Implementation Strategy “3R CIRCULAR ECONOMY” To Achieve SDG Target 11.6 “Municipal Waste Management” In Cipaganti Village, Bandung City (Study at the Cihampelas Mandiri Unit Garbage Bank)

Miftah Meinaldi Nurrochman\textsuperscript{1}, Ratna Lindawati Lubis\textsuperscript{2}

\textsuperscript{1,2} School of Economics and Business, Telkom University, Indonesia

\textbf{ABSTRACT:} Good municipal waste management is very important for a sustainable urban order. Good municipal waste management can reduce negative impacts on the environment, public health and natural resources. The application of a Garbage Bank is one of the solutions for good municipal waste management. This is due to the concept of a Garbage Bank which is aligned with sustainable city management. One of the principles that is effective in helping the performance of waste management at the Garbage Bank is a circular economy based on 3R (reduce, reuse, and recycle). The application of this concept needs to be supported by campaigns involving various activities such as outreach, education, training and promotion which aim to increase public awareness about the importance of sustainable waste management. This study aims to examine the Garbage Bank campaign strategy as an effort to support the achievement of Target 11.6 of the Sustainable Development Goals (SDG), namely “Urban Waste Management”, by implementing a 3R-based circular economy approach in Cipaganti Village, Bandung City. This study uses a qualitative approach with a case study method of a Garbage Bank in Cipaganti Village, Bandung City. Data was collected through in-depth interviews, participatory observation, and analysis of related documents. The key informants in this study were community members, related stakeholders, and the management of the Waste Bank in Cipaganti Village. The results of this study are expected to provide a better understanding of the effectiveness of the Garbage Bank campaign strategy in realizing SDG Target 11.6 in Cipaganti Village, Bandung City, as well as provide guidance for the government and related organizations in planning and implementing sustainable waste management activities.

\textbf{KEYWORDS:} 3R Concept, Circular Economy, Garbage Bank, SDG Target 11.6, Waste Management.

\textbf{INTRODUCTION}

Indonesia is the largest archipelagic country in the world located in Southeast Asia. This country has an area of around 1.9 million square kilometers and consists of 34 provinces. According to the Central Statistics Agency (BPS) report, of the 34 provinces, one of the provinces with the largest population is West Java. West Java Province is located in the western part of Java Island, Indonesia and is one of the most populous provinces in Indonesia with a population of more than 48 million people. Bandung City has 152 Unit Waste Banks and Coblong District has 23 Waste Banks spread across several RWs. With the large number of Waste Banks in Coblong District, it is possible to open facilities related to waste handling so that it can reduce urban waste production. Coblong District has an area of 7.42 square kilometers consisting of 6 sub-districts, 76 RWs and 468 RTs. The six sub-districts are Cipaganti Village, Dago Village, Sadang Serang Village, Lebak Siliwangi Village, Sekeloa Village, and Lebak Gede Village. In Cipaganti Village, Bandung City, there is a Waste Bank which is in the spotlight because of the large amount of waste collected, namely the Cihampelas Mandiri Unit Waste Bank which is located in RW 05 Cipaganti Village, Coblong District, Bandung City, West Java. The Cihampelas Mandiri Unit Waste Bank has been established since 2017 and was formed based on deliberation and consensus between local residents. The Cihampelas Mandiri Waste Bank itself consists of 10 RTs which are usually called CMs consisting of CMs 1 to 8, namely RTs 1 to 8 in RW 05, CM 9 is from the sub-district, and CM 10 is from the campus which participates in waste sorting. However, starting in 2019 with the government program, namely Citarum Harum, the current shelter had to be destroyed because it was on the riverbank. Since then, the waste collected by the community at each CM has to be collected independently until the weighing time arrives. The Cihampelas Mandiri Unit Waste Bank consists of the person responsible for each weighing and is assisted by 8 CMs, namely from RT 01 to RT 08 and each has a Chairman and CM Secretary who will deposit the waste at each
weighing. Then the weighing place was only carried out on the side of the road with inadequate facilities. The coordinator must bring a weighing device and then the CM representative brings the waste which has been sorted and placed on the side of the road. Conditions like this are very difficult because they can disrupt the traffic of passing vehicles because they are blocked by weighing activities.

LITERATURE REVIEW

A. Implementation Strategy
According to Mulyana, (2010) Strategy consists of the science and art of using capabilities together with resources and the environment effectively in the best way so that several alternative options emerge which are then evaluated and the best one is taken and the results are announced explicitly as tactical guidelines which are then transferred to the operational environment[1]. Then according to Usman, (2002) Implementation is an activity, action, action, or system mechanism that is carried out in a planned manner to achieve activity goals [2]. So it can be explained that implementation is not just an activity, but also a planned activity that is carried out seriously based on seriously planned references. Therefore, implementation does not stand alone but is influenced by the next object, namely the implementation of a program.

According to the experts' definition above, it can be concluded that an implementation strategy is a series of planned steps to introduce or implement a policy, project or initiative in an organization. The steps include planning, communication, team formation, gradual implementation, monitoring and evaluation, and adjustments if necessary. The goal of an implementation strategy is to achieve the desired results effectively and efficiently.

B. Waste Management

In developing sustainable urban settlements, it is very important to implement Waste Management. Waste Management is waste processing actions to minimize hazardous waste with effective and efficient actions including using recycling and recovery of useful materials and energy. According to the United Nations Environment Program, (2015) waste management is one of the important utility services that supports society and is a basic human need [3]. One of them is ensuring proper sanitation and solid waste management alongside the provision of drinking water, shelter, food, energy, transportation and communications as important for society and the economy as a whole. Despite this, the public and political profile of waste management is often lower than that of other utility services.

From the experts' definitions above, it can be concluded that waste management is an integrated activity that includes reduction, collection, processing, reuse and final disposal of waste. Waste management aims to protect human health, the environment and natural resources by reducing the negative impacts of waste and maximizing the reuse and recycling of materials that can be recovered. The implementation of Waste Management plays a very important role in urban settlements, because the volume of waste in a city is increasing. There are quite a lot of them and they are difficult to recycle. This is due to the lack of implementation of Waste Management so that waste that has been thrown away is not sorted properly and will be difficult to recycle.

C. SDG 11
One of the SDGs goals is SDGs point 11, namely sustainable development of cities and communities. SDG 11 reflects the importance of creating cities that are sustainable, environmentally friendly and inclusive for all their residents. The goal is to create better cities, which can improve people's quality of life, reduce social inequality, and protect the natural environment.

Specifically, the goal of SDG 11 which handles municipal waste is SDG 11.6. The aim of this target is to reduce the harmful environmental impacts of urban activities. This includes reducing air pollution, improving urban waste management, and reducing other negative impacts such as water and noise pollution. Various steps can be taken to achieve this goal, such as the use of cleaner and environmentally friendly technology, increasing energy efficiency, developing sustainable transportation systems, better waste management, and promoting the use of renewable energy. In addition, the involvement of the community, stakeholders and government is also important in implementing the steps needed to reduce the negative impact of cities on the environment.

D. Circular Economy
According to the Ellen MacArthur Foundation, (2013) a circular economy is an economic system or model that aims to generate economic growth by maintaining the value of products, materials and resources in the economy for as long as possible, thereby minimizing social and environmental damage caused by a linear economic approach[4].

The 3R concept (Reduce, Reuse and Recycle) is a concept that emphasizes the main priority in managing waste, with a focus on steps to prevent waste, reduce waste by promoting the reuse of products, and support products that can decompose naturally (biodegradable), and implementing environmentally friendly waste disposal methods. This approach is directed at carrying out waste and resource management in a sustainable manner.

E. 3R Concept

The 3R concept (Reduce, Reuse and Recycle) is a concept that emphasizes the main priority in managing waste, with a focus on steps to prevent waste, reduce waste by promoting the reuse of products, and support products that can decompose naturally (biodegradable), and implementing environmentally friendly waste disposal methods. This approach is directed at carrying out waste and resource management in a sustainable manner.

**Figure I**: 3R Concept Process

The following is an explanation of the 3R Concept:

1. **Reduce**: Refers to efforts to reduce the use of natural resources and produce as much waste as possible. This involves steps such as reducing consumption of unnecessary goods, increasing efficiency in production, and avoiding wastage of resources.
2. **Reuse**: Focuses on reusing products or product components that are still functioning well. Rather than throwing away items, efforts are made to extend their useful life by allowing others to reuse them or reuse them in different ways.
3. **Recycle**: This involves the process of collecting, processing, and converting waste into raw materials or new products. Recycling helps reduce pressure on the environment and natural resources by reducing the need for new raw materials.

**FRAMEWORK**

The framework of thought according to Amirullah & Widayat, (2002) is a conceptual model of theory related to various important problem factors [5]. One example of waste management is the presence of a Waste Bank in Cipaganti Village. The author also analyzes the application of implementation strategies and the application of the circular economy concept to waste banks through the 3R concept. Based on the results of the data analysis that has been carried out, it is hoped that through this research, input can be prepared regarding the role that can be carried out by Waste Bank managers. This is shown by the following image.
Based on the framework above, it can be concluded that fulfilling SDG Target 11.6 “Municipal Waste Management” can be started directly by the Cihampelas Mandiri Waste Bank by applying the 3R concept, namely Reduce, Reuse and Recycle. The 3R concept will later become the foundation for the Cihampelas Mandiri Waste Bank in carrying out waste weighing and sorting activities. This concept must be implemented and paid attention to carefully so that the waste selection is carried out on target and can be sorted properly according to its function so that the waste can be used wisely and reduce the accumulation of waste that occurs, especially in the RW 05 area through the Cihampelas Mandiri Unit Waste Bank.

**METHODOLOGY**

Based on the methodology, this research was conducted using qualitative methods. According to Moleong, (2017) qualitative research is research that intends to understand phenomena about what is experienced by research subjects such as behavior, perceptions, motivations, actions and so on holistically and by means of descriptions in the form of words and language, at a time.

**RESULT**

**A. Respondent Characteristic**

This research involved two people to be key resource persons consist of the Bandung City Environmental Service (R1) as the main determinant of waste management in Bandung City and the Waste Bank Coordinator (R2) who is the main figure in the sustainability of the Cihampelas Mandiri Waste Bank.

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Summary of The Interviews Answers</th>
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<tbody>
<tr>
<td>R1</td>
<td></td>
</tr>
<tr>
<td>1.1 Regulation</td>
<td></td>
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<tr>
<td>1.1.1 The initial regulations were established by Law No. 18 of 2018 concerning waste management and sustainability into a waste-free program</td>
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<tr>
<td>1.1.2 By providing outreach regarding regulatory information and programs launched by DLH Bandung City</td>
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<tr>
<td>1.1.3 There is a change in the mindset of each supporting element such as the RW, village head and sub-district head.</td>
<td></td>
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<tr>
<td>R1</td>
<td></td>
</tr>
<tr>
<td>1.2 Municipal Waste Management</td>
<td></td>
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<tr>
<td>1.2.1 By monitoring the Kang Pisman program (Reduce, Separate and Utilize)</td>
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<tr>
<td>1.2.2 Lack of communication, difficulty in changing mindsets, and lack of commitment</td>
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<tr>
<td>1.2.3 Citizens’ awareness of changes in behavior from mixing waste to sorting according to its characteristics</td>
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**Table I. Summary of The Interviews Answers**
Respondent | Summary of The Interviews Answers
---|---
R2 | 2.1.1 One of them is through counseling such as bringing tumbler bottles and reducing bottled water drinks and packing food by bringing your own container.
2.1.2 Usually residents like to forget things and are not used to this habit so they return to previous habits and lack supporting facilities.

2.2 | Reuse
---|---
R2 | 2.2.1 Teach how to use used gallons of water instead of throwing them away and using them as flower pots or places to store things
2.2.2 Not used to sorting waste and having a Waste Bank can reduce waste

2.3 | Recycle
---|---
R2 | 2.3.1 Usually, during the weighing, Mr. Tatang, one of the recycling shops in RW 05, also helps sort out items that can be made into crafts. Occasionally we also conduct workshops together with residents.
2.3.2 Lack of materials from RW 05 residents, Pak Tatang usually buys used ones from outside to support his craft. Apart from that, there is still a lack of public awareness and a lack of creativity in processing waste into items that can be used and have value.

B. Discussion of Research Results

1) Bandung City Environmental Service analysis of waste management to achieve SDG Target 11.6

Based from Regulation in Bandung City, according to R1 (Personal Communication, 12 October 2023), he stated that the regulations were initially made because of the explosion and landslide of the Leuwi Gajah TPA in 2005. Then a policy was made that referred to Law No. 18 of 2018 concerning waste management. One of the programs in 2015 was related to the waste-free area program. This program has been implemented and optimized in 5 RWs in Bandung City.

2) Waste Management in Bandung City

According to R1 (Personal Communication, 12 October 2023) stated that the current contribution of DLH Bandung City is by starting to improve since the fire occurred at the Sarimukti TPS, one of which is by monitoring waste management in every element starting from the sub-district head, village head and RW. Each of these elements was given a project by DLH Bandung City to handle waste related to the burning of the Sarimukti TPS. One of them is optimal waste sorting directly from residents, separating organic, inorganic and residual waste. Because transportation is now starting to be segregated and schedules are starting to be limited. Then the program currently being implemented is Kang Pisman (Reduce, Separate and Utilize)

3) 3R Circular Economy Analysis of Cihampelas Mandiri Waste Bank

The First Step of 3R is Reduce and Based on R2 (Personal Communication, 2 August 2023), it is stated that Reduce is already running at the Cihampelas Mandiri Waste Bank. One of the efforts to implement Reduce is to provide education to residents around the Cihampelas Mandiri Waste Bank, namely RW 05, to bring their own tumbler or drinking water bottle and bring their own food container when buying food and not to use plastic wrap. This aims to reduce waste of mineral water bottles or plastic food containers. However, in this outreach there is an obstacle, namely that they are not used to this habit, so people often forget to bring their own bottles or food containers. Apart from that, there is a lack of supporting facilities for carrying out this habit, such as the lack of places to refill bottled water so that residents return to their old habit of buying plastic bottled drinking water directly.

The Second Step is Reuse then according to R2 (Personal Communication, 2 August 2023), it was stated that the Reuse concept had been implemented at the Cihampelas Mandiri Waste Bank. One of the efforts made to apply the Reuse principle is to provide education about items that can still be used, such as plastic gallons that can be converted into flower pots or storage containers. However, this implementation faces obstacles due to people's habit of immediately throwing away waste without understanding that waste also has value and functions that can be reused. Therefore, the Cihampelas Mandiri Waste Bank has an important role in society as a place to collect and sort waste so that it can be reused or sold, providing added value for residents.
The Third Step is Recycle and Based on R2 (Personal Communication, 2 August 2023), it is stated that the Recycle concept has been implemented at the Cihampelas Mandiri Waste Bank. One of the steps that has been taken in an effort to implement Recycling is to involve the active participation of local residents, one of whom is a craftsman like Pak Tatang. Pak Tatang often participates in the process of weighing and sorting waste that can be reused according to his needs. Pak Tatang is also involved in holding workshops for local residents to jointly run the Recycle program to reduce the amount of plastic waste that is thrown away. However, there are still obstacles in its implementation, especially related to the availability of required goods. As a result, Pak Tatang has to buy used goods from outside RW 05 in order to support his craft. Apart from that, there is a lack of awareness among residents in sorting waste so that the availability of raw materials for the Recycle program is also limited.

4) Strategy Analysis for Implementing 3R Circular Economy at Cihampelas Mandiri Waste Bank

In implementing the 3R Circular Economy at the Cihampelas Mandiri Waste Bank, a review is needed. This is because the 3R Circular Economy at the Cihampelas Mandiri Waste Bank is not yet running as it should. Before implementing 3R, it is best to provide education regarding sorting waste properly. Based on R2 said that Most of them already know how to sort waste. So that's only the majority and there are also only a few who are not yet aware of this Waste Bank and there are still those who still throw it away carelessly. This proves that there are still many local residents who don't care about the environment, a lot of rubbish is still scattered and not sorted and just thrown away and turned into one place starting from organic waste. Meanwhile, the 3R process carried out so far needs to be monitored so that each process carried out is in accordance with its respective function.

5) Based on the explanation regarding the obstacles and obstacles that local residents complained about and caused the Waste Bank to no longer be active, it is necessary to make significant changes and improvements regarding the Waste Bank's systematics and processes. In this case, towards the Cihampelas Mandiri Waste Bank 2.0, which is a strategy that will be applied to the Waste Bank to change the structure of the Waste Bank's organizational system, starting from the CM Chairman, CM customers, and local residents who will be responsible for every process that will be carried out, as well as improve communication with the Village Head and Subdistrict Head as supporters of the existing Waste Bank, support can be in the form of supporting facilities or cooperation between waste activist organizations to supervise the Waste Bank. Apart from that, there will be an evaluation of each 3R process that will be running so far, starting from sorting inorganic and organic waste for local residents who don't understand, to communication between external parties responsible for the Waste Bank. One of them is the role of the RW Chair who is the main person responsible for RW 05. This is followed by communication with the Village Head and Subdistrict Head to evaluate each other's processes at the Waste Bank. With full support and commitment from local residents, especially RW 05, together to restore the initial image of the establishment of the Waste Bank as a place for the community to easily sort waste properly. This is in accordance with the objectives of SDG Target 11.6 concerning Municipal Waste Management. This can be shown in the timeline below:

<table>
<thead>
<tr>
<th>Table II. Action Plan Route To Cihampelas Mandiri Garbage Bank 2024</th>
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<tbody>
<tr>
<td><strong>Action Plan Route To Cihampelas Mandiri 2.0 in 2024</strong></td>
</tr>
<tr>
<td><strong>Figure</strong></td>
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<tr>
<td>Bandung City Environmental Service</td>
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### Action Plan Route To Cihampelas Mandiri 2.0 in 2024

<table>
<thead>
<tr>
<th>Figure</th>
<th>First Quarter (January–March 2024)</th>
<th>Second Quarter (April–June 2024)</th>
<th>Third Quarter (July–September 2024)</th>
<th>Fourth Quarter (October–December 2024)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head of RW 05</td>
<td>1. Establish management of the Waste Bank</td>
<td>1. Monitoring the results of outreach on organic and inorganic waste</td>
<td>1. Monitoring the results of organic waste outreach</td>
<td>1. Monitoring the waste weighing process</td>
</tr>
<tr>
<td></td>
<td>2. Develop a new program plan after the formation of the management</td>
<td>2. Evaluate the results of education on organic and inorganic waste</td>
<td>2. Evaluate the results of organic waste education</td>
<td>2. Evaluate the waste weighing process</td>
</tr>
<tr>
<td></td>
<td>4. Report every activity to the Village</td>
<td>4. Evaluate the results of weighing the waste</td>
<td>4. Monitoring the waste weighing process</td>
<td>4. Form plans related to activities and supporting facilities in 2025</td>
</tr>
</tbody>
</table>

| Ketua RT (CM) | 1. Hold meetings with customers | 1. Monitoring the results of outreach on organic and inorganic waste | 1. Monitoring the results of outreach on organic and inorganic waste | 1. Monitoring the results of organic waste outreach |
| | 2. Invite inactive customers and look for future solutions | 2. Evaluate the results of counseling on organic and inorganic waste | 2. Evaluate the results of organic waste education | 2. Evaluate the waste weighing process |
| | 3. Develop a strategy so that residents are always active | 3. Monitoring the waste weighing process | 3. Monitoring the waste weighing process | 3. Monitoring the waste weighing process |
| | | 4. Evaluate the results of the waste weighing process | 4. Evaluate the results of weighing the waste | 4. Evaluate the results of weighing the waste |

| Cipaganti Subdistrict head | 1. Hold meetings with residents involved in the Waste Bank | 1. Monitoring the results of organic waste outreach | 1. Monitoring the results of organic waste outreach | 1. Monitoring the waste weighing process |
| | 2. Monitoring obstacles that occur at the Waste Bank | 2. Evaluate the results of organic waste education | 2. Evaluate the results of organic waste education | 2. Evaluate the waste weighing process |
| | | | | 4. Evaluate the waste weighing process |
CONCLUSION AND RECOMMENDATION

Based on the description of data presentation and data analysis it can be concluded that The City of Bandung through the Environmental Service (DLH) has fully supported waste management in accordance with SDG Target 11.6 concerning Municipal Waste Management. Starting from regulations on Law NO 18 of 2018 concerning waste management. Then we have created supporting programs such as Waste Free Zones and Kang Pisman (Reduce, Separate and Utilize) which will later be applied to every element of society and its derivatives such as sub-district heads, village heads, RWs and RTs. And then the implementation of the 3R Circular Economy at the Cihampelas Mandiri Waste Bank is not being implemented well, this is proven by the large number of local residents who do not actively participate in the Waste Bank. Apart from that, there are still many residents who do not understand the separation of organic and inorganic waste. This is coupled with the unavailability of land for temporary storage of
waste that has been sorted, which makes residents reluctant to be active in the Waste Bank. Then to be able to solve the problem Cihampelas Mandiri Waste Bank must form new management in accordance with their respective responsibilities so that it is orderly. For example, the Chairman, Deputy Chairman, Secretary, Treasurer, Operations and Security sections. After that, review the Waste Bank management process that has been carried out so far. Take another approach in providing education regarding waste management in the RW 05 area. One approach that can be taken is through religious leaders. It can be conveyed indirectly about the benefits of waste management and what it has to do with religious teachings. One of them is that cleanliness is part of faith, and helping sort waste means we lighten the burden on waste officers and indirectly is a reward for those who do it.

REFERENCES