



## **Penta Helix Partnership Program to Increased Waste Management Based on SDG Target 11.6 “Handling the City Waste” in Coblong District Bandung City**

**Ferdy Aldyan Syah**

School of Economics and Business, Telkom University, Indonesia

**ABSTRACT:** Sustainability Development Goals (SDGs) are one of national and global efforts to maintain and create a clean and safe environment. However, the increasing amount of waste, especially in the city of Bandung, means that this criterion is broken. The community's daily waste production is still high, causing waste to continue to pile up. Ironically, with the population of Bandung City being quite large and dense, especially in Coblong District, the TPA around Bandung City is no longer able to accommodate waste from Bandung City. As a result, the rubbish was simply abandoned on the side of the road. However, this waste problem is not the responsibility of just one party. This waste problem is a problem that requires cooperation from various parties called Penta Helix consisting of Academics, Business, Community, Government and Media. This research was conducted using explanatory qualitative research methods. With the aim of finding out how Penta Helix collaborates in realizing waste management in realizing the SDG 11.6 target in Coblong District through analysis from five points of view of the Penta Helix pillars. Because in dealing with this problem, multi-party cooperation is needed so that its implementation can be realized well and the impact given is more comprehensive and maximum. The result is that the collaboration between Penta Helix pillars is still not synergistic and the efforts shown, especially by the Government, are still not serious. Like waste that has been sorted and mixed again at the landfill, existing regulations are still minimally enforced and the human resources involved still do not meet the standards they should be. Then, the basic problem experienced by all the pillars in Penta Helix is the lack of community ability in sorting and managing waste from the household.

**KEYWORDS:** Penta Helix, Sustainability Development Goals (SDGs), SDG Target 11.6, Waste Management, Management.

### **INTRODUCTION**

Indonesia is the country with the fourth highest population in the world, with 276.4 million inhabitants. West Java is the province with the highest number in Indonesia. Based on data obtained through the Central Statistics Agency, West Java Province is a province with an area of 35,377 km<sup>2</sup>. Based on data obtained from [bandungbermobil.id](http://bandungbermobil.id), waste production in the city of Bandung. Bandung City is the city that has the largest daily waste production figures in West Java Province. So with this, it can be seen that the number of residents in a city/district will be directly proportional to the amount of daily waste production in that city/district. This reached 1,500 tons/day. The government is working through Presidential Regulation (PERPRES) SDGs No. 111 of 2022. Sustainable Development Goals (SDGs) is a global framework launched by the United Nations (UN) to achieve sustainable development throughout the world. In Indonesia, SDGs have become a national priority which is outlined in various government policies and programs. The Indonesian government has committed to achieving all 17 SDGs goals by 2030. SDG 11, which is one of the 17 Sustainable Development Goals set by the United Nations (UN), aims to achieve inclusive, safe, disaster-resilient and sustainable cities. . However. Expectations do not always meet reality. Public awareness in disposing of waste in the city of Bandung is still low, which is a problem that needs to be addressed seriously. Many city residents still do not care about the importance of good waste sorting and management. This phenomenon is reflected in the practice of throwing rubbish carelessly in public places, including rivers, gutters and sidewalks. Several factors that cause low public awareness of throwing rubbish in the city of Bandung are the lack of education and sufficient information regarding the importance of proper waste management. Many people do not know about the negative impacts that indiscriminate waste disposal has on the environment and health. Lack of awareness of the importance of waste sorting and recycling is also a major factor in the low level of public awareness in disposing of waste properly. Apart from that, there is also a lack of adequate facilities and infrastructure for waste management in several city areas. So it is not surprising that a lot of rubbish has piled up everywhere, especially in Coblong District and the most populous village in Coblong

District, namely Cipaganti Village. The party had to look for a location in the nearest district for the TPA, which had just claimed that the Sarimukti TPA was overloaded. That way, the TPA in question will not accept waste shipments outside its own area, making this policy overwhelming.

## LITERATURE REVIEW

### A. PENTA HELIX

Pentahelix is a concept that prioritizes collaborative principles in achieving its goals. Putra (2019:64) said that "Penta helix is one of the concepts of the cross sector collaboration of stakeholders that rally round the development of village tourism. The pentahelix model is a conceptual framework of the collaboration between community, government, business, academics, and social entrepreneurs.". From this definition, we can determine that the penta helix concept is a concept that involves and requires collaboration between the community, academics, government, business people and society to achieve and succeed in the goals of the program. Then Penta Helix based on (Sudiana, Tisnawati, & Soemaryani, 2020) states that "The Penta Helix is a conceptual framework involving academicians, government industry, non-governmental institutions, civil society, or social entrepreneurs or media that is believed to be able to enhance the economy to pursue innovation and entrepreneurship through collaboration and synergy". This definition can be interpreted as meaning that the Penta Helix concept is a concept consisting of academics, government, non-government institutions such as business, community and media who collaborate to create innovation and synergy. Penta Helix is a concept that can improve the surrounding environment. With the definitions mentioned above, it can be determined that Penta Helix is a collaborative concept consisting of Academics, Business, Community, Government and Media in achieving a goal, namely creating a better environment by uniting determination to form synergy and harmonization, so that a new innovation is formed which in the end can create a sensitivity on all sides of Penta Helix in creating a healthy environment and balancing between humans and nature

### B. SUSTAINABILITY DEVELOPMENT GOAL (SDG) TARGET 11

According to (Ministry of National Development Planning / National Development Planning Agency (PPN/BAPPENAS), 2020:1) SDGs are a global and national commitment. This movement has 17 goals to achieve. One of them is SDG Target 11. Based on data obtained through the official website from [sdgs.bappenas.go.id](http://sdgs.bappenas.go.id) SDG Target 11 reads "Make cities and settlements inclusive, safe, resilient and sustainable"

### C. SDG TARGET 11.6

Figure I : SDG Target 11.6

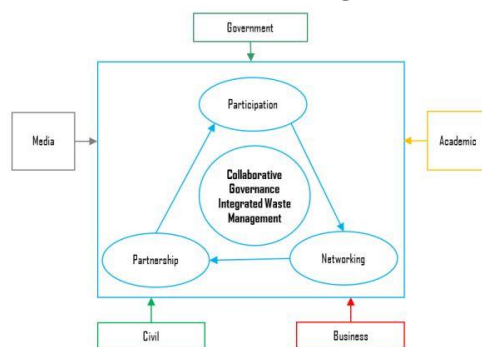


SDG 11.6 is one part of the SDG 11 goal, namely Sustainable Cities and Human Settlements. Based on the results obtained via the official website from [sdg.bappenas.go.id](http://sdg.bappenas.go.id), SDG 11.6 contains "By 2030, reduce the detrimental impact of the urban environment per capita, including by paying special attention to air quality, including handling municipal waste." So it can be seen that these SDGs are a global and national effort to create a better life with one aspect of its fulfillment being reducing detrimental per capita environmental impacts and handling municipal waste.

**D. WASTE MANAGEMENT**

To control the amount of waste produced every day, disposal management is needed. According to (Tolaymat, Badawwy, Sequeira, & Genaidy, 2015:600) "Waste management is a conduit at the cross roads of inputs from producers, users and outputs to environmental compartments with the overall goal to clear the residues and reutilize cleared materials and natural resources". Then waste management is also a process where the collected waste is then moved and processed first, leaving only residual waste (Amasuomo & Baird, 2016: 93).

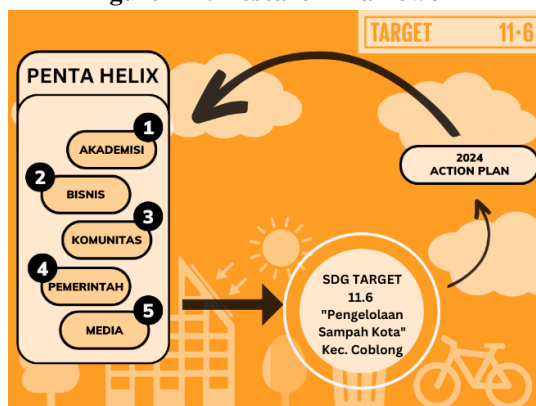
**Figure II : Collaborative Governance Integrated Waste Management**



In carrying out waste management, several components are needed that work together so that the handling is optimal according to the statement (Rini, Sufianti, & Abdullah, 2020), namely participation, networking and partnership. This is in accordance with figure 2.3 above. An effort to carry out waste management needs to be supported by many parties, namely the Penta Helix pillars which consist of ABCGM (Academicians, Business, Community, Government, Media) by paying attention to three aspects of integrated waste management. That way, waste management activities can be carried out optimally.

**FRAMEWORK**

**Figure III : Research Framework**



SDGs is a global work program consisting of 17 goals. One of the goals is SDG Target 11.6 concerning "Municipal Waste Management". With the facts explained previously, waste is a problem that needs to be solved jointly by various parties, namely Penta Helix (Academics, business, community, government and media) so as to synergize goals between the pillars of Penta Helix and can form activity plans to form good waste management in Coblong District

**METHODOLOGY**

Based on the methodology, this research uses a qualitative methodology. Qualitative research methodology states that qualitative research is research that uses natural settings with the aim of interpreting phenomena that occur and is carried out by involving



various existing methods. So it can be interpreted that qualitative research is research that involves data analysis in the form of descriptions and interpreting phenomena that occur naturally using various existing methods. Paradigm according to Harmon (in Muslim, 2015: 77-78) is a basic way to look for perceptions, thoughts, assessments and actions related to something specifically about reality. So the research paradigm used in this research is the constructivism paradigm. The constructivist paradigm is a paradigm that is almost the antithesis from an observational and objective point of view in searching for reality or knowledge (Umanilo, 2019:1).

**RESULT**

**A. Respondent Characteristics**

This research uses primary research data which is used as a data source that will be analyzed by researchers. This in-depth interview or what is called an in-depth interview was carried out by the researcher with the five research sources who had been determined according to the qualifications in the previous chapter. Resource persons in this research include environmental academics (Accademician), owner of Warung 1000 Kebun (Business), Public Relations coordinator and YPBB Sustainable Earth Conservation Yaksa Volunteer (community), Head of Coblong District (Government), editor of IDN Times Bandung City (media).

**Table I.** Summary of Respondents' Answers

<b>1. Effort</b>	
<b>Respondent</b>	<b>Summary</b>
<b>R1</b>	<ul style="list-style-type: none"> <li>• Conduct an assessment of the land use period for TPS and TPA,</li> <li>• Conduct an assessment of acts of corruption in the waste management process in Bandung City</li> </ul>
<b>R2</b>	<ul style="list-style-type: none"> <li>• Providing training regarding the management and sorting of organic waste at the household scale at Green and Bean Resto</li> <li>• Providing facilities for managing organic waste for participants who wish to purchase</li> </ul>
<b>R3</b>	<ul style="list-style-type: none"> <li>• Provide training to the community regarding waste management and waste sorting from households</li> <li>• Monitor the target area regarding waste management</li> </ul>
<b>R4</b>	<ul style="list-style-type: none"> <li>• Providing waste management facilities/technology at local TPS</li> <li>• Forming a Community Self-Help Group to guide the community in managing waste</li> <li>• Provide employment opportunities to recidivists</li> </ul>
<b>R5</b>	<ul style="list-style-type: none"> <li>• Providing educational and inspirational news to the public</li> </ul>
<b>2. Obstacle</b>	
<b>R1</b>	<ul style="list-style-type: none"> <li>• Many acts of corruption in the process</li> <li>• People who do not care about managing and sorting waste</li> </ul>
<b>R2</b>	<ul style="list-style-type: none"> <li>• Public awareness is still low</li> <li>• Public understanding of waste management and sorting is low</li> <li>• Long bureaucratic flow</li> <li>• The government has not seriously handled the waste problem</li> </ul>
<b>R3</b>	<ul style="list-style-type: none"> <li>• The government is still not serious about dealing with the waste problem</li> <li>• Public understanding of waste management and sorting is low</li> <li>• Waste that has been selected will then be mixed again</li> </ul>
<b>R4</b>	<ul style="list-style-type: none"> <li>• Public perception of waste</li> </ul>



	<ul style="list-style-type: none"> <li>• Unsupportive community behavior</li> <li>• The lack of quality of existing human resources</li> </ul>
R5	<ul style="list-style-type: none"> <li>• Lack of public interest in news about waste management.</li> </ul>
<b>3. Hope</b>	
R1	<ul style="list-style-type: none"> <li>• People are aware of the importance of sorting waste and managing waste from the kitchen/household.</li> <li>• Tighten monitoring of the flow of waste funds to ensure there is no corruption</li> <li>• Behavioral change is more important</li> </ul>
R2	<ul style="list-style-type: none"> <li>• People have more awareness about waste management and sorting at the household scale</li> <li>• Communities manage their own organic waste in their own homes</li> <li>• The government is more firm and serious in regulating waste issues</li> <li>• Waste management should also be promoted by religious leaders</li> </ul>
R3	<ul style="list-style-type: none"> <li>• The public is aware of the importance of sorting and processing waste</li> <li>• The government is more firm and serious in dealing with waste problems</li> </ul>
R4	<ul style="list-style-type: none"> <li>• The public is aware of the importance of sorting and processing waste</li> <li>• The community is more responsible for maintaining the technology and facilities provided by the Government</li> </ul>
R5	<ul style="list-style-type: none"> <li>• The public is aware of the importance of sorting and processing waste</li> <li>• The community is more responsible for maintaining the technology and facilities provided by the Government</li> </ul>

**B. Discussion of Research Result**

1. Academics

From the results of in-depth interviews conducted by researchers with resource persons who are the pillars of the pentahelix, namely academics, business, community, government and media, it can be seen that each of these pillars has made efforts to realize good waste management in The city of Bandung, especially Coblong District, is in accordance with SDG Target 11.6, namely "Reducing adverse urban environmental impacts per capita, including by paying special attention to air quality, including handling municipal waste. (VAT/BAPPENAS)". Things done by academics include assessing the potential of TPA and TPS for the next 20 years by paying attention to growth prospects and population numbers in the city of Bandung. As explained by academic sources, the TPA and TPS project is a long-term project so it requires extraordinarily detailed calculations and observations to be on target. Apart from that, the next thing to do is look at the flow of funds which should be used for the waste management process but are diverted by irresponsible parties. This is intended to ensure that government agencies are more strict in monitoring the flow of funds that will be used for something so that they are not wasted and only used for certain groups or even individuals.

2. Business

From a business perspective, based on the results of interviews obtained by researchers from sources, this business sector has made various efforts to create a safe environment by creating people who are aware of sorting and processing waste



from households. This business sector has made efforts to provide counseling and practice directly in front of the audience on how to manage organic waste which should be done on a household scale. This provision was carried out at a restaurant in Bandung City. This aims to create public awareness of how easy and important it is to manage and sort waste from the household. This business sector makes it easy for people who want to manage organic waste independently at home by providing starter kits for consumers who want to buy so that they can directly implement the knowledge that has been previously conveyed in their respective homes. The tools provided by this business sector which can be used as a means of managing organic waste are quite simple and do not require special skills to apply them at home. These tools are like the Lodong Sesah Dapur (Loseda), which is a tool made from a plastic pipe which is then hollowed out and then planted in the ground. Next is Takakura's basket. This tool is the result of improvisation from a tool introduced by a Japanese scientist, namely Mr. Takakura. A practical tool to assist the process of managing organic compost waste to be applied on a household scale. This business owner not only provides education to the public about the importance of processing and sorting waste, but also applies it to everyday life.

### 3. Community

Community is one of the most important elements in carrying out movements for society. This is because the community has a large mass so that it can mobilize a large mass of people so that the movement carried out has many followers. As implemented by YPBB, namely collaborating with Coblong District in implementing zero waste cities. In this activity, YPBB provided education and implementation regarding waste sorting and processing in the RT/RW environment in Coblong District. The education provided is about separating organic waste from inorganic waste. Organic waste is waste that you should be able to manage yourself at home by composting it. The compost can then be used as fertilizer for plants in each home.

### 4. Government

The government is one of the most vital pillars in a movement that will be implemented by society. This is because the government is the regulator and facilitator, so whether a movement is successful or not will more or less depend on support from the local government. Based on the results of researchers' interviews with resource persons, it can be concluded that the local government has made several efforts to realize good waste management. The first effort is to provide technology to help sort waste at the Tamansari TPS using Gibrik Mini. So that when sorting waste at the TPS, it won't take too much time. Then there is employing a community of recidivists who are known to be negative in the eyes of society. By providing decent employment opportunities and providing income through the right channels, it will make them more able to respect themselves and on the other hand can also help Coblong District in realizing good waste management. The next step is to provide outreach to the public regarding waste sorting according to waste type. Here, Coblong District has innovated that there is no need to use the introduction of 9 types of waste which are felt to be too much and difficult for the public to remember, so the District. Coblong educates that there are 3 types of waste that must be sorted according to their type, namely organic, inorganic and residue.

### 5. Media

The media side, based on the results obtained by researchers from interviews with sources, it can be concluded that this media has attempted to raise a sense of awareness about the recent waste disaster phenomenon and explain the impact of this event on the environment and surrounding communities. Apart from that, the media produces publications which they feel will attract public attention to immediately carry out waste sorting and waste management independently from the household. This aims for the common good. Apart from that, the media is trying to change people's mindset towards waste, seeing that waste is disgusting and has no value, even though on the other hand, waste still has economic value if the waste is sorted and managed properly and correctly.

### 6. Waste Management

The public's low awareness regarding waste sorting and processing as well as the lack of application of the 3R principles (reduce, reuse, recycle) in daily life means that initial predictions from academics and the planning period for the use of landfills are far off. The reason is, people still think that the important thing is that the waste is not in front of them or in their homes, so they think the waste problem is solved, even though it is not. The community only removes the waste from before them and the government only moves the waste from one place to another without making any efforts to reduce and



manage it so that the amount in the landfill becomes small. Looking at these facts, waste management in Bandung City, especially in Coblong District, is still at a low stage. Because public awareness and the authorities regarding sorting is still low and not in accordance with theory. According to (Tolaymat, Badawwy, Sequeira, & Genaidy, 2015:600) "Waste management is a conduit at the cross roads of inputs from producers, users and outputs to environmental compartments with the overall goal to clear the residues and reutilize cleared materials and natural resources". Then waste management is also a process where the collected waste is then moved and processed first, leaving only residual waste (Amasuomo & Baird, 2016: 93).

#### 7. Raising People's Awareness

Apart from that, in realizing a goal that we want to achieve, we cannot ignore the role of technology which has really advanced and made humans really need technology in their daily lives. Based on the facts and data above, to attract people's attention and change people's habits, there needs to be a social campaign regarding the importance of waste management from the kitchen or household on social media or other new media. Because based on the facts in the background, the majority of Indonesian people are already aware of technology, namely the internet, and the majority of those who access the internet already have their own social media. So it is necessary to take an approach through social media and create a content concept in the form of collaboration in order to attract people's attention to participate and be motivated to become part of the people who care about the environment from the household/kitchen. With such a goal, it is important to have clear goals, assignments and authority and that the steps to be taken are planned and directed.

## CONCLUSION AND RECOMMENDATIONS

The pillars in Penta Helix have carried out activities as they should and in accordance with their respective portions. However, when implementing it, there are many obstacles, the majority of which are the low level of public awareness in sorting and managing waste at the household scale and also the lack of public interest in implementing the 3R concept in everyday life. The government still seems half-hearted in its efforts to realize good waste management in accordance with SDG Target 11.6. This is because there is still a process of mixing the waste which has been transported separately and then mixed again when it arrives at the TPS and also at the TPA. Failure to strictly implement regulated waste regulations. The bureaucracy in the waste management process is too long, causing a lot of corruption to occur in every phase it goes through. So the amount of funds that should have been obtained was much smaller, which was caused by irresponsible individuals. The quality of human resources and existing technology is still not suitable so that machines quickly break down and stall due to lack of education. The lack of supervision in the process of carrying out waste management means that everything that is carried out cannot be measured and is carried out haphazardly, causing a situation called "overcoming a problem, with a new problem". The negative behavior and views of society towards waste and considering waste to be something that has no value and is disgusting is enough to create difficulties for all existing pillars in forming public awareness in managing waste and sorting waste which is carried out at the household scale. This research aims to analyze how Penta Helix's partnership is improving waste management in Coblong District, which includes academics, business, community, government and media. More in-depth research on one of the pillars needs to be carried out for further research. This research aims to provide a reference for action plans that need to be carried out. It is necessary to carry out an analysis of the effectiveness of existing waste management activities. This research aims to analyze how the Penta Helix partnership works in waste management in Coblong District. It is necessary to photograph Penta Helix's partnership in waste management with a wider scope of objects. This research was carried out to determine Penta Helix's collaboration in managing waste in Coblong District, Bandung City. It is necessary to conduct research on how Penta Helix collaborates in managing waste in Banyumas Regency as a district that is successful in overcoming waste problems. It is necessary to implement a transparent financial flow system so that existing funds can be monitored in real time and accurately. Implementation and supervision of waste management needs to be carried out seriously and consistently. There needs to be more targeted collaboration between the Penta Helix pillars. This aims to create a unified synergy between one pillar and another so that the goals that have been promoted together will be maximized in their implementation.

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