WASTE MANAGEMENT BASED ON CIRCULARITY IN PAHLAWAN VILLAGE, TANJUNG TIRAM SUB-DISTRICT

Annisa Ilmi Faried[1]
Rahmad Sembiring[2]
Neng Sri Wardhani[3]

[1]Faculty of Social Science, Development Economics Study Program, Universitas Pembangunan Panca Budi, Indonesia
[2]Faculty of Social Science, Development Economics Study Program, Universitas Pembangunan Panca Budi, Indonesia
[3]Faculty of Social Science, Accounting Study Program, Universitas Pembangunan Panca Budi, Indonesia
(email:annisailmi@dosen.pancabudi.ac.id)

Abstract: The problem of waste is multidimensional, so it must be handled regularly. Waste reduction requires a cooperative effort from all parties involved. Accomplishing the Village Sustainable Development Goals (SDGs) in 2030 is one of the cross-sectoral challenges and problems that the Hero Village is trying to solve. This paper aims to look at circularity-based waste management and provide insight on how green recovery stimulus can be achieved. Doing this is to control the negative environmental, economic, social, and rural effects that threaten villages, and to reap the benefits that come from doing so. One reason is because the funds allocated by the government are insufficient for rural waste management. Even for today's trash.

Keywords: waste, management, circular, village, reduction

Introduction

This problem has far-reaching consequences for the environment and society due to the lack of extensive knowledge about waste management, the scarcity of available human resources, and the absence of suitable landfills. In order to start tackling the problem of inefficient waste management and working towards achieving the Sustainable Development Goals (SDGs), it is necessary for each region to first gain an understanding of the factors that can contribute to this happening. Improving the rural living environment is a key component of rural revitalization (Liu & Ma, 2021). Realizing sustainable development in the new economic era that prioritizes the use of hi-tech, especially in rural areas, is an important issue in developing regional potential creatively and independently (Nainggolan, et al., 2019). Models of rural community development include community development, participatory approaches and community empowerment (Gandasari, et al., 2021). Therefore, development policies are carried out to achieve high economic growth by utilizing existing potentials and resources in accordance with the different conditions of each region (Purba, et al., 2021).

Humans create 300,000,000 tons of plastic every year, about half of which is used to produce single-use items such as grocery bags, disposable cups, and plastic straws. (Megarani, 2022). The use of natural resources in the future can be directly linked to balance (Simarmata, et al., 2021).Development activities will produce impacts, both on humans and the environment

(Kurniullah, et al., 2021). Household waste in rural areas has not been treated effectively (Wang , et al., 2019). Rural household waste is defined as solid waste, which includes wet waste (food scraps, leaves, meat scraps), recyclable waste (paper, plastic bottles, metal, cloth), and non-recyclable waste (plastic bags, glass, metal). Among them, kitchen waste is a major part of rural household solid waste (Chen, 2010).Decaying garbage causes an unpleasant odor and is a health hazard (Faried, et al., 2022).

Garbage accumulation is quickly becoming a problem across the region in terms of environmental impact. The effects of the annual population expansion are visible in the ever-increasing amount of waste generated each day. Ineffective waste management has been seen as the single most important socio-economic and environmental challenge for governments at all levels. This view holds true because ineffective waste management is a problem that affects society and the environment. As a result of long-term and substantial informal dumping practices, such as open dumping and ditching, large quantities of rural domestic waste have accumulated, causing critical adverse consequences and posing serious challenges and threats to the sustainable development of society and human health.Changes in economic structure also present challenges in terms of the reallocation of production factors (Basmar, et al., 2021).

Table 1 Achievements of Waste Management in 2021 in 290 Regencies/Cities throughout Indonesia

Information	Total (Tons/Year)	Percent (%)
Waste Reduction	65,826.17	10,21
Waste Handling	328,500.00	50,93
Managed waste	394,326.17	61,13
Unmanaged Trash	11,569,415.39	31,49
Garbage Generation	**654,012.56**	

Source: (SIPSN, 2022)

According to data 1.1 collected on the achievements of waste management in 290 cities and regencies, the amount of waste handled is 328,500 tons per year (50.93%), and the amount of waste that has been reduced is 65,826.17 tons per year (10.21%). There will be greater pressure on infrastructure as the population increases, making it more difficult for people to get the basic services villages need (Faried & Sembiring, 2019). There is a dynamic interplay between economic, social and environmental influences. Waste management is becoming increasingly important as waste production increases. If waste is not handled in a way that does not damage the environment, it can have serious consequences for public health and can wreak havoc in places such as the environment, forests, rice fields, rivers and oceans. Rural areas are usually on the outskirts, away from the hubbub of city life. However, the amount of waste generated is potentially large. Also, it is important to remember that governments can avoid servicing remote places due to logistical challenges. Garbage disposal remains widespread, especially in peri-urban and rural areas, although it is the most environmentally damaging and unsustainable aspect of modern waste management. The lack of concern in rural communities for waste management is changing as more people, and more types of waste, are produced and consumed. To produce goods and services, production activities involve many factors of production (Marit, et al., 2021).

The role of consumer behavior varies greatly depending on the beneficiary or user (Sudarmanto, et al., 2020). The responsibility is big, there are many decisions that must be made even though they have not mastered the problem (Hastuti, et al., 2020)Without awareness of management, environmental and health damage will occur (Sitorus, et al., 2022). There is a change in development towards an increasingly quality life in the sense of an increasingly prosperous life (Sudarmanto, et al., 2020). Commitment and action become an important momentum for the advancement of creative economic growth (Faried, et al., 2021). The increasing role of the people's economy is reflected by the increasing role of the productive economic sector (Faried, et al., 2022)as well as having an impact on many industrial activities (Sipayung, et al., 2022). The idea of building a village is experiencing problems because village communities are only seen as objects of development (Faried, et al., 2022). The transition to a circular economy is very important for Pahlawan Village because of the many benefits it will bring to the country's environment and future economic growth in various sectors.

The subject of environmental management, more specifically waste management, must be considered significantly not only by village government agencies but also by residents in general and other related parties. With a population of 2,447 Pahlawan villages. So it can be assumed that the waste products in Hero Village reach 0.7 x 2,447 people = 1,713 kg/day, 1,713 kg x 30 days = 51,390 kg/month or 616.68 tons/year. With details of the percentage of waste categories as follows:

Table 3 Percentage of Garbage Categories in Hero Village

Trash Type	Amount (Tons/Year)	Percentage (%)
Kitchen Trash	345.34 tons	56%
Plastic waste	129.50 tonnes	21%
Paper Waste	49.33 tonnes	8%
Other Garbage	92.50 tonnes	15%
Total	**616.68 tons**	**100%**

Source: Hero Village, Tanjung Tiram District, 2021

In 2021 it would be ironic if people immediately disposed of the trash that was already in their homes. The property used for landfill continues to be a hindrance in Hero Village. It is possible that with the potential for existing waste, if it is not handled seriously, Hero Village will be filled with garbage, which will have a negative impact on health and the environment, especially considering that Hero Village is a coastal village that must protect its natural ecosystem.

Literature Review

One of the effects of the linear economy that has been carried out so far is that it produces enormous amounts of inefficiency and waste. BPS and the Ministry of Environment and Forestry show that in 2021, the amount of waste from five sectors which represent 1/3 of Indonesia's

Gross Domestic Product and involve more than 43 million people (Food & Beverage, Textile, Construction, Trade, Electronics) are respectively :

Table 2 Projected Increase in Waste Generated By Sector in 2030

Sector	Generated Garbage (Million Tons)	Projection of Waste Increase in 2030 (%)
Food and Beverage (Food Waste)	57.5	54
Textile (Textile Waste)	2,3	70
Construction (Construction Waste)	29.0	82
Wholesale and Retail Trade (Plastic Packaging Waste)	5,4	40
Electronics (E-Waste)	1,8	39

Source: BPS; KLH 2022

The data above is of course worrying. So it must continue to be encouraged to apply a circular approach to stop or at least significantly reduce the threat of efficiency and waste from these various sectors. Building community knowledge is an important step in the process of building effective waste management, which does not happen overnight. It is not easy to increase the awareness of the people in the hamlet. This requires the support and cooperation of all parties involved, including the community, village officials and third parties. The process of raising awareness involves patience, as well as consistent positive examples and examples from policy makers. In addition, the process demands consistency from policy makers. Waste management outreach initiatives are made possible to encourage rural community participation in waste management; This can also be supported by various community empowerment programs that can help raise awareness.

method

This research is a causal research, to analyze how a variable affects other variables, and is also useful in experimental research where the independent variable is treated in a controlled manner by the researcher to see the impact on the dependent variable directly. The parameters observed in this study are sustainable circularity-based waste management in Pahlawan Village, Tanjung Tiram District. Data analysis is adjusted through a quantitative approach. The scope of this research is focused on sustainable circularity-based waste management. For data analysis from this study used descriptive qualitative and quantitative in analyzing waste management.

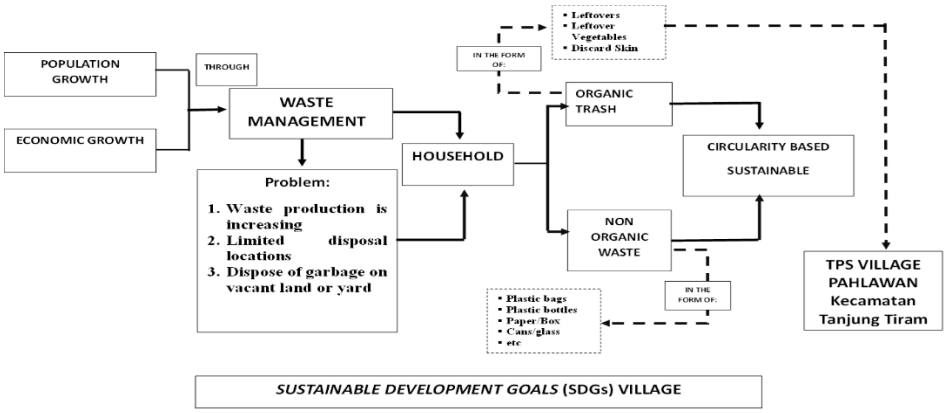

Figure 1 Research Conceptual Framework, (Source: Researcher, 2023)

Result and Discussion

In densely populated rural areas, ineffective waste management not only impacts people's homes, but also creates disaster for river flows. This is true whether the population density is high or not. This situation is comparable to what happened in Pahlawan Village, Tanjung Tiram District, Batu Bara Regency and in a number of other hamlets. The Aliaran River was eventually used as a garbage disposal site for both organic and inorganic waste.

Figure 2. Garbage beside the houses of the Heroes of Village Community, 2023

One of the most significant problems facing rural areas is waste management. At least 175,000 metric tons of waste are produced every day throughout Indonesia. The target of reducing waste by thirty percent by 2025 has been set by the government itself. A very difficult target to achieve. On the other hand, if all stakeholders can be involved, it is not an impossible goal to achieve. At this time, waste has become a significant problem that needs to be addressed, especially for the sake of preserving the environment and health. Garbage that is not disposed of properly can cause damage to the surrounding area, which in turn contributes to environmental pollution. In terms of waste processing in rural communities, the majority still rely on the landfill waste component, and after that disposal and destruction is carried out by burning or throwing it away, or in the last approach, waste is collected, transported, and disposed of at the final waste processing location. Managing waste effectively can start with management, which can be done by having each family sort their own waste independently. Waste management can involve classifying it as salable waste or waste fit for disposal. In the early stages of the movement, one of the goals was to equip communities with the necessary knowledge and skills to sort waste

independently and to raise awareness of the problem.

Conclusion

According to the Regent Regulation (PERBUP) Pemkab Batubara No. 40 of 2021 concerning Synchronization of APBDes Plans and Activities with the 2018 Fiscal Year APBD, each hamlet is required to have its own waste depot. It is regulated in the Perbup that waste management in the village must have a budget allocated through the Village Revenue and Expenditure Budget for the purchase of waste banks or waste sorting houses. There should be at least one unit for each village. Including the construction of a Temporary Final Disposal Storage Site (TPSS), as well as the participation of village capital in a Village-Owned Company engaged in waste management and the operation of the Village Level Waste Management Team.

Even though everything has been regulated using the Perbup, the village system for managing waste still faces certain challenges. Because there are still many villages that have not set aside certain land to be used as a waste disposal site. One reason is that managing is a challenging task. If a village does not have an Independent Waste Management Network (JPSM), then the situation is much more problematic, due to the fact that it is not an easy task to invite local residents to join JPSM, which will eliminate the accumulation of waste in depots and can become a valuable or valuable commodity. high economy.

Table 3. Results of Interviews with Various Community Groups in Hero Village in 2023

No	Group Description	Targeted Aspect	Results
1	Housewife (IRT)	Interest in Waste Management	1. Most housewives want to manage waste but don't know how 2. Know the dangers of waste that is not managed properly 3. Not maximizing waste that can be recycled so as to reduce the amount of residual waste 4. Recognizing that waste provides added value to the economy and the environment 5. Realizing his important role in cultivating the habit of sorting waste in the household environment, as the beginning of the chain of domestic waste management
		Awareness of Waste Management Behavior	1. In practice, they manage daily waste by burning it and throwing it into the river. 2. Garbage segregation will reduce the presence of pests such as flies and rats, making the area cleaner, tidier and less seedy 3. Knowing the types of kitchen organic waste and plastic packaging waste 4. The impact of plastic waste can cause disease, and if it is burned, it can cause air pollution 5. It is acknowledged that sorting waste is very easy, but the implementation is difficult because it does not become a habit.
		Infrastructure	1. The waste bank in Pahlawan Village is not

No	Group Description	Targeted Aspect	Results
		and facilities	running optimally in waste management 2. Optimizing APBDes to organize solid waste infrastructure and facilities 3. Handling waste in rural areas is carried out in the simplest way possible by taking into account local wisdom, meaning that the village government can adjust the infrastructure and facilities for waste management using materials available in the area.
2	Fisherman	Interest in managing waste	1. Huge potential to be empowered in supporting the prevention of pollution due to the entry of garbage into the waters 2. Requires the action role of all stakeholders to produce a circular economy starting from marine waste collection, sorting, technological innovation, product recycling, to the utilization of recycled products. 3. Fishermen have the will to carry out waste management, but it depends on the amount of economic incentives received
		Awareness of Waste Management Behavior	1. Empowering fishermen to reduce marine pollution through collecting garbage at sea 2. The clean culture approach is an effective effort to change the habit of disposing of waste indiscriminately and preventing waste from entering 3. Fishermen can identify waste such as plastic waste, cigarette butts, leftover food and so on 4. Part of the waste generated is burned, left untouched and partly thrown into the river
		Infrastructure	1. It is necessary to increase marine waste reduction campaigns, as well as public service advertisements in print and electronic media, to invite coastal communities and industry to participate in keeping sea waters clean and healthy. 2. Fishermen are aware that there are trash cans in the corner of the village but they still throw garbage carelessly
3	Trader	Interest in Managing Waste	1. Traders are willing to manage waste if facilities are provided by village officials 2. Ineffective communication between the government and the local community.
		Awareness of	1. Traders can identify household waste and

No	Group Description	Targeted Aspect	Results
		Waste Management Behavior	business waste, such as fish waste, snacks and others 2. The average trader does not understand how to manage plastic waste
		Infrastructure	1. Traders have not utilized waste banks
4	Youth	Interest in Managing Waste	1. Youth are not yet interested in managing waste independently 2. Do not want to take the initiative in waste management
		Awareness of Waste Management Behavior	1. Youth can identify types of waste based on village community activitiesYouth understand the impact of waste on health, it can cause flooding, air pollution when burning and so on
		Infrastructure	1. There are no waste management facilities 2. Still using the same management, namely burning, letting it go, stockpiling and so on

Source: Results of FGD with the Community, 2023

If only the community was aware of increasing communal waste management with a more structured technical and managerial approach and its impact on society. The habit of managing waste from sources is a form of concern for the environment, which can be done only by separating organic and inorganic waste. The practice of using products that are good for the environment and durable enough to be used many times, which greatly supports the achievement of sustainable waste management goals and contributes to the reduction of waste generated by mobile sources.

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