



Circular Economy Education Through Food Preparation as an Effort to Reduce Food Waste and Strengthen the Family Economy

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Abstract

Circular economy literacy efforts are important considering that the waste awareness index in Indonesia is still worrying. If we look at the data from the National Waste Management Information System (SIPSN), food waste dominates the composition of waste based on waste type, namely 40.2 percent. When looking at the source, it is known that households are the largest source of waste (38.3 percent). Considering these data and facts, preventive efforts need to be carried out at the household level, especially regarding food waste. This activity aims to provide education for mothers regarding the circular economy and food waste behavior to minimize food waste, especially in its preparation or better known as food preparation. It is also believed that this effort will have a positive impact on the family's economy. This activity is carried out through the outreach method, and is also accompanied by a pre-test and post-test as a form of evaluation. The locus of the activity will be carried out in Batuan Village, Sukawati District, Gianyar Regency, targeting the local village PKK (family welfare empowerment) team. The aim is that information and activity materials can be distributed and implemented widely. After comparing the results of the pre-test and post-test, it was discovered that there had been an increase in service participants' understanding of the circular economy and food preparation. It is certainly important to continue this activity, one of which is through assistance in preparing circular economy programs through the PKK.

Keywords: Circular economics, family economics, family welfare empowerment team, food preparation.

1. Introduction

Indonesia has adopted the circular economy concept in formulating various policies to realize sustainable development (Kusumawardani et al., 2023). The circular economy is often identified with the 3R concept (Reduce, Reuse, Recycle) with optimal production levels in utilizing natural resources by minimizing natural exploitation, minimizing environmental pollution, reducing emissions and waste levels by implementing sustainable concepts (Strielkowski, 2016).

Circular economy literacy efforts are important considering that the waste awareness index in Indonesia is still worrying. Figure 1 shows the distribution of the awareness index for waste in Indonesia. If the index number is greater, it means that you are less concerned about waste, and the waste awareness index in regions in Indonesia is in the range of 0.41 to 0.55.



Figure 1: The stages in confounding community service program
 Source: Statistics of Indonesia, 2018 in forestdigest.com

In implementing a circular economy, the type of waste that has been the focus is plastic waste, especially polymers (single-use plastic). Even though a circular economy can include food waste, natural yarn, wood products and biopolymers which will create 'biological nutrients' (compost) (Fontanella, 2024).

Data from the National Waste Management Information System (SIPSN), food waste dominates the composition of waste based on waste type, namely 40.2 percent, followed by plastic waste at 18.1 percent (Figure 2).

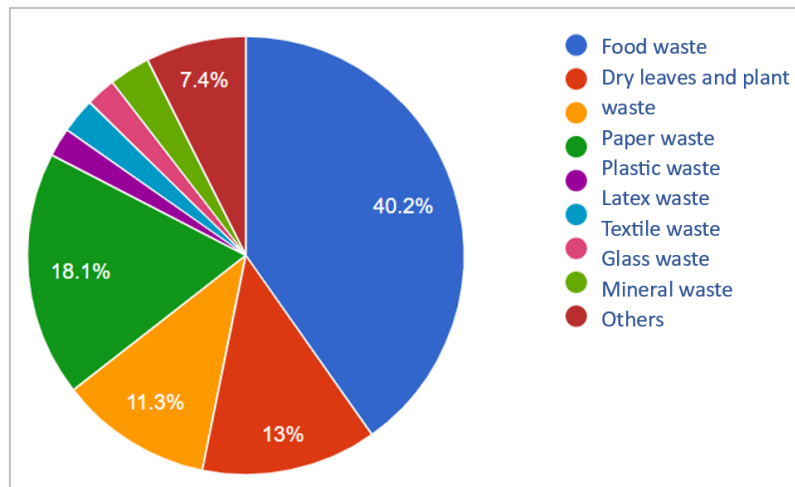


Figure 2: Waste composition based on waste type, Year 2022
 Source: sipsn.menlhk.go.id (2023)

Apart from that, if we look at the source, it is known that households are the largest source of waste (38.3 percent), followed by traditional markets and business centers, at 27.6 percent and 14.5 percent respectively (Figure 3).

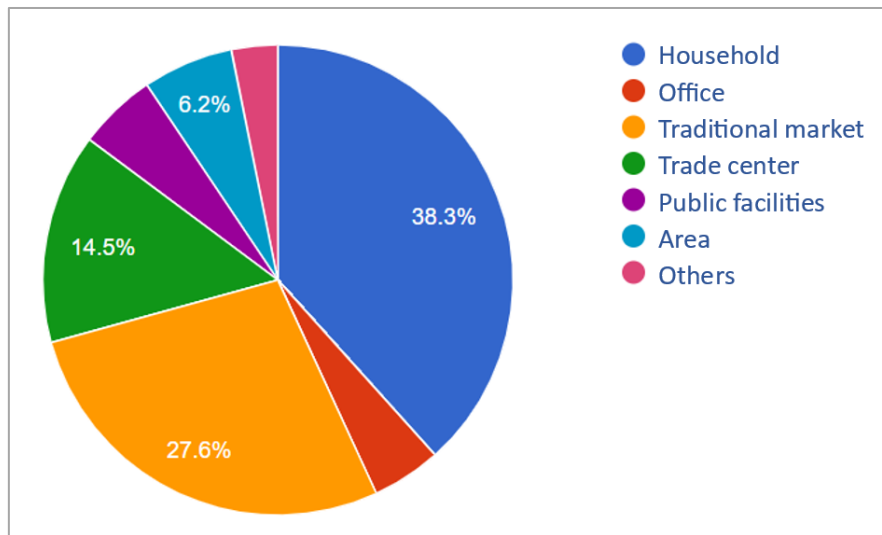


Figure 3: Waste composition based on waste source, Year 2022
Source: sipsn.menlhk.go.id (2023)

Specifically in Bali Province, the waste problem reached its peak around October 2023 with the burning of three main Final Processing Sites (TPA) in the Sarbagita area due to the accumulation of waste (detik.com). So, efforts to control the amount of unprocessed waste can start from the household level using a circular economy approach. Of course, this concept is not only in waste or waste processing (Latif, 2023), but is pursued in preventive steps to prevent negative externalities by providing knowledge, assistance and outreach related to the concept of reducing, reusing and recycling (Suryawan, 2024).

Considering these data and facts, preventive efforts need to be carried out at the household level, especially regarding food waste. As we know, woman have an important role in providing/purchasing, storing and processing daily food ingredients. It is not uncommon for woman to be less careful in calculating their grocery shopping so that the dominant food ingredients are perishable goods (wet ingredients) and end up being wasted. So it is necessary to educate mothers regarding food waste behavior (Chaerul & Zatadini, 2020) to minimize food waste, especially in its preparation or better known as food preparation. It is also believed that this effort will have a positive impact on the family's economy (Khusniyah et al., 2022).

The locus of the activity will be carried out in Batuan Village, Sukawati District, Gianyar Regency, targeting the Family Welfare Empowerment (PKK) team. The aim is that information and activity materials can be distributed and implemented widely.

2. Method

As previously explained, in an effort to reduce waste generation (especially food waste) through preventive efforts, it is necessary to provide education to change food waste behavior. In line with this, efforts to strengthen understanding of the circular economy are also important. So this concept becomes the basis for society (especially at the household level) in consuming, from previously tending to apply a linear economy, namely the 'take-use-dispose' consumption model (Ellen Macarthur Foundation, 2015).

The solutions offered for these problems are presented in more detail in Figure 4.

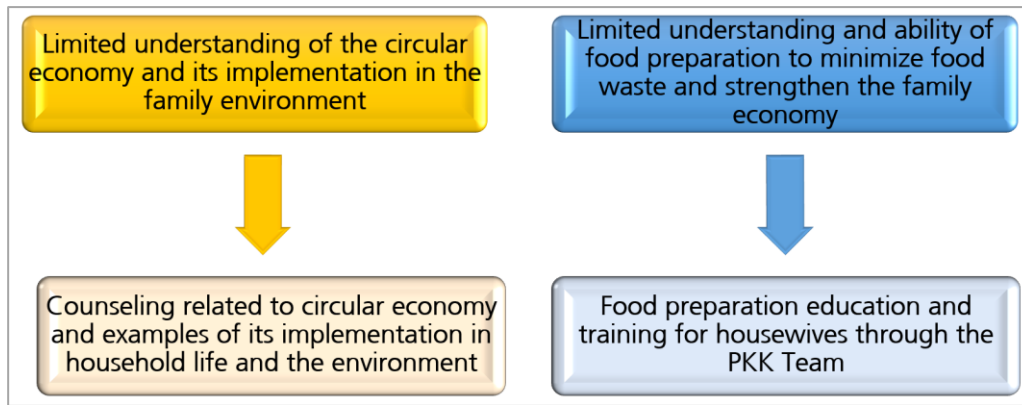


Figure 4: Problem linkage scheme and solutions

This community service implementation aims to provide education about the circular economy and food preparation as an effort to reduce food waste and at the same time strengthen the family economy.

In the educational process, the counseling method is used, where this method is considered to be in accordance with the aim of changing behavior (Suasih et al., 2023), namely food waste behavior. Counseling is defined as an effort to encourage changes in behavior in individuals, groups, communities or society so that they know, want and are able to solve the problems they face (Lahav, 2013; Kaur, 2018).

The detailed method for implementing this activity is presented in Figure 5.

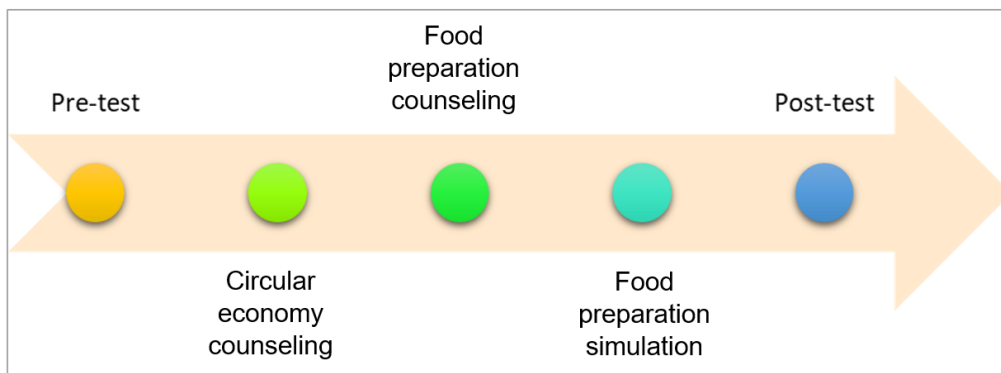


Figure 5: Method of community service activities

Figure 5 shows that in the initial stage a pre-test was carried out regarding the target participants' knowledge about the circular economy, knowing about food waste behavior and food preparation. Next, counseling is carried out regarding these two topics. Food preparation material is provided by food preparation experts. Furthermore, simulations were carried out using work papers and materials, so that participants had a more real picture. Next, at the final stage, a post-test is carried out to evaluate the results of implementing the activities.

3. Results and Discussion

3.1. Activities and Implementation

The main activities in community service are carried out through counseling about the circular economy and food preparation. The activity participants were the PKK Team of Batuan Village, Sukawati District, Gianyar Regency. The activity was carried out on May 12 2024, at the Puspa Aman location (Mandiri Asri Nyaman Natural Food Center) Batuan Village (Figure 6). The resource person regarding the circular economy topic is the service implementation team from the Faculty of Economics and Business, Udayana University. Meanwhile, the resource person for the food preparation topic was Ni Luh Reni Martini, S.E. who is the author of the book "What are you cooking tomorrow? Weekly Shopping Savings Guide, Food Preparation Tips, and Simple Everyday Recipe Inspiration".



Figure 6: Implementation of Circular Economy and Food Preparation for PKK Team of Batuan Village

Material related to circular economy topics includes the meaning, benefits and principles of circular economy. Apart from that, it also explains how to transition towards a circular economy, namely by reducing consumption, better consumption methods, and creating systemic change. Meanwhile, regarding food preparation, some of the material provided includes understanding, benefits, general guidance, and tips for carrying out food preparation. In addition, the resource person provided material with clear and structured illustrations in preparing a weekly cooking menu plan. Where this plan will serve as guidance in shopping for groceries and the food preparation process. Through careful planning and storage of food, it is hoped that household expenditure for daily needs will be in accordance with the allocation, and prevent food from being wasted.

3.2. Measurement the participant understanding

To measure the success of implementing activities, a pre-test and post-test were carried out regarding the topics of circular economy and food preparation. A comparison between the understanding of activity participants, before and after counseling, is presented in Figure 7.

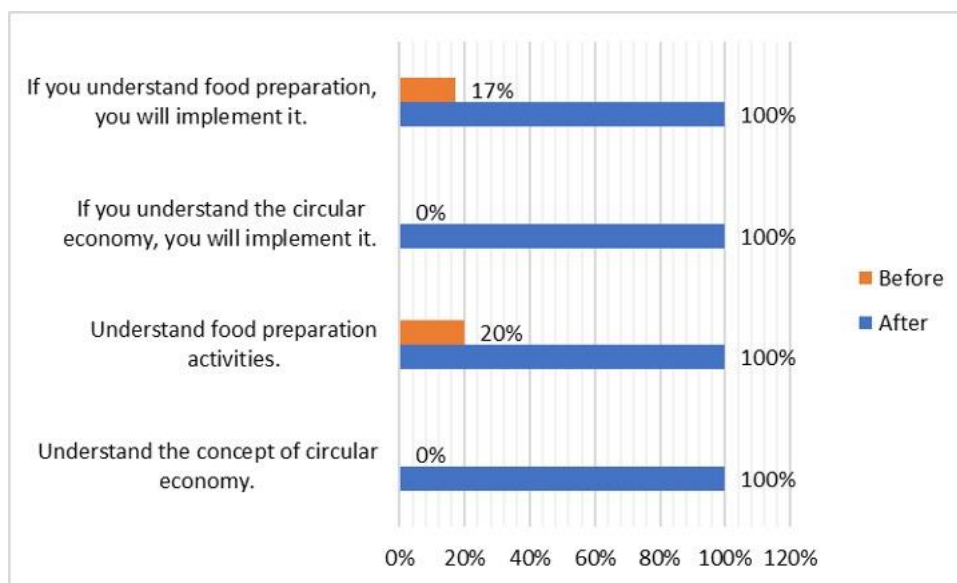


Figure 7: Pre-test and Post-test Results of Circular Economy and Food Preparation Counseling in Batuan Village, Sukawati District, Gianyar Regency

Figure 7 shows that before the outreach was carried out, participants did not know about the circular economy. There were 20 percent of participants who knew about food preparation before carrying out service activities, but only 17 percent of them did not want to implement it. If we review the understanding of the activity participants after the counseling, it is known that all participants have understood the circular economy and food preparation. Apart from that, the participants were also interested in implementing it.

As a follow-up to the implementation of the activity, it is of course hoped that the participants can implement their understanding in their respective households. Apart from that, the participants who are the PKK Team are of course expected to be able to disseminate this information to PKK members in their respective environments.

In implementing food preparation, of course food storage media is needed. Limited ownership of food storage in each home is one of the obstacles in implementing the results of activities. The implementation team has thought about these obstacles, so that all participants are given food storage, even though it is still in small quantities. Apart

from that, the implementation team also handed over a book about food preparation written by one of the resource persons to complete the village library collection and become reference material for mothers in Batuan Village.

In the future, implementing a circular economy in households in various forms of activity remains important. Bearing in mind that the impact of implementing a circular economy will be obtained in the long term to realize sustainable development. The next service activity can take the topic of sorting and recycling household waste.

4. Conclusion

Circular economy is an economic concept that uses resources efficiently and maximizes the usefulness and added value of raw materials, components and products to reduce the amount of waste materials that are not used and disposed of at the final disposal site. This circular economy education activity through food preparation was attended by the PKK team of Batuan Village, Sukawati District, Gianyar Regency. Comparing the results of the pre-test and post-test analysis, it is known that there has been an increase in the understanding of activity participants regarding the concept and implementation of a circular economy and food preparation. Activity participants also expressed interest in implementing circular economic concepts and food preparation in households because they believed it could save family expenses. It is hoped that this activity can be followed up by activity participants to be implemented in daily/household life, so that it can play a role in encouraging higher green economic growth compared to the "business as usual" scenario.

Acknowledgments

This service activity is funded by the Institute for Research and Community Service (LPPM) at Udayana University, through the 2024 Udayana Service Program (PUM) scheme, with contract number: B/256.3/UN14.4.A/PM.01.01/2024. We also would like to thank the Batuan Village Government and the PKK Team of Batuan Village who have facilitated the implementation of the activity.

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