Effectiveness of community empowerment in waste management program to create sustainable tourism in Karawang, West Java

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Abstract. This research aims at evaluating the effectiveness of Karawang community empowerment program in order to create sustainable tourism. The innovation of the community development and empowerment program is direct training for those who can improve the knowledge, attitudes, and behavior of the community in realizing sustainable tourism in Karawang. This research is experimental research with the cross-sectional approach because of the data obtained through treatment in a short time to compare differences in knowledge before and after treatment (counseling and training). The research subjects of this study were productive age housewives consisting of 30 people. From the data analysis, it can be concluded that the results of the questionnaire showed that most participants had a very positive reaction to this community development and empowerment activity. The results of the analysis by the Wilcoxon test showed that negative ranks were 0, positive ranks were 25, and ties were 2. From the results of tests given to participants, it was known that in general, the participants experienced an increase in waste management value by 24%. This shows that community development and empowerment carried out in Segaran Village, Karawang, West Java showed a positive impact. There are significant differences in knowledge and skills between before training and after training. This results can be applied to the development and empowerment of communities in various other aspects, especially in increasing the potential of a region to support sustainable tourism.

1. Introduction
Karawang Regency has been known as a national rice barn, besides that Karawang also has the potential of unique archeological resources since prehistoric times, namely Candi Batujaya Site. Batujaya Temple has a great attraction so that every year there is an increase in the number of tourists [1]. A very high surge in the number of visitors occurred at the time of the celebration of Vesak, especially on restored Soul temples. Therefore the Batujaya temple tourist attraction has the potential to be developed into a Tourism Village.

But based on the results of preliminary observations, in Segaran Village, Batujaya Subdistrict, it is known that there is still minimal management and conservation of the environment. There is still much garbage scattered on the roadside [2]. Garbage is an environmental problem that needs serious attention because it not only damages the environment but also can cause epidemics. Based on Law No. 18 of 2008, waste is the remainder of everyday human activities and/or natural processes that are solid. Household waste is a large enough source of waste in increasing waste in an environment so that the presence of household waste is unavoidable [3].

Based on the results of the first stage of community service, it is known that a lot of household waste is mountainous and scattered along the roadside because it lacks optimal handling from various parties, both from people who do not have sufficient awareness and knowledge about waste management and local governments that have not organized community waste well [4]. This is possible because the village is quite far from the city and the central dumpsite. Therefore, the people of Segaran Village should be able to manage the waste themselves.

Suparmini et al (2013), said that environmental problems are the carrying capacity of the environment as a result of low public awareness of the importance of environmental management. This is due to several factors, including changes in the function and environment, decreasing carrying...
capacity and environmental quality, lack of integration of management of human, natural and artificial resources in environmental management among various parties, less optimal use of land and space, and pollution environment produced [5,6].

Protection and management of the environment is a systematic and integrated effort carried out to preserve environmental functions and prevent pollution and/or environmental damage which includes planning, utilization, control, maintenance, supervision and law enforcement [7]. The existence of the environment is very important for human life because if there is damage to the environment, human life will also be disrupted. Based on Article 65 (1) of Law No. 32/2009, every person has the right to obtain equal rights in obtaining a good and healthy environment as part of human rights[8]. Therefore, the role of the community is needed in terms of overcoming pollution and environmental preservation to create clean, healthy, beautiful and sustainable villages. Preservation and management of the environment is the duty and authority of the government and the community to create a good and healthy environment. According to Law No. 32 of 2009 concerning Protection and Management of the Environment, the environment is the unity of space with all objects, power, conditions, and living things, including humans and their behavior, which affect nature itself, the survival of life, and the welfare of humans and other creatures. This means that humans are one of the determining factors in efforts to preserve the environment through environmental protection from pollution and environmental management [9].

Efforts to preserve the environment through environmental protection from pollution are not only limited to throwing away and collecting garbage but can process the waste so that it can increase the economic value of household waste and can also benefit the environment. Waste management and utilization of the yard for local food will also have an impact on the creation of clean, healthy, beautiful and sustainable environmental conditions. It is also an important basis for building a Tourism Village. Poor environmental conditions can cause a decrease in a tourist attraction [10].

Environmental conservation is also the sixth Sustainable Development Goals, namely sustainable sanitation. Poor sanitation environment can be a source of various diseases that can disrupt human health. If health is disrupted, the welfare will also decrease. There are four principles for realizing sustainable development which include: fulfillment of human needs, maintenance of ecological integrity, social justice in the form of justice for future generations, and opportunity for self-determination. Waste management is a form of environmental maintenance that can function to improve welfare, fulfill basic needs, and create a healthy environment for future generations [11,12].

However, the lack of awareness and knowledge of the community about the ways and benefits to be gained when carrying out environmental preservation makes the community become indifferent to the problems that occur and the effects that will be caused. Therefore the people of the Batujaya Temple area need help to further develop the skills that are owned by the community in the form of counseling and training. This is intended to increase public knowledge about how to preserve the environment through processing household waste.

Community empowerment is also in line with the Sustainable Development Goals launched by the United Nations. Furthermore, the empowerment of the Segaran Village community will be carried out in stages, especially in increasing scientific usefulness for the welfare of the Segaran Village community in Karawang. It is hoped that through community empowerment it can increase the knowledge and welfare of the community in the field of environmental education and sustainable development.

2. Methods
To solve the problem of poor environmental sanitation and the lack of efforts to manage and preserve the environment due to lack of awareness, knowledge, and skills of the community, the method of the chosen approach is counseling and training. This research is experimental research with the cross-sectional approach because of the data obtained through treatment in a short time to compare differences in knowledge before and after treatment (counseling and training). This approach is used to see the relationship between one variable with another variable. The training was held on July 4, 2019, at the Batujaya Karawang Site Museum.

The target audience in counseling and training on household waste management is housewives in Batujaya Temple, Karawang Regency. Women have an important role in managing household waste, related to one of their roles as a housewife. It is expected that the training of housewives can be transmitted to mothers in the surrounding environment so that it can assist in environmental preservation, meeting needs, and increasing income.
The sample carries out a series of activities from beginning to end which are closed with a post-test. The research instrument used pre-test and post-test. The independent variable in this study is the training on waste management and the dependent variable is the knowledge of the material training on waste management. Primary data in this study are data collected directly in the form of data from the pre-test and post-test about the knowledge of housewives regarding the overall material training in waste management. Data analysis techniques in this study were paired t-test. This test is used to determine the effectiveness of waste management conducted as an effort to increase knowledge about waste management and aquaculture materials in Segaran Village, Karawang, West Java. This method was chosen so that the community has awareness, knowledge, and skills in managing and preserving the environment.

The procedure for implementing the training and training is divided into several stages including:
1. Drafting education and training concepts
2. Preparing the media and materials
3. Implementing the counseling
4. Implementing the training
5. Evaluating

3. Results and Discussion

3.1. Results

The results of the analysis by the Wilcoxon test showed that in general, the participants experienced an increase in waste management value by 24%. Wilcoxon Signed Rank Test results of waste management aspects are listed in Table 1.

| Ranks     | Test Statisticsb          |
|-----------|---------------------------|
|           | PostTest - PreTest        |
| N         | Mean | Sum of Ranks | Z          | Asymp. Sig. (2-tailed) |
| PostTest  | Negative Ranks | 3a | 5.50 | 16.50 | -4.367a |
| PreTest   | Positive Ranks   | 26b | 16.10 | 418.50 | .000 |
| Ties      | 1c    |             |             |             |
| Total     |       | 30          |             |             |

Based on the results of the Wilcoxon Signed Rank Test in Table 1 it is known that the value of the negative rank indicates a value of 3. It means that there are 3 housewives who experienced a decrease in the pre-test to post-test results on the waste management material. Positive ranks show a value of 26. This means that there are 26 housewives who have increased knowledge of waste management methods. The average increase is 16.10, while the number of positive rankings or sum of ranks is 418.50. While Ties is the similarity of the pre-test and post-test values, it is known that the value of ties is 1, this shows that there are 1 housewife who has not experienced an increase in knowledge of waste management materials. Overall, knowledge of housewives in waste management materials increased by 24%. Based on these results it can be seen that quite several housewives have increased knowledge of waste management materials, so this training was concluded as effective training.
In addition, the output of the training provided is in Table 2.

### Table 2. Result of Community Empowerment in Segaran Village Karawang

| No. | Activity       | Output                                                                 | Notes                                          |
|-----|----------------|------------------------------------------------------------------------|------------------------------------------------|
| 1.  | Field observation | Identification of environmental problems                              | Problems of unprocessed household waste         |
| 2.  | Counselling     | The training participants master the theory of grouping waste and how to treat waste | Providing basic material on waste, the impact of waste, and how to process waste |
| 3.  | Training        | Paper recycling activities, making handicrafts worth selling by utilizing inorganic waste (plastic waste), manufacture of simple hydroponic Wick systems | The training was carried out together with the demonstration method |

3.2. **Discussion**

Segaran Village is one of the villages in Karawang District, Batujaya District. This village has a great tourism village potential because there were prehistoric relics before the Middle Ages that have now been formalized to become one of the national cultural reserves, namely the Candi Batujaya. But unfortunately, the road to the Batujaya temple in Segaran Village is a lot of rubbish on the side of the road, along the river, scattered in the yard of the house. The yard of the house was not used by the community to be planted with green plants that could beautify the village and be beneficial for the needs of household food, but to damage the view of Segaran Village with a pile of rubbish.

The results of observations carried out, the problem of waste was not overcome because there was no transportation of waste from community homes to TPS and TPA. In addition, until now there has been no movement to prevent and handle waste in a sustainable manner due to lack of environmental knowledge and skills in managing waste in the Segaran Village Community. So far, the people of Segaran Village have handled the waste problem by storing garbage in the soil without sorting waste and burning waste so that it causes air pollution. This is consistent with previous research which states that the rubbish in Karawang is very piling up and therefore a special tool is needed to manage waste. In previous studies, Riyadi used a Hybrid Smokeless Waste Burners Machine to manage piles of garbage [13].

Other research also states that improvement of commercial roads from waste in disadvantaged areas can be done by improving roads, greening areas, improving the environment of urban business districts, and promoting effects cultural sights and tastes [14]. But there has been no citizen action that shows concern in greening the environment. Based on these findings, it can be seen that the people of Batujaya Village need counseling on how to classify waste as a form of environmental preservation in creating sustainable tourism. In addition, training is needed to improve skills in managing waste. The training carried out was by sorting waste, making recycled paper, and making flowers from plastic waste.

3.2.1 **Counseling**

Counseling was conducted on 30 productive age housewives. Housewives are people who directly produce household waste, for example from cooking leftovers, food scraps, plastic shopping, etc. Housewives are also mothers who must be able to empower themselves at home, utilizing their free time to be able to work. Through managing waste properly and creatively, housewives not only preserve the environment and beautify Segaran Village but also can increase family income by selling waste-recycled works.

This counseling was carried out as a form of addressing environmental issues in Segaran Village so that it could have an impact on public health and the reduced aesthetic value of Segaran Village which actually had tourism potential. Therefore, the Segaran villagers are given information about the beauty of Segaran Village, the potential of Segaran Village, the problems that occur in Segaran Village regarding the environment, the impact of environmental problems, ways to overcome environmental problems, types of waste, how to manage waste, how to reduce waste, and how to process waste.
Household waste can be classified into organic, inorganic, and hazardous and toxic waste. Organic waste is garbage that consists of materials that can decompose naturally / biologically, such as food scraps and leaf avalanches. Inorganic waste is garbage consisting of materials that are difficult to decompose biologically so that the destruction requires further handling. Inorganic waste can be divided into recycled waste such as paper, cardboard, plastic; reuse such as glass bottles, cans, and jar. Waste from hazardous and toxic materials is waste from hazardous materials such as bulbs, syringes, batteries, etc. and toxic waste such as used diapers, used sanitary napkins, wound plasters, etc. The garbage must be separated by type because the handling and management are different. Good waste management aims to maintain public health, improve environmental quality, and can be a resource for the community. However, not only managing, but the community must also be able to reduce the amount of waste, because the more garbage, the greater the costs needed to manage it. Because now the waste management that should be done is by Reuse, Reduce, and Recycle. Reduce and reuse is an effort to reduce landfill waste, for example by carrying shopping bags while shopping to reduce the use of shopping plastic. Recycle is reusing materials after processing, for example by making fancy craft from plastic waste.

Based on the results of the pre-test it is known that community knowledge related to waste classification, how to reduce waste, how to manage waste is still low. After counseling, participants were given a post-test. This post-test aims to find out whether participants receive and understand counseling material well. Based on the results of the post-test, there was an increase in participants' knowledge.

3.2.2 Training

At the time of counseling, it was explained that in good waste management one of them is by recycling, which is to reuse materials after going through the processing process. Therefore this training will be given training on how to recycle garbage. In addition, it was also explained to be able to preserve the environment. The purpose of this training is to improve community skills in processing waste so that the community can reduce the amount of waste, improve village health so that mothers can empower themselves at home by utilizing waste into goods that have selling value. The training carried out was training on recycling paper and recycling plastic.

a. Recycling Paper

Waste paper, unused cardboard or cardboard can be used again into opaque paper, gift wrapping paper, and various crafts. The way to make recycled paper is to cut the paper into small pieces first, then soak it in water, and then blend it. Blended paper mixed with glue. Then printed using a screen printing tool and glass placemat. After that pressed to reduce the water content in the dough that has been printed. Then the paper is dried in the sun to dry.

b. Recycling Plastic

Recyclable inorganic waste is plastic, metal, glass, and cans. In this community service, the training was carried out by recycling plastic bags into plastic flowers. Plastic waste can now have a sale value into plastic flowers. Mothers can have extra money by recycling inorganic waste. In addition, by recycling inorganic waste there will be a reduction in inorganic waste which is difficult to decompose.

Based on previous relevant research, there are several factors that cause a place to become a tourist destination, including the number of tourists, attractions, access to location, availability of facilities, tourist characteristics, characteristics of local communities, policy profile, and community participation [15]. The participation of the Segaran Village community has an important role in creating sustainable tourism in Segaran Village. Extension of grouping waste into a starting point for the recycling of waste that has accumulated in Segaran Village. Furthermore, the community can reduce the pile of rubbish by recycling organic materials into crafts worth selling. These activities can attract tourists to visit the Batujaya museum site and improve family welfare in the Batujaya neighborhood of Karawang.

Counseling and training in Segaran Village, Batujaya District should be sustainable so that it can consistently improve the environmental conditions around the village. Environmental conditions can be improved in several ways including community education, community movements, the role of the local government, as well as the collaboration of various related parties to jointly succeed Desa Segaran as a sustainable tourist destination in West Java. The limitation of this study is the very short timeframe for counselling and training so that only a few indicators of counselling and training can be concluded. We
need more people to build this village together. We also need a number of housewives to be leaders in
this community so we can ensure that all programs that are designed run smoothly.

4. Conclusions
Counseling and training carried out in the Segaran Village, Karawang, had a very significant impact on
the people of Segaran Village. With the skills they already have, now the Segaran Village community
can manage household waste into high-value-value products. Of course, this will be an added value for
Desa Segaran as one of the Sustainable Tourism Villages in the Karawang area, West Java. The
counseling and training activities carried out proved to be effective in increasing the knowledge,
attitudes, and behavior of housewives as indicated by the significant Wilcoxon statistical test results of
0.000 (p <0.05) on waste management. There is a significant difference in knowledge between before
and after the training. Therefore, this training activity is very important to continue to be held with
periodic effectiveness testing such as waste management materials. This counseling and training has a
big impact to the development of cognitive, soft skills, abilities, and attitudes as well as artifice of the
future generation in Karawang. The participant, unconsciously, have contributed in preserving the
environment in many ways. A future research that should be conduct is an evaluation of counseling and
training in order to make sustainable tourism city in Karawang, West Java.

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