Association/NA and Citizens Association/CA); (2) Sudden Inspection (Sidak) by the Mayor to the office's, urban village to the lowest level (NA/CA) related to the method of garbage management carried out; (3) Blusukan (garbage free safari) with Forkompimda (Police, Prosecutors, Parliament, Army) and FKUB (religious leaders) to the subdistrict level upto NA/CA level to stimulate mutual cooperation (gotong royong) in combating garbage that done once a month on Friday or Saturday with the Mayor of Kupang; (4) empowering the environmental preservation program owned by the Movements Team of Family Welfare Founder (read: TP.PKK) in Kota Kupang as well as empowering Posyandu cadres from top to bsubdistrict level to utilize garbage recycling activities in the surrounding environment so produce economically beneficial goods; (5) publishing instructions of Mayor that every shop and seller of asongan prepare trash cans of organic and inorganic near sale area, prohibit the use of plastic bags in goods sale and purchase transactions, and if found there is negligence given strict sanctions such as revocation of business licenses, etc.; (6) publishing circular letter of Mayor for strategic places such as places of worship (churches, mosques, and temples) and educational units (schools, colleges and campuses) to socialize garbage standby of 24 hour to the congregation or students; (7) build partnerships with companies in Kota Kupang to utilize CSR funds such as the procurement of garbage banks, garbage health insurance, garbage festivals, garbage concerts, garbage deposits or the procurement of

assistive devices (motorbikes, cars, incinerators, etc.) that support the green community program; (8) build partnerships with third parties to carry out economic activities in handling garbage (the government as regulator, and third parties as operator); (9) cooperating with certain groups (mass organizations, scavengers, NGOs engaged in environmental issues, etc.) related to garbage management in Kota Kupang; and (10) strengthening the socialization ability about garbage management to disseminate through various media (social media, mass media and electronic media).

Suyanto et al. (2015) stated that the implementation of green community helped the mental revolution because the green community was carried out in an integrated manner between various stakeholders with a religious approach, ecoliteration, and local wisdom-based ecodesign towards the green city. Green Community is quite effective in Kota Bandung, Kota Purwokerto, and Kota Balikpapan. Posmaningsih (2016) states that the green community acts as a giver of information to the community, and as a facilitator in behavior change. Whereas Risal (2011) explained that the green community needs to be considered given the limited funds and resources so that the government is always left behind in the settlement of garbage. Widiyanto et al. (2017) states that a green community is able to reduce the amount of waste to the landfill significantly. The study results of Setiadi (2017) show that a green community can improve the participatory approach of the community so that the community is able to identify, analyze, and map its own problems and situations (potential, threats, and obstacles), and together offer the best solution for them. Green community if managed properly will also bring high economic benefits. Therefore a green community is needed because the production of garbage will continue to accumulate because the number of residents will increase, facilities and infrastructure are limited, and public awareness is still low on garbage.

2.3. Revolution of conventional garbage management arrangements in the bureaucracy

The management of garbage by the bureaucracy in Kota Kupang is carried out by the Office of Cleaning and Living Environment by: (1) a container system, which is a garbage management system that is carried out by placing containers in strategic locations, and when containers full of garbage, then brought in to landfill, and replaced with empty containers; (2) a door to door system, which is a garbage management system that is

carried out using a garbage truck which travels around accompanied by three to four workers to raise garbage from trash bins to the truck. (3) depo transfer system, which is a garbage management system carried out with two stages of transportation, where garbage from the location is collected by local collector officer using a garbage motorbike or a garbage cart to be taken to the depot transfer, then from the depo transfer, garbage from some the cart or motorbike is transported into a truck that has been waiting to be immediately taken to a landfill; and (4) the Temporary Trash Bins System (TTBS), which is a system that is carried out by providing temporary trash bins for accomodate garbage, and in certain periods the garbage truck will come to take the garbage collected in the TTBS and then bring it to the landfill.

Conventional garbage management arrangements that have been carried out by Cleaning and Living Environment Office have not had a significant impact in efforts to reduce garbage in the Kota Kupang, because the concept of Cleaning and Living Environment Office is gathering, transporting, and disposing to landfill without further processing. This conventional concept has lasted a long time since the previous Mayor until the next Mayor. The impact of this garbage management policy is the impact caused by the previous Mayor of Kupang (in the period 2012-2017) to the Mayor afterwards, where the Kota Kupang was designated "The Number One of Dirtiest City" in the Nusa Tenggara Timur province by the Ministry of Environment and Forestry in the Adipura (Cleanest City) award in 2018. Therefore it is necessary to carry out a total revolution towards conventional garbage management arrangements carried out by Cleaning and Living Environment Office of Kota Kupang.

The report from the Cleaning and Living Environment Office Kota Kupang in 2018 that the capacity of transporting garbage by the officers along with its fleet at the locations of available garbage is 528 M³/day (93,12%) of the total garbage of 567 M³/day so that the untransported is 39 M³/day (6,88%) . The transported garbage is immediately taken to the landfill without any further processing. This is the basis for the determination of Kota Kupang as the dirtiest city due to the highest scores Adipura's assessment is landfill management compared to other indicators. The Kota Kupang Landfill Model is an open dump so it has a low scores. The limited condition of facilities and infrastructure has caused the Cleaning and Living

Environment Office management of solid garbage to not be optimal. For details, it can be seen in the Kota Kupang of Cleaning and Living Environment Office infrastructure and facilities in Table 2.

Table 2. Conditions of facilities and infrastructure of Cleaning and Living Environment Office in Kota Kupang

No.	Variables	Σ	Σ operating	Σ not operating/damaged	Σ ideal needs
		Unit			
1	Garbage Dump Truck	43	32	11	51
2	Garbage Amrol Truck	5	4	1	10
3	Container bins	18	14	4	30
4	Garbage motorbike	52	3	49	55
5	Garbage cart	161	125	36	450
6	Heavy equipment				
	- Exavator	2	2	-	3
	- Loader	1	-	1	2
	- Bulldozer	3	2	1	3
7	Trash cans/trash bins Permanent	275	-	-	-
8	Garbage point	720	-	-	-
9	Compost house 500 M ²	-	-	-	-
10	Landfill 9,14 ha	1	1	-	20 ha
11	Transfer Depo	3	-	3	10

Source: *Cleaning and Living Environment Offices of Kota Kupang (processed)*

Garbage that is not transported to landfill is caused by a variety of factors, namely: (1) households as a source of garbage production, irregular dispose of garbage into the provided trash bins (such as disposing of garbage in rivers and seas, culverts, sewers, highways, and garbage thrown away when the officers has been transported garbage from location it) so cause there is still garbage that is not transported by officers; (2) The fleet of garbage carriers available is very limited from the ideal needs, which makes it difficult to regulate transportation services at garbage point location; (3) Human resources in the Kota Kupang of Cleaning and Living Environment Office have not been well organized, resulting in poor functioning in the operational arrangements of tasks in the field; (4) coordination related to the accumulation of garbage in a location has not been well organized so that it often raises complaints from the community about transporting garbage; dan (5) there are no strict rules for people who throw garbage at random.

In connection with the above then the needed are comprehensive garbage management arrangements, namely: (1) Mayor of Kupang revive the function of subdistrict effective until the NA/CA level to control the handling of garbage in their respective environments, and published a circular letter from the

Mayor of Kupang about the time limit for disposing of garbage in designated locations, such as determining the time to dispose of garbage starting at 6pm to 6am, because after that the garbage will be transported by the officer; (2) Mayor of Kupang builds a partnership with the Local House of Representatives of Kota Kupang to increase the budget for procurement garbage fleets, if the reason for the budget is limited, Mayor of Kupang can utilize the partnership with companies in his area to procure fleets from CSR funds; (3) Mayor of Kupang is needs improved budget the operations and safety for janitors to implement a program of garbage standby of 24-hour that had been prepared previously so that the management of janitors uses shift (replacement schedule), eg night shift and morning shift so that garbage will continue to be transported every time. This model will reduce the buildup of garbage at the location point of the garbage; (4) Mayor of Kupang forms a public complaint unit through media such as the group of WhatsApp, Facebook, kring Call the Mayor and the Cleaning Office, etcetera to accommodate the aspirations of complaints or information about garbage that has not been transported. In addition, the Mayor of Kupang instructs every device to control or supervise every

complaint to be followed up immediately; (5) The mayor along with DPRD need to evaluate the existing local regulation on garbage to be synchronized with the existing dynamics of garbage, or the Mayor of Kupang issues Instructions of Mayor about garbage to cover the weaknesses in handling waste that have not been regulated in the Regional Regulation; and (6) source of garbage problems due to negligence of officers in cleaning up invisible waste in drainage and sewers so that over time it will make the sewers clogged. This can be overcome by procuring of road sweepers car; (7) the application of reform of the bureaucratic structure through mutations and demotion needs to be done.

The collecting, transporting and disposing system that has been carried out by Cleaning and Living Environment Office at the landfill which has not yet had a sanitary landfill will create new problems, such as chemical and physical pollution caused garbage that accumulates so that it disturbs health and the environment. In addition, the existence of settlements that are starting to become densely populated in the area around the landfill can increase slum conditions exacerbate if not arranged properly. Residents in the area around the landfill generally work as scavengers. Therefore, the strategy for handling garbage in landfill can be done by partnering with scavengers. The existence of scavenger groups in the garbage management system can provide opportunities for unemployed people to try in this sector, and also help reduce garbage that must be transported or managed (Setiadi 2017). The role of scavengers in the process of traveling garbage starting from households to landfill is still relatively small, It is estimated that $\pm 2\%$ reduces garbage at trash bins, and $\pm 5\%$ reduces the garbage that arrives at the landfill. This is because the activities of scavengers are very dependent on the demand for the type of garbage needed by collectors.

Local government intervention to bring in many collectors in the regions is very much needed. But before the Kota Kupang Government needed to strengthen the organization of scavengers so that the arrangement was more controlled.

Nugraha et al. (2007) reported that the institutional strengthening of scavengers through diversification of garbage in the Kota Magelang, scavengers could generate four times as much income ($\pm$ IDR37.000.000,-/day) from daily income. Furthermore, Dwioktovanny et al. (2017) reported that there was intervention from the government through the concept of *reduce, reuse, and recycle* (3R) in garbage management in Kota Kudus able to increase the income of collectors from IDR2.428.871,-/day become IDR8,052,679,-/day.

2.4. Garbage as an economic value

The handling of garbage from time to time is still oriented to the bureaucracy which is handled by the Kota Kupang of Cleaning and Living Environment Office so that forming a government perspective that garbage is the source of problems. Wijayanti (2013) and Qodriyatun (2015) report that several regions such as Kota Malang, Kota Semarang, and Gianyar District have initiated that garbage has economic benefits in a way third parties, such as the Local Business Service Agency (LBSA) or Local Company (LC). The office which has been responsible for handling garbage only acts as a regulator (garbage policy maker) while the third party acts as an operator (implementing policy). The human resources component that is assumed to accumulate in the Cleaning and Living Environment Office Kota Kupang can be transferred to other offices that need their presence more, or can be distributed to urban villages to function as assistants for garbage utilization at the household level (Table 3).

Table 3. Condition of Human Resources in the Cleaning and Living Environment Office of the Kota Kupang

No.	Variables	Subvariables	Total (people)
1.	Total employees	Government employees	192
		Honerer	253
		Total	445
2.	Garbage personnel	Structural officials	29
		Crewman	276
		Street sweeper	76
		Driver	50
		Landfill Officer	8
		Supervisor	14

Source: Cleaning and Living Environment Offices of Kota Kupang (processed)

Qodriyatun (2015) states that profits when garbage operators are carried out by third parties then source of operational finance come from the Local Budget, retribution, grants, investments from the private sector, other business results from processing garbage (sales of garbage recycling results, garbage bioenergy utilization, and so on). In addition, if the third party investment is from an independent group, it will have an impact on the efficiency of the Local Budget. Wijayanti (2013) reported that the intervention by third parties in garbage management in landfill of Jatibarang Semarang was able to reduce garbage heaped by 20,90% and has an impact on reducing the value of CH₄ gas emissions by 35,27% per year, and CO₂ gas by 31,91% per year. Third party interventions can also have an impact on the lowest level, such as presenting garbage banks in each urban village in Kota Kupang. Garbage Bank as a third party in garbage management is allegedly able to increase people's motivation in reducing garbage dumps due to the provision of incentives.

Posmaningsih (2016) reports that garbage banks as give economic beneficial of citizens can increase community participation by 35,9%. Increasing more significant community participation can be followed by a policy of fines / penalties for the poor management of garbage in the community. Fines or penalties can lead to a more community orientation for the economy than being punished or fined. Community participation will increase significantly when there are incentives (money or prizes) provided for community-based programs. This method is called reinforcement methods, which are methods to stimulate by giving positive reinforcement and negative reinforcement, namely giving negative stimulus such as fines or penalties if doing the wrong thing. Suyanto et al. (2015) reported that community empowerment by garbage banks was able to manage the amount of garbage that had accumulated as many as 161.729,60 M³ by garbage bank personnel which only amounted to 2.917 people. After there were socialization, counseling, and garbage management training interventions, there was an increase in the amount of garbage that managed to 303.321,90 M³ which was managed by 8.318 members.

Surjandri et al. (2009) stated that garbage management interventions in the landfill were able to reduce garbage piles to 84% of total garbage by burning in insenerator machines, and the local government benefited from the brick produced from the combustion ash. Then in a contract a few years

later, a third-party insenerator machine was given to the local government to be used as a burning of toxic goods in the hospital. The presence of third party interventions in addition to providing an economic impact, is also very helpful in environmental conservation.

CONCLUSION

Garbage management must be carried out changes of fundamental by considering to changes in household behavior in handling garbage, sustainability of the perspective on garbage as a useful material that starts from world of education, changes conventional methods of handling garbage in Cleaning and Living Environment Office of Kota Kupang, and a revolutionary perspective on garbage is needed, from useless materials to be useful materials for the economy.

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