

Implementation of Green Economy in Household Environment in Tegal Sari Hamlet, Pademawu, Pamekasan Post-Pandemic

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Abstract. The application of the green economy during the covid-19 pandemic has become a problem in efforts to reduce household waste. Indonesia is currently ranked second as the largest waste producer in the world, one rank below China. The implementation of Community Activity Restrictions (PPKM) in Tegal Sari Village and other Pamekasan city areas has resulted in limited community activities outside the home, many workers being laid off making the community's economy decline, but economic needs are increasing. This can cause food packaging plastic waste produced from households to increase every day. Garbage will accumulate continuously and can even make the environment a hotbed of disease if not managed properly. The creative idea of handicrafts aims to help reduce the level of household waste by sorting waste using 3R (Rescue, Reduce, Recycle). The method used in this study is a qualitative method by interviewing resource persons who have ideas for creating items that are suitable for use from household waste. The method used in this study is the Participatory Action Research (PAR) method with a qualitative approach by interviewing resource persons who have ideas to create suitable items for use from household waste. The result of post-covid-19 pandemic service is that the community can distribute inorganic waste into goods of economic value by restoring the role of the green economy so that solutions from waste can be overcome.

Keywords: Green Economy, Covid-19 Pandemic, Handicrafts.

1 Introduction

One of the issues in the city of Pamekasan, Madura, particularly in Tegal Sari Village, is household waste. Since March 2022, following the official end of the COVID-19 pandemic in Indonesia, the pandemic has significantly affected the local economy. Many people have lost their jobs due to the pandemic, leading to increased limitations in their daily activities. Furthermore, Indonesia currently ranks second as the largest producer of waste globally, just below China [1]. The implementation of the Large-Scale Social Restrictions (during pandemic) in Tegal Sari Village and its surrounding areas in the city of Pamekasan, along with the Enforcement of Community Activity Restrictions (PPKM), has limited the community of Tegal Sari Village in their outdoor activities. As a result, household waste production can increase every day[2].

During the PPKM period, all activities shifted online, including the fulfillment of daily basic needs, such as ordering food online[3]. Food vendors often use materials that are difficult to decompose in the soil, such as plastic. Households contribute 42.23% to the national total waste of 21.88 million tons in 2021[4]. Meanwhile, as reported in [5], waste has increased by approximately 30% during the COVID-19 pandemic, and the numbers continue to rise. The current environmental issues exist in various places, involving environmental pollution such as soil, air, and water pollution. All of these are consequences of human activities[6]. Especially now, with the rapid spread of the virus, it is crucial for society to have a high awareness in adopting a clean and healthy lifestyle[7]. Environmental cleanliness indirectly becomes one of the ways to mitigate the spread of COVID-19. This is further emphasized by Nurmah Mudah, stating that clean and healthy living behaviors are practiced based

on awareness resulting from learning, enabling individuals, families, groups, or communities to help themselves in the health field and actively contribute to realizing public health[8].

If the waste is disposed of into water, it will impact marine life and cause environmental pollution. Meanwhile, landfilling requires a long time to decompose, impacting damaged soil surface structures and emitting unpleasant odors [9]. Burning waste only results in clumps and air pollution, and it still takes a considerable amount of time to decompose. Consequently, the impact of such waste contributes to global warming.

According to the Indonesian Law No. 18 of 2008 concerning Waste Management, waste is defined as the residue of human daily activities or natural processes in solid form. The Indonesian Dictionary defines waste as items or objects discarded because they are no longer needed[10]. Waste can be categorized into several types based on its characteristics [11], namely: Inorganic Waste: Non-biodegradable waste that cannot be fully decomposed through biological processes, either aerobically or anaerobically. Some types of this waste can be processed and reused due to their economic value, such as plastic, recycled paper, scraps of fabric, and styrofoam. Organic Waste: Biodegradable waste that can be completely decomposed through biological processes, either aerobically or anaerobically. This includes kitchen waste, agricultural residues, and others. Waste will continue to accumulate continuously if not managed properly. Moreover, accumulated waste can become dense and scattered over time, leading to an untidy and dirty environment[12]. During the rainy season, waste can cause flooding, and during the dry season, it becomes prone to fires. Therefore, household waste is processed by sorting it using the 3R principles (Rescue, Reduce, Recycle).

Iswanto, in his research, suggests that community-based waste management, also known as independent waste management, involves planned, implemented, developed, and sustained waste handling by a community group, such as a neighborhood or village[13]. Meanwhile, Suwerda emphasizes in his research that independent and productive waste management involves community participation in collectively managing waste[14]. This system underscores the community's autonomy in managing the waste they generate, reducing dependence on the government.

This study highlights that communities, as a system, can develop and distribute knowledge, creativity, and ideas in waste management. Inorganic waste such as plastic packaging, plastic bottles, and others can be transformed into valuable items with monetary worth when sold[15]. This article encourages the transformation of waste into valuable items, utilizing inorganic waste like milk powder packaging to create shoulder bags while adhering to health protocols.

2 Method

This research was conducted at Nur Faizah's house using an experimental qualitative method and interviewing informants. Experimental research is a type of research conducted through experiments aimed at understanding the effects of experiments on observed individual behaviors [16]. The experiments may involve specific actions or situations given to individuals or groups, and their effects can be observed afterward[17].

The objective of this research is to provide solutions and references for proper waste management without causing pollution and adverse impacts on economic development[18]. The research focuses on the implementation of green economy during the COVID-19 pandemic. The study's place element is Nur Faizah's house in Tegal Sari Village, the actor element is Nur Faizah, and the activity element involves collecting plastic packaging waste from door to door in the neighborhood.

The methodology employed in this community service program is the Participatory Action Research (PAR) method. Referring to the Community Service Methodology by [19]published by the Directorate General of Research and Development, Ministry of Religious Affairs of the Republic of Indonesia, the Participatory Action Research (PAR)-based Community Service Methodology consists of several stages, as follows:

a. Identification/Assesment

The most crucial stage in the program cycle is the identification/assessment stage because the continuity to the next stages depends on the results of identification and assessment at the beginning. This stage needs to be well-managed and thorough, although it may sometimes require specific expertise. The initial project process involves identification, preparation, analysis, and assessment. Identifying ongoing programs is an adaptive development to find what works best at each stage. Specific tasks in the early stages include:

1. Providing social, economic, technological, institutional, and other assessments as the initial stage to identify issues on a participatory scale, involving impacted parties and stakeholders to identify needs, potential, opportunities, and challenges.
2. Conducting Stakeholder Analysis to determine the interests, influences, and involvement of stakeholders that can impact program operations.
3. Performing Comparative Advantage Analysis to see how a program compares to others for accessibility and marketing, especially for target groups in government and village areas to avoid program overlap.
4. Conducting Assessment. The next stage is to examine all data and conduct an in-depth assessment to obtain a comprehensive formulation.

5. Organizing workshops with stakeholders to review and validate the results of the Identification Stage, especially those related to requirements and concerns. These workshops should generate issues and solutions that are feasible. Tahap
- b. Program Planning/Design
This stage involves the creation of an activity plan. Therefore, planning is something that has not been done yet. Participatory planning begins with a rural assessment and concludes with the implementation of the plan. Participatory planning must go through a continuous procedural stage in community empowerment.
- c. Program Design Stage
The results from the identification stage workshop are formulated into a proposal and a logical framework design. Preparations for stakeholder workshops include:
 1. Recycling Management Workshop with stakeholders to determine Objectives, Targets, Outputs, Activities, Goal Indicators, and critical assumptions. Additionally, input must be considered to generate the desired outcomes.
 2. Identifying Implementers. This activity requires identifying implementers with the knowledge, technical and administrative skills, and a commitment to engaging in participatory actions, not merely seeking individuals for distribution purposes.
 3. Delegation. Clear and firm program manager tasks based on knowledge (who, what, and when it must be completed, how to do it, and how much input is needed).
 4. Planning Work Based on "Program Outputs" and "Success Indicators" as well as "Strategies" for implementation, a work plan must be created.
- d. Implementation/Monitoring Stage
The implementation and monitoring phases are inseparable as they run concurrently to achieve the set goals. The monitoring function aims to assess whether the actions align with these objectives. The program's focus emphasizes procedures to achieve the desired outcomes from the provided inputs[20]. Evaluation is continuous because monitoring and evaluating the project will take place simultaneously with its implementation, while assessments occur at intervals.
To achieve the goals, several essential tasks must be completed during implementation, as follows:
 1. Communicating the Program. Activities must be communicated to the audience and relevant stakeholders. The community, both participating and non-participating, is the target audience that needs to understand the program. They can also participate in these community-based initiatives. Communicate with local leaders and institutions to avoid future problems in activity implementation. Territorial programs may require permits or notifications to relevant parties.
 2. Social Preparation.
 - a) Social preparation is carried out after identification or evaluation at the program site. Meetings are held to achieve consensus. This stage is crucial for communicating goals, activities, funding, and roles.
 - b) Based on problem and potential identification, social preparation is ongoing and more in-depth than program socialization.
 - c) Developing a Work Plan with the community to achieve goals, identify who will work on it, and how it will be technically executed.
 3. Training provided by program implementers is necessary because participatory methods require a community with the competence and willingness to learn the dynamics and changes occurring during program implementation.
 4. Visiting Program Locations. Visiting the program site is crucial to discuss progress, difficulties, alternative solutions, and assistance from others with the community.
 5. Conducting regular face-to-face meetings with the community to enable and provide assistance in addressing issues and monitoring management.
- e. Evaluation Stage: Periodic Evaluation
Periodic assessments, conducted every three or six months, measure progress and performance against indicators[21]. The evaluation assesses program success, issues, and financial usage. The target group, namely the community, is assessed first, and then other stakeholders are included. This way, the program's effects will be known for further action.

3 Result and Discussion

3.1 Waste Becomes the Primary Issue in Tegalsari Village

The main problem in Tegalsari hamlet is plastic waste. Post-pandemic like the current situation has led to an increase in the volume of plastic waste in the landfill. The more waste there is, the greater the proliferation of viruses and bacteria that cause diseases. Additionally, pollution and environmental damage are also caused by

human activities, such as air pollution, water pollution, soil pollution, and deforestation. All of these are inseparable from human activities and ultimately harm humanity itself.

So far, community involvement in reducing the use of plastic waste is still very minimal. Most people dispose of waste by burning it. If plastic burning is incomplete, it can form dioxins, compounds that can trigger cancer, hepatitis, liver swelling, and nervous system disorders. According to some people, an alternative way to handle waste is by burning it. However, this is equally dangerous as landfilling waste[22]. As mentioned in Law Number 18 of 2008 Article 29 concerning the prohibition of mixing waste causing pollution and environmental damage, disposing of waste inappropriately, handling waste by open dumping at the final processing site, and burning waste that does not meet the technical requirements for waste treatment are all prohibited. The following graph shows that inorganic waste has increased post-COVID-19 pandemic.

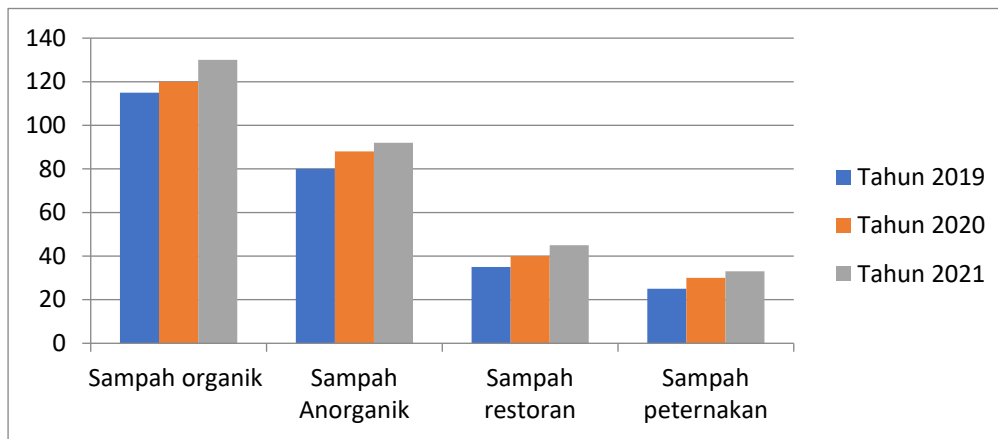


Figure 1. Increased Waste Volume Post-COVID-19 Pandemic (Kilograms per Month)

Figure 1 depicts the increasing volume of inorganic waste post-COVID-19. It is observed that in 2019 and 2020, the amount of inorganic waste rose to 8 kilograms, and in 2021, it increased again to 6 kilograms. In this study, the informant also shared insights on distinguishing between organic and inorganic waste, as well as methods for transforming waste into useful items[23]. This ensures that the community does not dispose of waste indiscriminately without first sorting and selecting it. This became evident when neighbors enthusiastically engaged in learning to craft shoulder bags from waste, turning it into a useful and economically valuable product.



Figure 2. Shoulder Bag Made from Household Waste
 (Source: Researcher's Document)

3.2 Implementation of Community Service Activities in the PAR Method

The implementation of this activity was conducted face-to-face between the author and one of the neighbors who successfully implemented green economy practices in their home during the pandemic while adhering to health protocols. In household waste processing with the application of the 3R concept—Reduce (limiting excessive use of plastic bottles by switching to reused ones), Reuse (utilizing reusable items such as glass bottles),

and Recycle (transforming household waste into useful and valuable items)—the focus was on recycling plastic waste into wearable and economically valuable shoulder bags[24].

The tools and materials needed for recycling plastic packaging waste into shoulder bags include: a) milk powder plastic packaging, b) cloth rags, c) sewing thread, d) macramé cord, e) unused bag clips, f) scissors, g) zipper (optional), h) ruler. The following are the steps involved in the creation process:

- a. Preparing Tools and Materials
- b. Collecting milk powder packaging, then clean and wipe the packaging using a cloth and let it dry.
- c. Cutting the milk powder packaging into two parts. Next, create folds of about 3 cm at the top and bottom of the packaging. Cut the folds to get small plastic sheets. You can make 500 folds from 50 packaging pieces.
- d. Weaving the cut plastic pieces into a shape resembling a propeller. The weaving end should be vertically shaped to facilitate the joining process. Continue the weaving process until you have enough weaves.
- e. Connecting the neatly woven plastic weaves to each other. Slide the weave onto the vertical part of another weave. Repeat this process continuously until the weave forms a circular shape like a bag.
- f. Creating the bag strap using macramé cord, then attach the bag to it using a bag hook or by sewing. Ensure the stitches are neat to prevent them from coming loose.

According to Nur Faizah, who served as an informant in this research, the post-pandemic period prevented her from engaging in outdoor activities, leading to boredom at home[25]. The idea of making a shoulder bag emerged because her family members and neighbors consumed powdered milk daily. She thought that instead of letting the daily waste of milk packaging accumulate in the landfill, especially since it was made of non-biodegradable plastic, causing environmental untidiness and unpleasant odors in the surroundings. So, she started contemplating and searching for ways to utilize the plastic waste. Eventually, after finding the idea of making a shoulder bag, she began collecting milk packaging every day. Approximately every two days, she had accumulated enough milk powder packaging, which she then cleaned. Nur Faizah even frequently asked her neighbors for their used milk packaging, which they no longer needed, to bring home without disposing of it in the landfill.

Some outcomes from the workshop have captured the attention of the youth in Tegalsari village, inspiring them to promote green economy initiatives to generate additional income from inorganic waste. This is evident in the workshop images showcasing the results of the community service aimed at implementing green economy practices[26]



Figure 3. Workshop Conducted to Drive Green Economy

The informant also mentioned that it took her about 4 days to create the bag. Initially, she learned the technique through YouTube social media and started practicing it [11]. Once the shoulder bag was finished, Nur Faizah wore her creation outside, proudly stating that the bag was made from collected milk powder packaging. This way, neighbors could learn and be inspired to start recycling challenging-to-decompose waste. This message was later conveyed through workshops and sessions in Tegalsari village, attended by village officials and residents, aiming to reduce the amount of inorganic waste generated daily[27].

4 Conclusion

From the activities and discussions above, it can be concluded that the creative idea of applying green economy principles, such as making shoulder bags from waste milk powder packaging, presents a new alternative for the

residents of Tegal Sari Hamlet in their efforts to reduce household waste post-COVID-19 pandemic. If left unaddressed, this waste could become a breeding ground for diseases.

The workshop results, conducted regularly in Tegalsari village, showcasing the creation of shoulder bags, can be integrated into daily routines. The application of the Recycle concept, transforming household waste into useful and valuable items, is evident in this activity by recycling plastic waste into wearable and economically valuable shoulder bags.

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