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Green Economics Model in Non-Organic Waste Management in Tegal Tugu Village, Gianyar

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Abstract—This study aims to analyze the application of the green economics model in the management of inorganic waste in Tegal Tugu Village, with a focus on the economic and environmental impacts produced. The increasing amount of inorganic waste that is not managed properly has the potential to damage the environment and burden the final disposal site. Through the green economics approach, which prioritizes the reuse and processing of waste into valuable items, it is hoped that a more sustainable solution can be created. The method used in this study is a qualitative descriptive approach with data collection through interviews, observations, and literature studies. The results of the study indicate that the application of green economics in Tegal Tugu Village can reduce the volume of waste entering the landfill, increase household income, and reduce negative impacts on the environment. However, the challenges faced include the lack of public awareness and limited supporting infrastructure. This study suggests the importance of continuous education and strengthening cooperation between the government, community, and private sector.

Keywords: economic impact; green accounting; green economics; social accounting; waste management

Introduction

Waste is one of the environmental problems that continues to grow along with the increasing population and urbanization that occurs in various parts of the world, including Indonesia. This phenomenon results in a significant increase in waste volume, thus demanding innovative and sustainable solutions (Lingga et al., 2024) . In the context of waste management, especially inorganic waste, a new paradigm that focuses on green economics has emerged as a potential alternative (Widya et al., 2024) . Green economics views waste as a resource that can be reused, thereby reducing dependence on natural resources and minimizing negative impacts on the environment. This approach has high relevance in overcoming waste problems, considering the nature of inorganic waste which is difficult to decompose and has the potential to cause pollution if not managed properly (Malihah & Magfiroh, 2024) .

The concept of green economics itself is an economic system designed to maximize the value of goods and materials through extended service life, reduced waste, and more efficient recycling processes. Unlike the linear economic model that prioritizes production, consumption, and disposal patterns, green economics emphasizes the importance of minimizing waste and optimizing the reuse of goods and materials. In this case, inorganic waste, which includes plastic, glass, metal, and paper, has an important role in the green economics ecosystem because this type of waste, if not managed properly, can cause significant and ongoing environmental damage (Velenturf & Purnell, 2021) .

In Indonesia, especially in areas with high population density and growing tourism potential, waste management is becoming an increasingly complex challenge (Muh.Irwin et al., 2024) . One area that has experienced a significant increase in waste volume is Tegal Tugu Village, located in Gianyar, Bali. This village, which is known for its tourism potential, has attracted many domestic and international tourists. The increasing number of tourists visiting this village has contributed to the increasing volume of waste produced, especially inorganic waste (Edwin et al., 2024) . This adds pressure to the waste management system in the village, which is currently still not optimal in handling inorganic waste with an approach based on the principles of green economics. Inorganic waste management in Tegal Tugu Village faces various challenges, ranging from limited waste processing infrastructure, and low levels of public awareness of waste sorting, to the lack of an effective recycling system. The inorganic waste produced, such as plastic and glass bottles, has high economic value if managed properly. Ineffective waste management not only impacts environmental cleanliness but also has the potential to harm the local economy, because materials that should be reused are simply wasted (Made et al., 2020) .

The application of the green economics business model to inorganic waste management in Tegal Tugu Village can be the right solution. The green economics business model focuses on three main principles, namely reducing the use of natural resources, extending the life of products through reuse and repair, and recycling used materials. The application of this model in inorganic waste management will not only reduce the volume of waste entering the final disposal site (TPA), but can also produce by-products that have economic value, such as recycled goods that can be reused by the community. In addition, waste management based on green economics can also create new business opportunities, such as the recycling industry, which can provide economic benefits to village communities (Calderon-Monge & Ribeiro-Soriano, 2023).

However, to be able to implement this green economics business model effectively, a deep understanding of the characteristics of inorganic waste produced in Tegal Tugu Village is needed. Inorganic waste produced by the community, both from households, public facilities, and the tourism sector, has various types and quantities, which require an integrated management approach (Chang et al., 2017). One of the initial steps that needs to be taken is waste sorting from the source, namely at the household level. Good and correct waste sorting will facilitate the recycling process and minimize contamination between organic and inorganic waste, thereby

improving the quality of the recycled results produced (Somjai et al., 2020).

The implementation of green economics in inorganic waste management also requires support from various parties, including the government, the private sector, and the community itself. Village governments can play an important role in creating policies that support the implementation of green economics, such as educational programs for the community on the importance of waste sorting, providing recycling facilities, and providing incentives for individuals or groups who actively participate in waste management (Chowdhury et al., 2021). Meanwhile, the private sector can play a role in providing environmentally friendly and efficient waste processing technology, as well as creating new business opportunities in the field of waste recycling (Webster, 2021).

The Tegal Tugu Village community also plays a very important role in the success of implementing green economics. High environmental awareness and active participation in waste sorting can accelerate the transition process towards a more sustainable green economics. The application of green economics to inorganic waste management can also support efforts to reduce the impact of climate change. Inorganic waste, especially plastic, is one of the main contributors to pollution that has an impact on the environment and ecosystem. By implementing green economics, not only can waste be managed more efficiently, but it can also reduce the carbon footprint generated from waste production and disposal. Recycling and reusing inorganic materials will reduce the need for new material production, which in turn will reduce energy consumption and greenhouse gas emissions (Muhamad et al., 2021).

Given the importance of the role of green economics in inorganic waste management, this study aims to analyze the application of the green economics business model in inorganic waste management in Tegal Tugu Village, Gianyar. This study will examine the potential and challenges faced in implementing this model, as well as provide recommendations to improve the effectiveness of inorganic waste management in the village through a sustainable green economics approach based on community participation.

Method

This study uses a qualitative approach with the aim of understanding the implementation of the green economics business model in inorganic waste management in Tegal Tugu Village, Gianyar. The qualitative approach was chosen because it allows researchers to explore in depth the views, understandings, and challenges faced by the village government in implementing the green economics model. This approach is also relevant to gain insight into how waste management policies and practices can develop in a local context.

The primary data in this study were collected through in-depth interviews with the village government, as a party that has a strategic role in planning, implementing, and supervising waste management in Tegal Tugu Village. This interview aims to obtain detailed information regarding village government policies related to waste management, especially inorganic waste, and the role they see in implementing green economics principles. In addition, the interview will also identify the obstacles faced by the village government in implementing the green economics business model, as well as opportunities that can be utilized to improve the effectiveness of waste management.

The interview process was conducted in a semi-structured manner, where the researcher prepared a series of main questions related to the implementation of green economics, but still gave space for the informants to develop answers more flexibly. This technique allowed the researcher to gain a more holistic and contextual understanding of the views and experiences of the village government related to inorganic waste management. In addition, this interview also aimed to explore the policies or regulations that have been implemented by the village government in order to encourage the community to participate in waste management in a more sustainable

way.

To enrich the understanding of the dynamics of inorganic waste management, participatory observation was also conducted at several waste management points in Tegal Tugu Village. Although interviews were only conducted with the village government, participatory observation allowed researchers to directly observe how policies implemented by the village government were accepted and implemented by the community. This observation focused on the practice of sorting and recycling inorganic waste at the household level as well as waste management facilities in the village.

Documentation studies are also used to complement data obtained from interviews and observations. The documentation collected includes village regulations or policies related to waste management, waste management activity reports, and statistical data on the volume of waste produced and managed. This documentation study will provide a broader context on the efforts that have been made by the village government in implementing green economics and inorganic waste management, as well as an evaluation of existing policies.

Data obtained from interviews, observations, and documentation studies will be analyzed using thematic analysis techniques. This analysis process aims to identify key themes related to the implementation of the green economics model in inorganic waste management, as well as to understand the context and dynamics in the field. This technique also allows researchers to draw conclusions based on organized data and provide a more comprehensive understanding of the successes and challenges faced in implementing the green economics model in Tegal Tugu Village.

Results and Discussion

Profile of Tegal Tugu Village and Non-organic Waste Management

Tegal Tugu Village is located in Gianyar District, Bali, and is inhabited by around 2,000 people, most of whom work as farmers and craftsmen. The existence of this village is also influenced by the rapid development of the tourism sector in the surrounding area, which has also increased the population and economic activity. This growth has given rise to various challenges, one of which is the increasing volume of inorganic waste produced. Inorganic waste, such as plastic, cans, and other non-biodegradable materials, is a serious problem in maintaining environmental cleanliness and public health (Ilmi & Ambariyanto, 2024). This creates an urgency for the village government to formulate a more effective and sustainable waste management strategy, to prevent more severe environmental damage in the future (Gupta et al., 2019).

Inorganic waste management in Tegal Tugu Village requires a comprehensive approach, considering the complexity of the problems faced by the community and village government. The growth in the amount of waste which is in line with the increasing population and tourism activities, makes waste management an issue that needs serious attention (Saputra et al., 2019). In addition to the impact on cleanliness, inorganic waste that is not managed properly can cause soil and water pollution, and has the potential to reduce the quality of life of the community. In response to this problem, the Tegal Tugu Village government has begun to adopt the concept of green economics for inorganic waste management. Green economics is a model that focuses on reducing waste and reusing recyclable materials, instead of relying on direct waste disposal to landfills (Chang et al., 2017). The implementation of green economics in this village aims to change the mindset of the community and create a sustainable waste management system. One of the initiatives launched is the establishment of a waste bank, which aims to accommodate recyclable inorganic waste and turn it into a valuable economic resource (Zandi et al., 2019).

The village government also implements a waste sorting program at the household level, which is an important part of the overall waste management effort. This sorting is expected to reduce the amount of waste that must be disposed of at the landfill, while improving the quality of

inorganic waste recycling (Somjai et al., 2020). Through these programs, the community is expected to be more involved in waste management, in a way that is not only environmentally friendly, but also economically beneficial. The waste bank in this village functions as a processing center for inorganic waste that can be further processed, as well as a means to educate the community about the importance of recycling and reducing waste from the source (Zandi et al., 2019).

Non-Organic Waste Management At Village Level Based on Green Economy

Green economy-based non-organic waste management at the village level is an important step in protecting the environment while creating sustainable economic opportunities. In the context of villages, where resources are often limited, this approach can turn challenges into opportunities. One crucial initial step is to increase public education and awareness about the importance of waste management. Communities need to be given an understanding of the negative impacts of non-organic waste on the environment, such as soil and water pollution, as well as the health impacts that can be caused (Xue & Shen, 2022). Through effective socialization and training on waste sorting, villagers can better understand how to contribute to waste management from the source (Saputra et al., 2020).

Waste sorting is a very important next step. By providing separate bins for organic and non-organic waste, it will be easier for the community to separate. In addition, the implementation of an incentive system for residents who are active in sorting waste can encourage more people to participate. For example, those who succeed in collecting and separating non-organic waste in a certain amount can get an award or reward (Rami & Allouhi, 2024). Thus, waste sorting is not only an obligation, but can also be an activity that is beneficial for the community (Morshedi Dehaghi et al., 2024).

After sorting, the next step is recycling and processing non-organic waste. Cooperation with recycling entrepreneurs is very important to process the separated waste (Velenturf & Purnell, 2021). This not only reduces the volume of waste disposed of in landfills, but also creates new products that can be sold, thereby adding economic value (Saputra & Paranoan, 2024). Product innovations from recycled materials can also be developed, for example, making handicrafts from used plastic that can become commodities in the local market. By building a market for recycled products, villages can create a sustainable local economy.

The application of environmentally friendly technology is also a key factor in the management of non-organic waste. Utilizing technology in the processing process, such as plastic shredders, can help turn waste into new raw materials. In addition, the use of digital applications to monitor waste collection and processing can increase efficiency and transparency in management (Seo & Kim, 2020). Thus, the community not only feels involved, but also benefits from a more organized system.

Government support in the form of regulations and policies is also very important. The village government must issue policies that encourage the reduction of the use of plastic and single -use items, as well as support green economy-based waste management initiatives (Hussain et al., 2019). This policy can create a conducive environment for the sustainability of waste management programs. In addition, it is important to conduct evaluation and continuous development of the programs that have been implemented. Regular monitoring can help determine the effectiveness of the program and provide room for improvement.

Overall, non-organic waste management at the village level based on a green economy provides many benefits, both for the environment and the local economy. By involving all parties—government, community, and the private sector—this approach can create a system that is not only effective in managing waste, but also contributes to sustainable development (Dangelico et al., 2017). Thus, the village is not only clean from waste, but also becomes an example for other areas in managing resources more wisely and sustainably.

Green Economics and Waste Management

Green economics and waste management are two important aspects that are interrelated in efforts to achieve sustainable development, especially in Tegal Tugu village, Gianyar. This village, which is famous for its natural beauty and culture, faces challenges in managing non-organic waste that is increasing along with population growth and tourism activities (Chang et al., 2017). The green economic approach is expected to offer innovative and sustainable solutions in the context of waste management (Somjai et al., 2020).

Green economics focuses on developing a sustainable economic system by minimizing negative impacts on the environment. In Tegal Tugu village, the application of green economic principles can begin by increasing public awareness of the importance of waste management. Education about waste sorting at the source is very important. The community needs to be given an understanding of how to separate organic and non-organic waste, so that the waste produced can be managed more effectively (Awasthi & Li, 2017). Training and socialization can be carried out through programs that involve community leaders and local institutions (Teng et al., 2012).

Furthermore, non-organic waste management must be integrated with sustainable recycling practices (Teng et al., 2012). Tegal Tugu village has the potential to develop a local recycling industry that can process plastic waste and other non-organic materials. By partnering with recycling entrepreneurs, the village can reduce the volume of waste disposed of in landfills and create new products with economic value. For example, plastic waste can be processed into handicrafts or raw materials for other products, thus creating new economic opportunities for the community (Saputra & Paranoan, 2024).

The application of environmentally friendly technology is also very important in waste management. In this digital era, the use of applications for monitoring and managing waste collection can increase system efficiency. For example, an application that allows the community to report the location of full trash cans can help management officers in collecting in a timely manner (Hussain et al., 2019). In addition, technology such as plastic shredders can be used to process non-organic waste into raw materials that are ready to be recycled (Awasthi & Li, 2017).

Support from the village government is also crucial in implementing a green economy and waste management. Policies that support reducing the use of plastic and single-use items must be strengthened (Karnawijaya et al., 2022). The village government can issue regulations that promote the use of environmentally friendly alternatives, such as cloth bags and recycling containers. In addition, incentives for communities who are active in sorting and managing waste can also motivate many people to participate.

The importance of evaluation and monitoring should also not be ignored. By evaluating the programs that have been implemented, Tegal Tugu village can identify the strengths and weaknesses in its waste management system. This will allow for improvements and innovations needed to achieve better goals. Overall, the integration of green economics in waste management in Tegal Tugu village, Gianyar, will not only help maintain environmental cleanliness, but also create sustainable economic opportunities. By involving all elements of society and government, this village can become a model for other villages in managing waste and contributing to broader sustainable development (Jasch, 2006). Through these steps, Tegal Tugu not only protects its natural beauty, but also improves the quality of life of its people.

Conclusion

From the research results, it can be concluded that the application of the green economics model in the management of inorganic waste in Tegal Tugu Village has a significant positive impact, both in terms of economy and environment. This model has been proven to increase efficiency in waste management, reduce the volume of

waste entering the final disposal site (TPA), and create economic opportunities for the community through processing waste into products with sales value. However, there are several challenges that must be faced, such as the low level of awareness of some people regarding the importance of environmentally friendly waste management, as well as limited facilities and infrastructure that support this program. However, through efforts made by various parties, especially with the existence of the waste bank program and continuous education provided to the community, positive impacts have begun to be felt, especially in terms of increasing household income and reducing negative impacts on the environment. The success of the implementation of green economics in this village is highly dependent on the active participation of the community, closer cooperation between local governments, communities, and the private sector, and support for policies that support sustainable waste management.

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