The Model of Collaborative Management Based Waste Settlement (A Case Study in West palimanan Village, Cirebon Regency)

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ABSTRACT
Basically every living thing will always produce the residue of metabolic processes. In humans is not only a waste materials derived from the metabolism of the body, but Also of his living activities. Residual material that has been un used it will be a waste and further the material will swhich Become an environmental pollutant will never last as long as human life exist. In order to take the benef it of sit is Necessary to manage so the pollutant material can be converted into valuable material economi cally or as an alternative fuel. To transform waste materials into use-ful, it is Necessary to form a collaborative cooperation of various parties, ranging from policy makers, producers, collectors, processors to be neficiaries.Advantages that can be gained through this collaboration is in addition to management can reduce waste generation, reduce environ-mental pollution, as an alternative to fossil fuel energy and at last is expected to Gradually change the bad perception of waste into valuable material economy. Key words: waste, collaboration management, economic value, alternative fuels

Global Warming that lasts in recent decades have resulted in climate change and increase in the air temperature. To prevent the impact of global warming, efforts to reduce or stop the process influential in the trigger gas effect greenhouse (GHG) emissions. Some sources GHGs are causing the release of methane gas (CH4) from the degradation of organic matter contained in waste generation and release of carbon dioxide gas (CO2) resulting from the use of fossil energy, especially from industrial activities. The higher the population density, the greater the volume of waste generated. Fossil energy needs to turn the wheels of the economy is increasing while reserves available in the world has declined.

To deal with this contradictory condition required a solution that could reduce the release of methane and carbon dioxide would also require a solution to the garbage polluting material in the environment that can be utilized as economically valuable goods or processed into alternative fuels that are environmentally friendly. It is expected the welfare of human life can be improved and the quality of living things and their surroundings better.

Waste management settlement in Cirebon until now has not done effectively. Their place of final disposal (landfill) with open dumping system (hoarding free) growing in some areas may result in disruption of ecosystem health and sustainability of the environment. Condition

This is compounded by population growth continues to increase from year to move waste generated also increases linearly. The following chart Cirebon population growth by the amount of garbage that can be transported to the landfill:

Source: BPS Prov Jabar & Components Waste Cirebon 2004

Picture 1, Growth Population vs Waste transported

According to statistics of the Ministry of Environment, garbage in Indonesia are generally transported to landfill / dump area (60%) for large cities and 30% in small towns / rural), the rest is composted, burned (open burning not use incinerators), discarded to the river, not transported and others (BPS 2000 - 2007). a large population, lack of public awareness of the importance of waste management is good and right, as well as the role of government that eventually led to be endless. To overcome pengelol efforts should be made through cooperation among stakeholders that involve the community, government, academia, non-governmental organizations, and the private sector.

The system is only one sanitary landfill the methods are implemented to minimize waste generation and its pollutant load crop. However, it has not been able to effectively maximize that lead to the application of the concept of zero waste. One of the major problems in waste management in Indonesia is the sorting of types of waste. Until now, people have not been accustomed to sorting kind of garbage, but it will affect the

when processed using equipment incinerator (Incinerator). Changing or improving public awareness was not easy, because it is closely related to the mindset and habits that have been hereditary.

To obtain optimal results in handling of this waste is needed for effective management and planning. The government can play a role through the issuance and private policies that play a role through the technical capabilities as well as its funding. Results obtained from the joint management will certainly not have added value if not utilized. In this case the role of the industry is needed to use it.

Trash basically had a pretty good heat value when burned. Through precise process waste can be utilized as a source of alternative energy. Industry in their daily operational activities in absolute need of energy in large enough quantities, and most needs this energy comes from fossil fuels. This is why the researcher thought to explain the concept and practice of collaborative planning in waste management towards zero waste concept.

One of the industries that use large enough fossil energy is the cement industry. Needs heat energy used to burn the material to produce cement products is very high. With high energy needs while the availability of fossil energy that is increasingly limited, an obstacle to the development of the cement industry. Utilization of alternative energy to support its operations are required to be managed professional. In this position the role of sewage treatment industry is vital and decisive.

Of the current development paradigm is no longer dependent on the role of government (government) alone, but evolved into a development involving stakeholders (governance). The definition of stakeholders (stakeholders) are: the parties affected by the policy, the parties can influence the policies and those who have the resources or authority to implement policies (Smutko, 2006). Their involvement is expected to accommodate the values and interests of the public in decision-making, improve the quality of public decisions, improve the capacity of communities, as well as avoiding conflict. The involvement of stakeholders in each different development programs. They generally can be grouped according to the interests and roles. In the case of governance process of continuous interaction between society and the state in development, as expressed by McCarney, Halfani, and Rodriguez (1996), that governance is "the relationship between civil society and the state, between the rulers and the ruled, the government and the governed".

In the context of participation, a sign of participation arise when confidence (trust) and engagement (engagement) mastering system. Planning co-exist with the concept of governance is planning collaboration (Healey, 2006) because the approach involves various stakeholders. Planning collaboration currently dominates

urban planning (Allmendinger, P. and Mark Tewdwr-Jones, 2002: 216). By looking at its characteristics, this collaborative approach can be used

an attempt to overcome the problems of development, including environmental issues. One intractable environmental problems today is rubbish. Source can be derived from individual scale waste products, household, industrial, agricultural or office. By type, the garbage is divided

in several variations: solid / liquid / gas, wet / dry, or organic / inorganic. The production process running at any time and are always rolling so that the volume increases with the rate of population growth and activities.

Some of the problems caused by the presence of waste has been a lot happening in some areas. Trash is a problem, ranging from transport process processing. Therefore a good and correct handling as garbage also have externalities. According to the understanding of economics, an externality is a loss or profit suffered or enjoyed economic actors for the action of other economic actors are not reflected in market prices. Externalities garbage is garbage has given a negative influence on other parties

who did not throw but have to "pay", the garbage problem is a common problem, the problem of household, government agencies, the private sector, because the waste generated by all of us. the handling

must be done together, can not simply be done by one party.

Some efforts have been made to overcome this problem, but have not been able to provide optimal results. All parties involved, whether they produce, which is affected, as well as those managing waste, should cooperate through a mechanism. The mechanism can be done from the planning process at the level of stakeholders, implementation and evaluation of the final results of waste management. With the involvement of stakeholders and competent, collaborative approach to waste management that could be considered to be one alternative in solving the problem of waste.

Even though it looks ideal, there are many who doubt the effectiveness of this collaborative process in terms of process and ideological foundation. Uniting several different opinions then summed into an agreement not an easy task. The collaborative process becomes difficult to implement because in this process has a lot of

demands, requires a lot of time, gives results that certainty is low. Lack of commitment from stakeholders bias causing friction within the group (Johnston, 2010). In addition, public involvement freely and without hindrance to solving common problems is a conceptual impossibility (Mouffe, 1999).

Collaboration management is done through several stages:

a. Planning collaboration established through a joint consensus
b. Implementation which is based on the confidence (trust) the various parties

c. Supervision together in any activity, to avoid the perselisihan
d. Evaluation of the results obtained from the activities undertaken.

Waste management through collaboration possible to be implemented, although in reality takes time, effort and funding not less.

The above steps are integrated waste management efforts involving three elements, namely:

a. The regional government through the managers and owners of the landfill one of them is DKP
b. Private waste handlers competent
c. Industries that have implemented the concept of co-processing

The combination of these third-party potential

if synergized would be a force superior system because each has its advantages and comparative effect on the continuity of the process of collaboration. If cooperation between the three elements are successful and sustainable, the problem of waste will not be a frightening specter for the current generation and future generations. On the other hand it can create a new paradigm. The bins were originally regarded as goods to be avoided then regarded as goods that have the potential and economic value. This promising new hope that the next could be one solution in sustainable environmental management.

RESEARCH METHODS

The method in this study using a combination of quantitative and qualitative approaches include the study of literature, data analysis secondary, interviews and site visits. The interview, conducted on palimanan West Village community, village waste processing board, and the private sector users of trash. Conducted field visits to several sources of waste, TPS / TPA, village-owned enterprises (BUMDes) as waste processing palimanan Village West, and PT Indocement Tunggal Tbk. (PT ITP Tbk.) As the beneficiaries of the processed garbage. TPA TPA visited were billowing Cirebon. Secondary data used is the data derived from the processing and utilization of garbage in garbage processed BUMDes PT ITP Tbk.

RESULTS AND DISCUSSION

1. System Waste Management in the District Cirebon

Local Government Cirebon carrying out waste management plan based on the network system of solid waste contained in Cirebon Cirebon District Regulation No. 17 of 2011 on Spatial Planning (RTRW) in 2011 to 2031, which in article 23, activities include:

a. Master planning of waste management districts;
b. Organic waste composting technology development in rural and urban residential areas;
c. Development of temporary shelters (TPS) is placed at the center

community activities, including market, housing, offices and social facilities are located in each district;

Rasio Jumlah Daya Tampung TPS Per Satuan Penduduk

Tahun	Volume sampah (m3)	Jumlah penduduk	Rasio
2003	97.200	2.035.100	47,76
2004	108.000	2.084.572	51,81
2005	129.600	2.107.918	61,48
2006	156.600	2.134.656	73,36
2007	189.000	2.143.545	88,17

Sumber : Dinas Cipta Karya Kab. Cirebon 2007

Table 1. Ratio of Total Capacity Per TPS Population Unit.

d. Increased utilization and management point of final waste processing (TPPAS) existing waste management system *sanitary landfill* include:

- TTPAS Mount Pupils in the village of the District billowing palimanan measuring + 4 ha;
- TTPAS Ciawi Ciawi Japura Japura Village Subdistrict Lebak Susukan area + 2 ha;
- TTPAS Ciledug in Desa Wetan Ciledug District of Ciledug measuring + 4 ha.

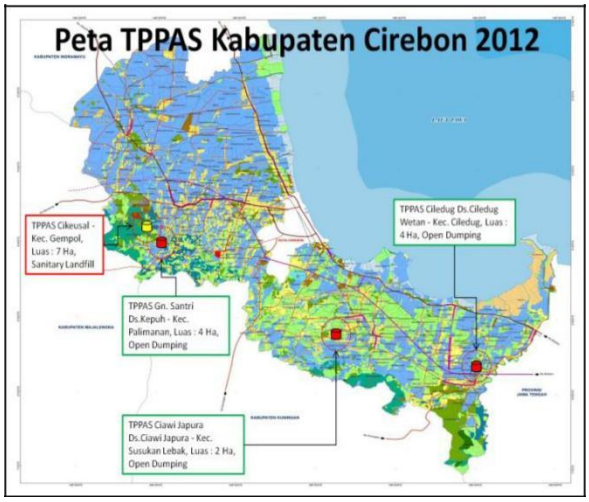

Figure 2. Map of Cirebon TPPAS 2012 (Source: Spatial Cirebon 2011-2013)

e. TPPAS construction with sanitary waste management system *landfill*in the village of the District Gempol Cikeusal measuring + 7 ha; and

f. Preparation and management of the construction of the final waste processing (TPPAS) Regional district.

The level of solid waste services in Cirebon in general is still very low. Scope waste services until the end of 2007 by 23 percent and about 50 percent of waste in the landfill is still done open dumping. In addition, conditions means of transport of waste is still not adequate.

Data show that in 2003 of any waste generated by the 1000 population can only be accommodated by TPS 47.76 cubic meters. While in 2007 the ability of TPS 88.17 cubic meters. Meanwhile, the government plans to improve solid waste services in 2014 set a target of SMT capability ratio will be increased to 157.97 (up 79 percent). With the hope of rising customer satisfaction scale in 2007 amounted to 2.75 in 2014 to 3.5 (up 27 percent).

Some of the action plan that will be used in waste management in Cirebon are:

a. Preparation of management policy waste management
b. The provision of infrastructure and facilities for waste management
c. Preparation of solid waste management cooperation policy
d. Improved operation and maintenance of infrastructure and waste facility
e. Waste processing technologies development
f. Technical guidance waste

g. Improving the ability of the waste management officer
h. Waste management cooperation
i. Waste management cooperation between regions
j. Socialization of waste management policy
k. Increased community participation in waste management
l. Monitoring, evaluation and reporting

The concept of waste management planned by the local government, if successfully implemented would have a positive impact on the environment. But in the RTRW and RJMD (medium-term plan) the focus of management based solely on infrastructure development and methods

the management of the sanitary landfill. This shows that there is still potential problems posed. To the use of sanitary landfill, the waste problem could be solved in the short term, but in the future this method could potentially pollute the environment. If not properly managed and sustained the environmental damage caused only a matter of time.

Some of the conditions and problems faced in the current waste management, among them:

a. The greater volume of waste generation increasingly narrow land
   - Total population continues to grow (natural / urbanization)
   - Increased economic capacity, production, and consumerism
   - The role of society and the business world is very low in an effort to minimize the garbage

b. Limited service capacity
   - The old paradigm of waste management rely on get-haul process waste.
   - Priority funding is very low and not comparable with the needs of service
   - Inadequate institutional capacity (Status, authority, planning, supervision of human resources, etc.)

c. Public and private capacity as a partner yet to be built and developed
   - Concern for socialization, training, education, the public is very low
   - Climate and partnerships bureaucracy yet conducive and attractive for the private sector to invest

Based on the above conditions, you can bet there are still many obstacles in the waste management system in Cirebon because generally patterned on the system together

- waste of conveyance. Because not get the right solution then built new landfills with sanitary landfill system. This indicates that the waste management do not currently provide an adequate solution, and tend to cause

problems in society due to the presence of land fill

in their environment. The change in land use will eventually result in changes in local ecosystems.

2. management Collaboration Management trash

Picture of the waste management in general and local government plans in waste management can not provide a solution for the waste problem. There are some others who have power

and the potential to cooperate in the collaborative waste management, among them:

a. The role of the waste (the public): Able to work with in an orderly dispose of waste in place. Start learning to sort the waste according to its characteristics, so as to facilitate the transport. Changing a habit of throwing garbage into rivers and burn the waste alone (open burning).

b. The role of waste processing (waste processing industry):

   Waste processing should be able to continue to make improvement in every way, from the system of collecting, processing technology, product type, up to product distribution. Waste processing in addition to having an environmentally friendly technology should also have adequate funds. In recycling, organic waste into compost, some will be RDF (refuse drived fuel) which is then sent to the industry as a fuel

   alternatif.Pengolah garbage must also

   prepare environmental management programs, among which is able to cooperate with the scavengers and craftsmen in order to further increase profit and avoid the emergence of waste in the period long before processed. This is to avoid possible negative effects

   arising from the excessive development of microorganisms that could have a negative impact on the surrounding environment waste processing.

   The application of the concept of zero waste should always be considered.

c. The role of garbage beneficiaries (industry): Today many emerging private sector is active in waste management. It could be a new force if included in cooperation with local governments. There are also some industries that require energy in large enough scale that can also apply the process of co-processing

   in its operational activities, among which are:

   - Cement plant (cement manufacturing)
   - Industrik heat generation (thermal power industry)
   - The steel industry (steel industry)
   - Produksibatukapur (lime *production*)

If the above three elements are combined in a framework of cooperation, it will be one of the solutions in waste management as shown in the following illustration:

Picture 3. Relationship Government with Industry Utilization and Business waste.

Co-processing is the use of waste as a raw material, or as an energy source, or both, to replace mineral resources (recycled material) and fossil fuels such as coal, petroleum and gas (energy recovery) in industrial processes. Waste materials used for co-processing is referred to as a fuel and raw material alternatives.

This time around the world, wastes suitable for co-processing energy potential is equivalent to nearly 20 percent of the fossil fuel energy used in industry and coal-fired power plants. About 60 percent of the trash can be used for co-processing because it is considered carbon neutral. In this way the co-processing offers significant potential to reduce greenhouse gas emissions from fossil fuels. Furthermore, divert the flow of industrial waste from landfills and incineration without energy recovery contributes to reducing overall CO2 emissions when used to replace fossil fuels through co-processing. The following examples illustrate the benefits of co-processing to reduce emissions in the cement industry:

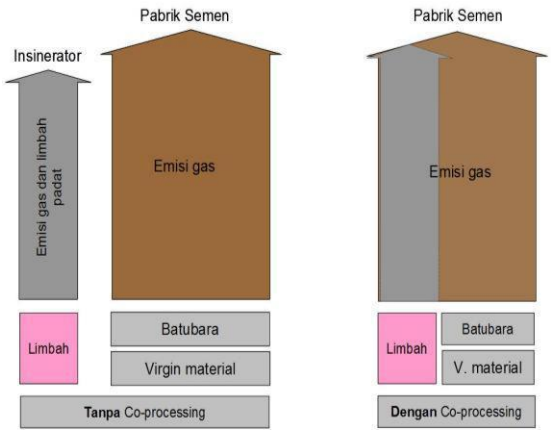

Figure 4. Reducing emissions from co-processing applications

The process of co-processing capable of contributing to the competitiveness of industry hrough the application of high technology. In addition to producing the concept of cleaner production in industry, can also be considered as an alternative solution in the concept of sustainable and integrated waste management. It is more effective to build a new sewage treatment capacity thereby reducing the cost of waste management to the public. But in the process of co-processing takes Other factors to consider include product quality standards, aspects of licensing, and communications transparent in order to gain public acceptance. Therefore, it needs processing before garbage in the process of co-processing. Processing can be done by the private sector which is specially engaged in the waste processing industry.

The potential for waste in Cirebon large enough, while it was in this district there are many industrial plants are able to utilize the waste is the cement industry, power plants and factories lime people. There is also industrial waste processing. The third element of the collaboration process has been met and that the local government / DKP as the manager of the garbage (waste generator), industrial waste processing (waste platforms) and industrial users of garbage (co-processing). Here is the potential for waste which is owned Cirebon:

Table 2. Potential Data Trash Cirebon

DATA POTENTIAL FOR GARBAGE DISTRICT CIREBON

YEAR	TOTAL POPULATION (SOUL)	ASSUMPTION TOTAL generation TRASH (LT / ORG / HR)	ASSUMPTION TOTAL generation TRASH (M3 / HR)	TOTAL PRODUCTION ACTUAL TRASH (M3 / HR)	TOTAL TRASH transported (M3 / HR)	DIFFERENCE (M3 / HR)	PERCENTAGE GROWTH generation TRASH	POTENCY biomass (M3 / HR)	ASSUMPTION VOLUME 2M3 = 1ton (TON / HR)	VALUE ASSUMPTIONS SELL (RUPIAHS / HR)
DISTRICT CIREBON										
1980	1,331,690	3	3.995	3,196	2,940	1.055	-	1,470	735	73,509,288
1990	1,649,483	3	4.948	3,959	3.642	1,306	23.86%	1,821	911	91,051,462
2000	1,931,066	3	5.793	4.635	4.264	1,529	17:07%	2,132	1,066	106,594,843
2010	**2,067,196**	**3**	**6.202**	**4.961**	**4.564**	**1,637**	**7:05%**	**2.282**	**1,141**	**114,109,219**

Source of population data: BPS West Java Province

Formula :
Assumption of waste = (Total population x 3) / 1000
Actual litter = Assumptions - (Assumption x 20%)
Waste transported = Actual - (Actual x 8%)
Difference = Assumptions - Waste transported
Source formulation: Component Waste Cirebon 2004

Potential Biomass = Waste transported x 50%

Formulation Source: Analysis of potential

not transported

(Recycle themselves by the public,

for example burnt / stockpiled etc.)

percentage of garbage transported

It is estimated that:

50% is used for compost

The rupiah yet

reduced levels water (MC)

TPAS
LOCATION:
Cirebon : Kepu

Data along with illustrations of the economic value that will be obtained, clearly illustrated that there will be a new economic source for governments, industry and the general public so that collaborative schemes can be used as an attempt to control environmental governance in the field of solid waste. The following management model

collaboration that can do :

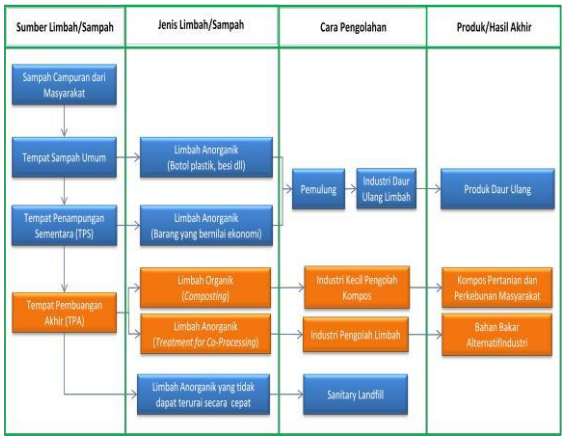

Figure 5. Collaborative Management Model

The collaborative process can be performed on the stages of trash is in landfills. If the collaborative management scheme is run, the waste management towards zero waste concept can be realized because the left was

Evaluation of the impact of the implementation of the collaborative process of waste management can be seen from several aspects, among which are:

a. Economic aspects, may be a new product that has economic value,
b. Social aspects, can create new jobs,
c. Health aspects, can reduce the potential decline in public health,
d. Technical aspects, can be an alternative energy utilization,
e. Environmental aspects, can help reduce the occurrence of environmental degradation due to poor sanitation and pollution load into the landfill and the surrounding environment,

f. Aspect organization and institution could help the government curb the problem of waste.

Thus it is clear that the process of collaboration can be one of the models in addressing the problem of waste in Cirebon. The success of this collaborative process will be greatly influenced by the conditions in the field. Changes and adjustments depending on the dynamics of which occurred. The collaborative process is not only influenced by things that happen during the planning process, but also the characteristics and habits of people as well as other parties involved. The government's role as the holders of power will determine the success of this collaborative process.

3. Results Management Collaboration Management

trash Indocement

Collaboration management waste management conducted by PT Indocement cooperate with the village-owned enterprises (BUMDes), can be used as one of the models in the implementation of collaborative management of waste management for the district of Cirebon.

At this time, the village of the waste management pilot project in the village built PT Indocement is palimanan West Village, which has the largest population among the other partner villages. Trash that is used not only from domestic waste that has been processed (RDF / municipal waste), but also from waste agricultural / plantation among rice husks (rice husk), waste paper (used paper), sawdust (saw dust), and rice straw (rice straw). Waste processing is done by establishing a village-owned enterprises (BUMDes) in 2008 with the establishment of financing, technology, operation and training of PT Indocement Tbk. In its daily management is done by BUMDES with the integrated development of PT ITP Tbk. BUMDES formation is one of the efforts that waste management can be sustainable, and have the results that can increase incomes around.

Figure 6. Waste Management

Provisioning infrastructure investment and sewage treatment given by Indocement, through funding and training are bridged by the company. Socialization of the implementation of this business to a circuit in the company's CSR activities, so that people who become waste producer can participate to help with disposing of waste in the space provided.

Garbage collected by BUMDES, then taken to a treatment site to be sorted according to the type and character of waste entering crushed and fermented organic waste to be composted and sold. Inorganic waste is mechanically crushed into a certain size and shipped / sold to Indocement to be used as an alternative fuel. types of waste

others still have economic value, before processing managed by the community, especially mothers rt through the recycling process to form a creative items that have a sale value while garbage containing B3 handed over to third parties licensed to processed according to applicable legislation.

Although initially funded by PT ITP Tbk., Sewage treatment process would gradually capable of being operated by the communities themselves. Empowerment through waste management into economic value of goods into one proof bahwa.kuncinya

is the active participation and commitment of the parties tinggi.Semua For the record, the garbage that used in PT Indocement previously been through the appropriate testing laboratory analysis of applicable legislation. Thus the problem of waste generated by the activities of people and industry can be resolved, because the waste can be utilized optimally without disturbing the environment.

Below is a graph of the development of waste management, which is managed by BUMDES.

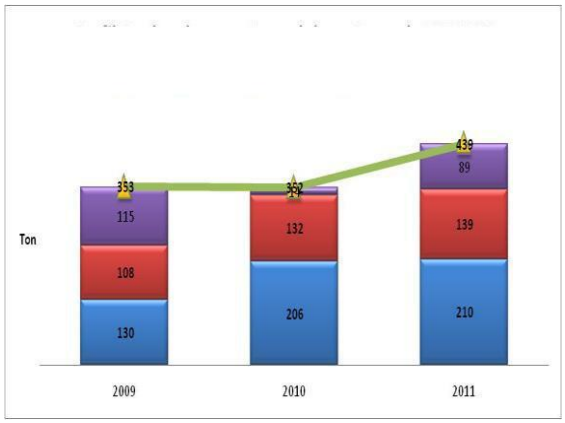

Figure 7. Graph Management trash BUMDES

CONCLUSION

Collaboration management is a process that requires the active involvement of stakeholders and this process can be applied in environmental management. In developed countries, the application of this approach has shown success. In developing countries there are still chances of success, although requires effort harder, because the characteristics of the society that democracy is still evolving. Seeing the success of the process of collaboration on environmental management, then this approach is not impossible in waste management. The involvement and commitment of the stakeholders from the public, universities, NGOs, businesses, and government is essential. This engagement can be accommodated in a form of collaborative processes for decision making to be carried out together.

The strength of the collaboration process is determined by the commitment, active participation and cooperation of all parties involved in it. A strong commitment and transparency in the implementation determine the success or failure of this process. Implementation of a professional is needed from the planning, implementation and evaluation be key to the success of this process. There are three elements that must be involved in this process is local government as waste management, the industry as waste processing and industrial parties as beneficiaries of garbage. If one of these three elements is not there then the success of the collaboration process waste management scheme will not be able to walk in a sustainable manner.

Benefit implementation collaboration

waste management with the implementation process of co-

processing heading towards zero waste concept in

Among these are:

a. Can save landfill space and reduce pollution caused by the disposal of waste generated continuously,
b. Capable of destroying and making use of waste into alternative energy sources, and reducing negative impacts on the conservation of the environment in the future,
c. Being able to provide economic benefits and help improve health community.

Through collaboration in the process of co-processing is expected to sustainable development can be implemented, because it can reduce the demands exploitation of natural resources, reduce pollution and landfill space, thus contributing to reduce an environmental trail

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