

The Role and Function Analysis of Community Related to Domestic Waste Water Treatment System in Makassar City

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Abstract

The city of Makassar also developed a centralized domestic waste treatment system managed by the Regional Government like other cities. Geographical factors and uneven distribution of population caused the Makassar City government to build a centralized domestic wastewater treatment system using an onsite system. This system is integrated with residential areas. The strategic residential area according to the Medium Term Development Investment Plan of Makassar City concern in its development. New settlement areas built with more planned in the construction of one of them is residential area Sakinah Antang Housing District Manggala, Makassar City.

Based on the study result, it need to increase the role of government in waste management in terms of partnership structure for local communities with human resources by knowledge, training, and skills for the community with experts and finding sources of funding. The second is creating strong local organizations by developing future strategies with community participation, taking into consideration appropriate training models with customized community characteristics. And the third is improving understanding and ability of mastery in the field of waste management so that the public better understand what to do with environmental conditions in the region.

INTRODUCTION

The government has issued several legal bases for wastewater management, such as Republic of Indonesia Law no. 23 of 1992 concerning the health of article 22 hinting on the importance of environmental health through, among other things, the safeguarding of solid and liquid waste, further Law no. 7 of 2004 on water resources Article 21 paragraph 2 point d indicates the importance of the regulation of sanitary facilities (wastewater and sanitation) in the protection and conservation of water resources, article 40, paragraph 6 declares that the regulation of development of drinking water system is conducted in an integrated manner with the development of sanitation infrastructure and facilities, then Law No. 32 Year 2009 on Environmental Protection and Management Article 6, paragraph 1: "Every person has the obligation to preserve the function of the environment and prevent and overcome pollution and destruction of the environment". Article 14: In order to ensure the sustainability of environmental functions, any business or activity is prohibited from violating the quality standard and the standard criteria for environmental damage.

Based on the legal basis, there are several elements that must cooperate with each other in the management of this liquid waste, namely community participation, government participation through local government and non-governmental organizations. These three stakeholders are the minimal elements that must be directly involved in liquid waste handling. The community needs help from government and non-governmental organizations to handle this household liquid waste.

This study is located at Sakinah – Antang Housing, District of Manggala in Makassar City with the consideration among others: 1) Makassar city does not have an operational system and operational procedures for effective public waste management so it has not been able to make Makassar a clean and comfortable city, 2) Kota Makassar is the largest city in the Eastern Indonesia Region so that the trend of population, economic and business activities, education activities continue to increase as a center of economic growth.

The objective of this study is to analyze the role and function of the stakeholders related to domestic wastewater treatment system in Sakinah Antang District, Manggala Sub-district, Makassar City. Hopefully this paper can support to increase community participation in development planning especially in the field of sanitation.

METHODOLOGY

This study was conducted in residential area of Sakinah Antang Housing, Manggala Sub-district in Makassar City. The city of Makassar does not yet have an operational system and operational procedures for the effective management of public waste installations so that it has not been able to make Makassar as a clean and comfortable city. Operational management of municipal sewage installations is still based on community participation and participation. Makassar City is the largest city in Eastern Indonesia Region so that population, economic and business activity trends, education activities continue to increase as a center of economic growth. The ever-increasing changes in socio-economic dynamics will have an impact on the need for an adequate and effective public wastewater installation to support the quality of the city's environment. Therefore the availability of public wastewater installation becomes a serious problem for Makassar City.

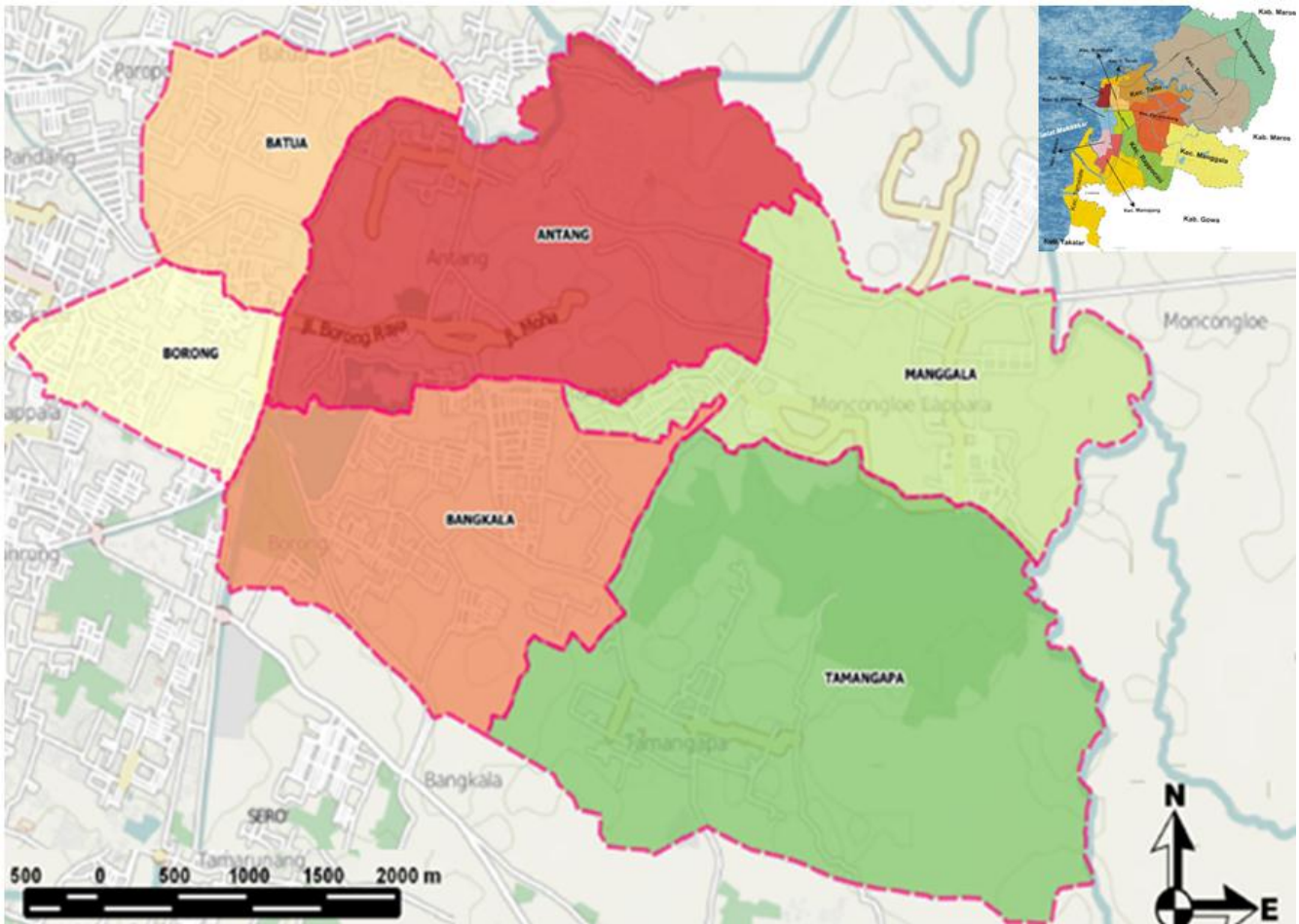


Figure 1. Location map of study area in Manggala district, Makasar city

Data Collection and Analysis

This study uses a quantitative and qualitative data such as participatory prospective analysis to find detailed result in the field. The data obtained from interview, focus group discussion, and social data. Sampling technique for society is determined by Proportionate Stratified Random Sampling method, which is sampling from random and proportional population members, where the member population is heterogeneous (unlike) and the chances are the same. By using the formula Krejcie and Morgan obtained a total sampling of 390 respondents. 90% confidence level and error of 10% of the total population.

The primary survey was conducted by determining survey points from the settlement map for the occurrence of equity. Each survey point consists of 60-80 respondents depending on the respondent's willingness and permission from local neighbourhood association. Each respondent takes about 15-30 minutes in filling out questionnaires and interviews. The data have been analysed by several methods of analysis, namely quantitative descriptive analysis, PIL (Power, Interest, Legitimate) stakeholder analysis, PPA (Participatory Prospective Analysis), AHP (Analysis Hierarchy Process), and SWOT analysis.

RESULTS AND DISCUSSION

Community Participation in Waste Management

The community in this case is the most important aspect, because apart from the fact this waste comes from the community itself, the community is the first group affected by the waste generated. Community participation is essential for the management and handling of this waste.

In the graph shows the shape of community participation in management can be in the form of energy, money, materials, or other forms or it could be in the form of proposals. In waste management, community participation in housing is mostly in the form of money 67,2% then by giving material 10,9% power 10,4% which donate money and other form 10.6% while proposal 0,8%. In this case the largest contribution is given in the form of money because most residents in housing have high income levels, although there are still some people who provide other assistance in the form of money such as material donations in the form of money, food, equipment, buildings. Only a few give suggestions, because these citizens want to immediately complete the waste management quickly and well.

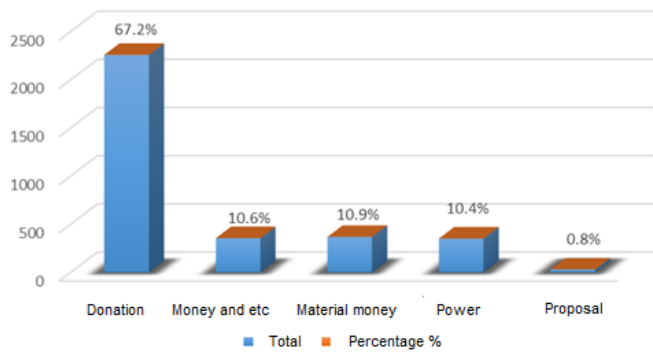


Figure 2. The graph of community participation in management

In the graph, it is seen that the form of activity most of the people in the waste management activity is in the form of maintenance by paying someone, because the environment in this housing is mostly workers, so most people have been occupied by their work. But the residents remain consistent with the outcome of the meetings held in regular meetings to attend the mass work of 15.8% undertaken jointly within the designated location. In this case will arise the desire of citizens themselves to carry out in the neighborhood where he lived at the same time 19.6% and the desire of citizens to do it by doing at any time.

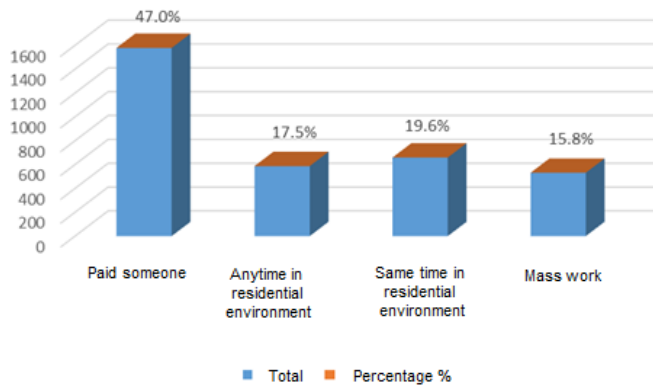


Figure 3. The graph of resident activities

Regarding the form of participation based on the frequency of joint activities that have been done then most people on average do it once a month. The joint activities were carried out routinely with the same time and place where the implementation in the village was only followed by some active citizens and not busy with the 22.8% job whereas the regular meeting at RW level at the time and place was not the same 29.1% while most residents chose activities in the neighborhood of 48.1% of the RT conducted routinely at the same time place is not the same so it can be said that the existing role activities carried out intensively conducted monthly routine.

For one's activity in meeting activities based on direct interviews with citizens, it can be concluded that citizens' involvement at RT level is immediate 76% of the residents are

willing to participate in certain activities, in the process of engaging in meetings, discussions, and contributing personnel. While indirect is the involvement for the citizen association level and the level of Kelurahan residents tend to be inactive 3% if citizens delegate their rights to other parties in decision-making and political system representatives.

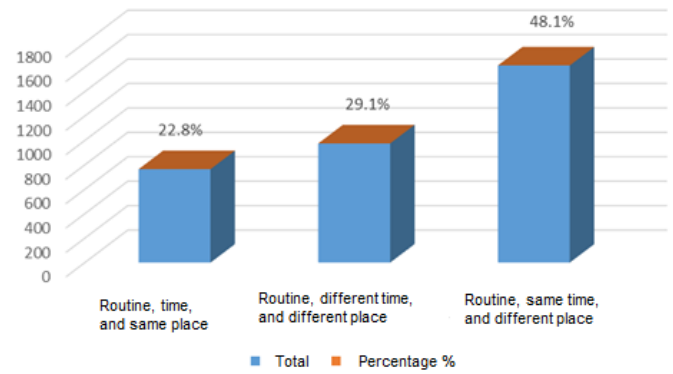


Figure 4. The graphic of daily people activity

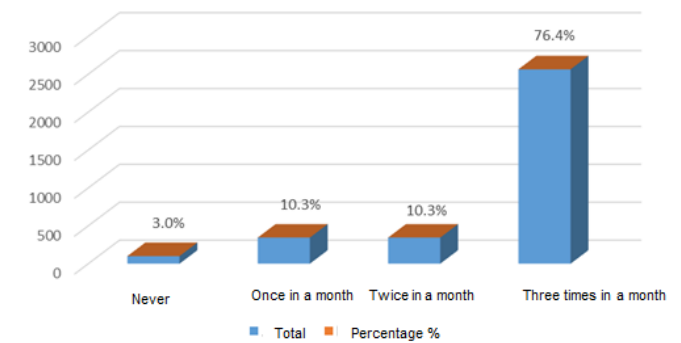


Figure 5. The graphic of community presence in the meeting

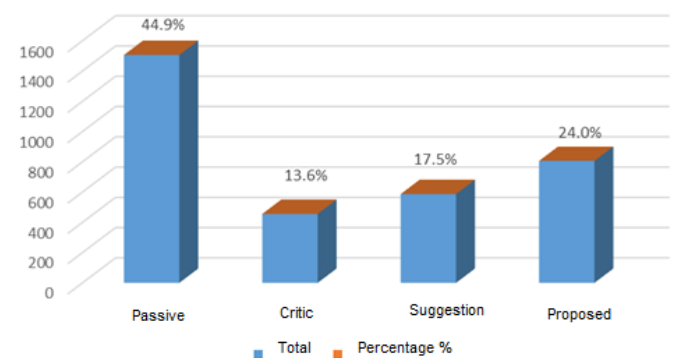


Figure 6. The graphic of discussion activity

Most of the residents are active in giving their opinions either in the form of suggestions, suggestions or criticism because the level of education is high and the level of awareness of the importance of waste management in achieving better environmental quality.

Concerning the degree of volunteerism, the form of participation can be categorized in free participation as most people do not feel that there is a compulsion of 77.2% in their participation from meetings to physical activities. While the citizens who feel somewhat forced 22.8% because the involvement is not on their own consciousness, but invited by other citizens.

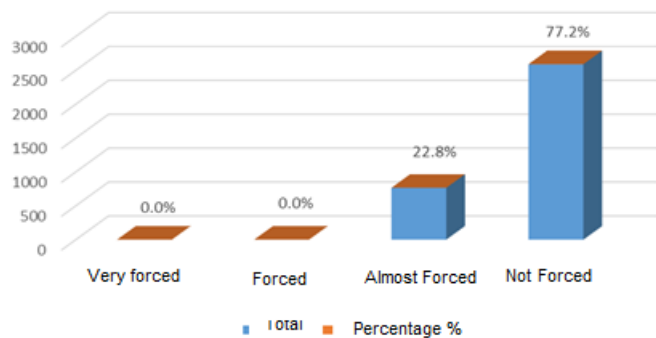


Figure 7. The graph of community volunteerism

COMMUNITY PARTICIPATION LEVEL

Bambang Purwanto (2004) mentions that the volume of liquid waste generated by everyone from bathing, washing and others reaching 100 liters per day. The volume of domestic waste varies greatly and generally very closely related to the standard of living of society (Djajaningrat and Harsono, 1990).

Based on these facts in the Arnstein category the level of participation that occur is low ie Informing category, this stage is influenced by:

1. Synergistic relationship between members so that each has responsibilities in accordance with the roles and positions in organizational stewardship.
2. Capacity of government organizations and institutions that support the implementation of government so that appropriate steps should be taken in doing the empowerment to the community
3. Consideration of socio-cultural background that is from low income society group, society need to be given strength and ability in a series of actions / steps undertaken by the government on the mastery of knowledge, attitude of conscious behavior and skill expertise.
4. The absence of ability and responsibility in decision making because most people have lower-middle education.
5. The community is not given the opportunity / right to express opinions / ideas because it is considered not have the ability and the initiative is the party who needs assistance so that the activities carried out without any feedback to the community.

Involvement of Government Institutions

To prevent overlapping, whether in planning, implementation of environmental management, Law No. 23 of 1997 has set a strategy in environmental management, namely government obligations coordinate. Article 9 paragraphs 2 and 3 shall be affirmed that: 1) Environmental management is implemented in an integrated manner by the agency government in accordance with their respective duties and responsibilities, communities and other development actors with due regard to cohesiveness planning and implementation of national environmental management policies life, 2) Environmental management must be done in an integrated manner with the arrangement space, protection of non-biological natural resources, resource protection artificial, conservation of biological natural resources and its ecosystem, cultural heritage, biodiversity and climate change.

The government will work better if members of the structure are given the opportunity to engage in any activity, it involves the involvement of government officials through the creation of values and commitment to be strongly motivated in the implemented program. From the survey results visible involvement of the government is still very less in providing services 56.3% due to limited funds and power.

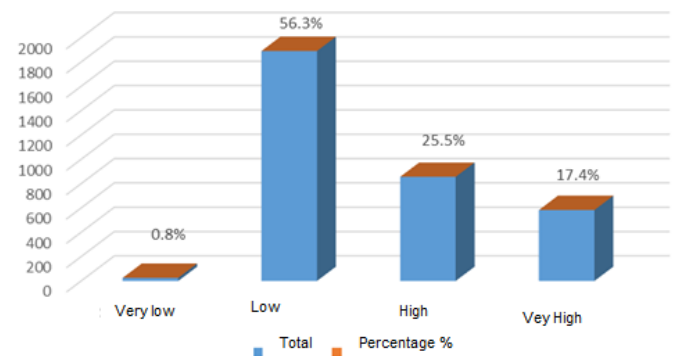


Figure 8. The graphic of government involved

Management problems implemented by the local government contain urgency that provides "better value for money" which means the extent to which local governments are able to carry out development services economically, effectively and efficiently. Economic understanding is more directed to the ability of local governments to choose the most optimal medium in the provision of services, effectively lead to the achievement of objectives as expected, while more efficient lead to the extent to produce maximum output and minimal input. Role of Government in giving direction and invite others to participate, for example by giving appeal to society to suppress pollution that happened by not throwing garbage or waste in river in reaching goal minimize waste according survey result 70% of society think that there are already activities that invite people to participate and only in some non-directing activities.

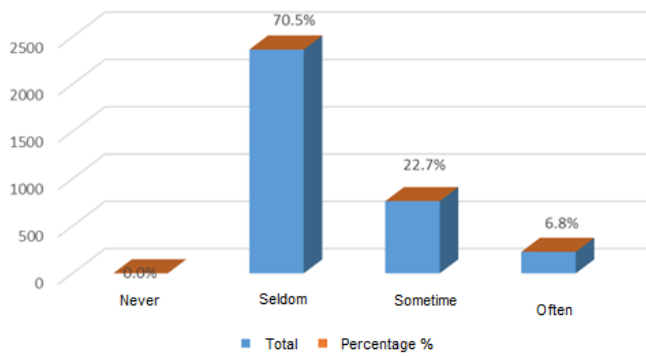


Figure 9. The graph of government roles in referrals

It appears that the community feels that the existence of a forum to accommodate their aspirations is urgently needed, especially in order to channel their opinions. The role of the government is less support in the organization / forum to provide funding assistance is evident from the majority of respondents gave his opinion 63.6%.

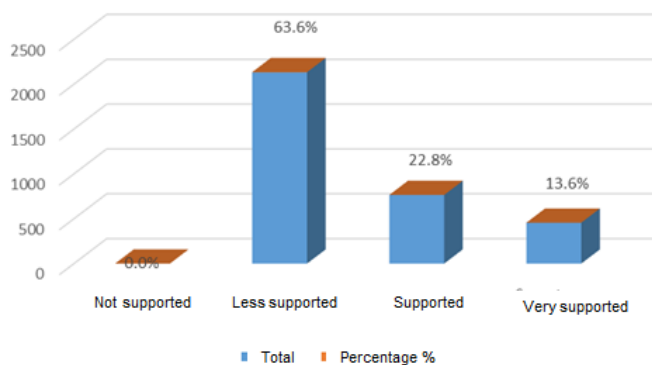


Figure 10. The graphic of government supporting

That there have been efforts made by the government in the waste management process by providing coaching through community meetings but not yet covering the whole because the funding for maintenance has not been considered by the government.

The development program undertaken in the study area based on the aspirations and proposals of citizens facilitated by the Bintari NGO and the city government of Makassar is forwarded to the Government of Japan-JICA conducts a pilot program in waste management. Government assistance in providing counseling / coaching majority of respondents argued often 35% through activities in the village attended by competent authorities as well as activities PKK and LKMD. For material assistance provided by the government in the form of development of TPS tubs and the provision of garbage carts and asphaltting projects. This shows that there is already a role of government in facilitating development activities.

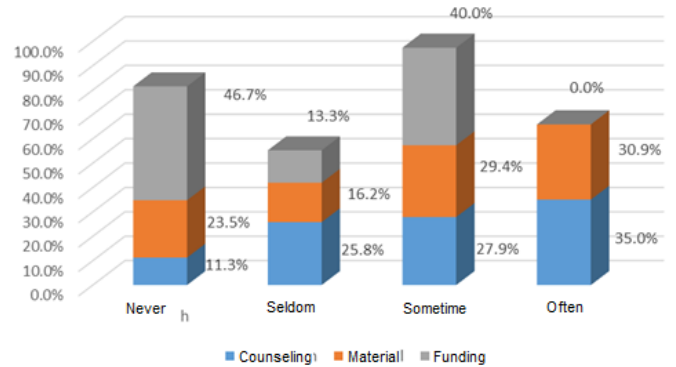


Figure 11. The graphic of government activity

Involvement of Non-Governmental Organizations

Kustiah (2005) studied about community-based waste water management pattern concluded that 1). Implementation of Community-Based Wastewater Management Initiative early: Local and Foreign Government, Private Institution (Foundation, NGO), community (individual / motivator), 2) Waste Water Management Institution. Managing Agency can be implemented by community (self-reliant), community under the foundation, management level: citizen association and villages with care based on community agreement implemented in citizen community, 3) Financing pattern of waste water management. Investment costs for sanitation facilities still rely on donor assistance (government and private), contributions society is still low.

The formulation of ideas in the form of planning that can reflect the real needs of society will not be realized without the intervention of facilitators in this case is the NGO. The community in the research location consisting of lower middle class society generally does not have the ability to formulate ideas in the form of proposals. The role of facilitator as a community facilitator becomes so important in identifying the potential, constraints, problems and excellence of the community. It is also able to arouse the spirit and provide the flow in the opportunity of the community to participate.

From the survey, the majority of respondents who think the role of NGOs in waste management is not active 53.3% according to the results of the field observation does not appear the activities in RW is closely related to the lack of role of RW chairman in inviting its citizens to participate in environmental management. While respondents who think the role of NGOs is very active in the area of citizen association XI where its citizens can be coordinated for waste management / composting activities with Takakura method that is driven by the Japanese Bintari and Japan International Cooperation Agency (JICA) government. This is supported by the geographical condition of corrugated and there is no TPS, therefore citizen association XI became the initial program of composting which is expected to be disseminated in areas that have not received composting service. From the above study it can be concluded that the role of NGOs is seen with the socialization of composting, but it must be improved in the wider scope of the region.

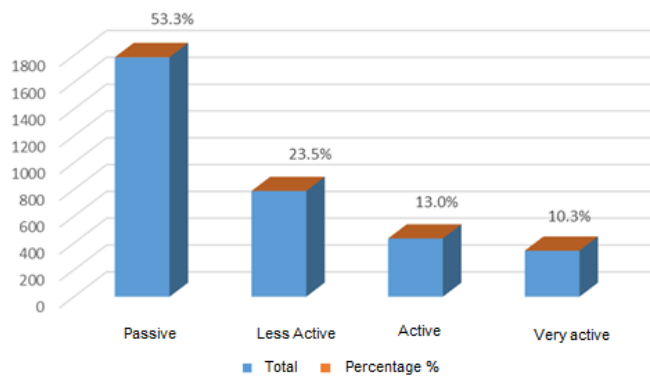


Figure 12. The graphic of non governmental organization

Influence Factor

Statistical tests are needed to determine the relationship between shape and level of community participation with the factors that influence it. This statistic test uses cross-tabulation or crosstab of some variables and by considering the value of chi-square where to know whether there is a relationship between respondent characteristics (education, occupation, income, home ownership, length of stay) with the shape and level of community participation. Regarding SPSS calculation results can be seen in the table.

Table 1. The probability result of occupation

| Respondent Characteristic | Form of Participation | Level of Participation |
|---------------------------|-----------------------|------------------------|
| Level of education | 0,475 | 0,536 |
| Occupation | 0,063 | 0,045 |
| Income | 0,205 | 0,377 |
| Home ownership | 0,146 | 0,241 |
| Length of stay | 0,003 | 0,207 |

Based on the analysis Table 1 above shows that there are two variables that can be measured, namely the Respondents Working variables associated with the variable level of participation with a value of 0.045; and Variable Length of Stay Respondents related to Form of Participant with value 0,003. Both variables have a significant effect on waste management.

The following summarizes the internal factors that influence waste management, the internal factors that influence the role are the lack of spare time for meetings due to working time > 5 days in a week and some of them work late in the evening. The average educational level of secondary school also affects the ability to communicate and convey information (from respondents' answers, the percentage active in submitting suggestions / suggestions is only 26.7%). The relatively low level of income is an obstacle to increasing higher participation. Mechanisms of physical activity carried out in

collaboration by citizens and the desire to improve the quality of the environment is a factor that can increase participation.

As for the external factors that affect the participation of the community is the existence of technical assistance from the government in the form of environmental improvement program settlement. The assistance of the program is a stimulant or a pioneer, but it can spur the growth of community participation in development. The assistance is a driver of the growing willingness of the community to participate in the form of energy and funds. Strengthening community assistance, by program managers and community leaders or institutions established in the framework of the implementation of such programs, such as KSM, Bintari NGOs and related institutions are instrumental in motivating communities to engage in participatory activities.

The Stakeholders Participation in Waste Management

According to Grimble and Wellard (1997), the category of stakeholders is divided into eight (8) among others: 1) PIL category (dominant); power is very strong, interest is affected, and high legitimacy, 2) Category PI (powerful); power is very strong, interest is affected, no claim acknowledged or weak legitimacy 3) OT Category (influential); power is very strong, claims are recognized or legitimacy strong, and interest is not affected, 4) Category IL (vulnerable); interest is affected, claims are recognized or legitimacy is good, but without power, 6) Category P (dormman); power is very strong, interest is not affected, and claims not recognized category L (perfunctory); claims are recognized, but not affected and not strong, 7) Category I (marginal); affected, but the claim is not recognized and is not strong, 8) Other ratings; stakeholders who do not have all three

At this time the expected condition is the active participation of all stakeholders involved. The Government of Makassar City functions as a facilitator, receives all inputs from the community or other institutions that are constructive to further be actualized in environmental management planning documents, especially waste. The government can also involve the community in general waste management processes by implementing the stages of a structured planning process, meaning that there has been a drafting of socialization mechanisms, information dissemination through mass media, as well as meetings through citizens' debates, by bringing in more innovative models of socialization.

One of the obstacles to waste management is funding and post management management. Due to funding constraints, the government needs to raise the role of the community in the excavation and mobilization of funds through community self-help for the development undertaken. In addition to funds, adequate management is needed in areas that have been pursued to improve the environment, so it is hoped that it will not become slum again due to weak management management.

The purpose of community involvement in the environmental management activities mentioned above can be concluded that there is a delegation of authority by the government to the community to manage the infrastructure that has been built.

To give this authority to the community, the government can also introduce post-implementation citizens' introduction which introduces ways of managing post-development infrastructure and the formation of SHGs in developing the results achieved in the environmental improvement program. In addition to the government's grant of authority, the role of participation and the level of participation that occur is driven more by the ability and the willingness of the community itself. Because of this limitation, the infrastructures that can be managed by the community are currently only at the level of environmental infrastructure that can be directly benefited.

CONCLUSIONS

The conclusions of this study is 1) Creating a partnership structure for local communities with human resources that are equipped with knowledge and training and skills for the community with experts and support the community in finding sources of funding, 2) Creating strong local organizations by developing future strategies with community participation, taking into consideration appropriate training models with customized community characteristics, 3) Develop infrastructure with support provided by the government in the form of funding sources, 4) Improving understanding and ability of mastery in the field of waste management so that the public better understand what to do with environmental conditions in the region.

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