Available online at https://journal.rescollacomm.com/index.php/ijrcs/index

International Journal of Research in Community Service

e-ISSN: 2746-3281
p-ISSN: 2746-3273

Vol. 6, No. 3, pp. 113-117, 2025

Circular Economy Socialization for the General Public Around the Citarum River Basin

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Abstract

Environmental issues are becoming increasingly concerning and endangering the life of the ecosystem on this earth. The environmental problems faced will certainly endanger human life now and for future generations. The issue of sustainability has become a very interesting study to discuss, both by academics, practitioners, relevant authorities, and even the general public, especially in developing countries. The concept of the five Rs: Reduce, Reuse, Recycle, Repair, and Recover, which has long been offered as a solution to reduce industrial waste, community waste, and family (household) waste, continues to be developed and is now the concept of the circular economy. The trending concept of the circular economy must be disseminated so that everyone realizes the importance of playing a role in realizing a circular economy for the sustainability of life in the future. This is the background to the implementation of the Student Creativity Program (PKM) with the topic of the Circular Economy for the General Public. The PKM was carried out offline and targeted the participants' understanding and interest in the circular economy. After the PKM implementation, understanding of the circular economy increased; where initially the community was not familiar with and familiar with the circular economy, after participating in the socialization showed a change in paradigm and attitudes, as well as knowledge about the circular economy.

Keywords: Environmental Problems**,** Five Rs, SDGs, Circular Economy, Sustainability

1. Introduction

Environmental issues are becoming increasingly concerning and endangering the life of the Earth's ecosystems. These include air, water, and soil pollution, loss of biodiversity, depletion of the earth's crust, and other environmental issues (Geissdoerfer et al., 2017). This problem can certainly endanger human life and future generations. The issue of sustainability is a very interesting study to discuss, both by academics, practitioners, relevant authorities, and even the general public, especially in developing countries (Bilal et al., 2020). The Five Rs of a circular economy refer to principles that help realize a more sustainable economic concept and reduce environmental impact. These principles are: Reduce, Reuse, Recycle, Repair, and Recover, offered as solutions to reduce industrial waste, community waste, and family (household) waste that continues to be developed. The concept of a circular economy is currently trending, with various interesting studies (Bilal et al., 2020; Geissdoerfer et al., 2017; Govindan, 2018; Hinaa et al., 2022; Kirchherr et al., 2017; Kirchherr & Piscicelli, 2019; Lewandowski, 2016; Munaro et al., 2020; Stahel, 2016; Velenturf & Purnell, 2021) must be disseminated so that every human being (both as social beings and economic actors) realizes the importance of playing a role in realizing a circular economy for the sustainability of life in the future.

The five Rs concept offers a solution to reduce industrial, community, and household waste. The government and relevant parties are increasingly developing programs to maintain the community's quality of life. Programs embodying the five Rs concept are expected to reduce waste, which continues to increase as the global population grows.

The concept of the five Rs has evolved and is better known by the tagline green environment or green economy, or other terms that use the word "green." Green is considered to represent or reflect the concept of environmental sustainability. The concept of the five Rs is a concept for integrating economic activities with the goal of creating sustainability. The concept of the five Rs, green economy, and green environment that we have known so far uses a linear economic approach. The increasing public participation in environmental sustainability has led to the development of a new concept offered to achieve the SDG's target of sustainability, namely the circular economy.

Experts provide definitions of the circular economy from various perspectives (Geissdoerfer et al., 2017). Viewed from an environmental perspective, it takes the issue of sustainability from resource input, waste, and emission output. Some also define the circular economy with the theme of resource scarcity, environmental impacts, and economic benefits, or resource optimization related to cleaner production, increasing the value of the technical and biological cycles of materials through circular strategies. The concept of the circular economy raises the issue of reuse, repair, remanufacturing, and recycling of products, materials, and components (Munaro et al., 2020).

Sustainability has become a strategic issue that will be achieved by the whole world in accordance with the agreement of the Heads of State and is outlined in the Sustainability Development Goals in 2030. The Sustainable Development Goals (SDGs), adopted by all member countries of the United Nations (UN) in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030 (UNDP, 2021). The 17 SDG targets must be the responsibility of all of us to realize them and to achieve them cannot be done alone or individually. The sustainability of this earth involves the cooperation of all parties, including the government, the private sector, academics, economic actors and of course the general public. The government realizes that the environmental problems currently faced must be recognized by all parties, so that realizing sustainability will be easier to achieve. The government has also issued several rules, provisions, laws and others that regulate sustainability. The realization of sustainability requires support from various parties, through various means and channels, and of course with cooperation and collaboration it will be easier to achieve the SDG targets.

The world is currently facing a situation where increasing consumption, the emergence of a new generation of consumers, urbanization and employment, and technological leaps, mean that the concept of a circular economy must be implemented immediately (McClelland, 2016). This will impact the environment and existing ecosystems if awareness of protecting and preserving the earth is very low. Maintaining the sustainability of the earth where we live so that life on earth can continue is the responsibility of all humans on this earth. Every human being must be aware of this responsibility. Unfortunately, awareness of protecting the environment through various activities is still very low, especially among people in developing countries.

Director of Waste Management at the Ministry of Environment and Forestry (KLHK) Novrizal Tahar said that 72% of Indonesian people are indifferent to the waste problem. The data is based on the 2018 Environmental Indifference Behavior Index report from the Central Statistics Agency (BPS). Public indifference causes environmental problems such as a dirty environment, which is caused by people throwing garbage carelessly which results in garbage piling up and being scattered. Air pollution caused by the use of gasoline, industrial smoke, vehicle exhaust, burning of garbage, the use of freon, is also an environmental problem. Soil pollution, water pollution, flooding and environmental problems caused by public indifference to the environment (Silmi Nurul Utami, 2021). Public indifference to environmental issues will have a major impact on human life today and for future generations. This must not happen and must not be allowed to continue without any effort to prevent it.

Experts have been working to protect the earth from degradation and environmental problems for decades, starting with the linear economy, better known as the five Rs. This has then evolved into the more recent concept of the circular economy. As its name suggests, the circular economy concept is depicted as a circle. Specifically, the life cycle of an item or product should be shortened to be as long as possible (sustainable). The circular economy concept is expected to slow down the occurrence of environmental damage and problems. Therefore, awareness is needed in every community to understand and apply the circular economy concept in everyday life.

Raising awareness of the importance of implementing the circular economy concept as an improvement on the linear economy requires literacy for all parties, including the general public. Socialization, as a form of public literacy, is expected to increase public understanding and awareness of the importance of implementing a circular economy in everyday life.

2. Methods

Environmental problems such as air pollution, soil pollution, water pollution, industrial and household waste, and various other environmental issues are phenomena that occur around people's lives. If these environmental problems are not resolved or analyzed to find solutions, they can have negative impacts and affect all aspects of human life, such as economic, social, governance, legal, and so on. These problems must be resolved by all parties, including academics and the community. Various methods and forms can be used by any party to resolve environmental problems. One method and form of resolving environmental problems, especially those that occur in the community, is the implementation method. Which done is by giving "Socialization and Education about the Circular Economy". Socialization and education are needed for the general public to know and understand the circular economy and then be able to benefit from and implement it in their daily lives. The methods or stages of activities carried out start from 1) preparing a work plan (planning) including preparation, 2) implementing activities (socialization and education), 3) observation and evaluation and 4) reflection.

The planning and preparation activities carried out were: 1) Coordinating with the administrators of the Bening Saguling Foundation, Jl.SDN Cianjur, Babakan, Cihampelas, Cihampelas District, West Bandung Regency, West Java 40562, to obtain approval and permission as well as a schedule for implementing socialization and education activities for the local community. 2) Creating and compiling socialization and education materials about the circular economy. To facilitate understanding and capture the contents of the message to be conveyed related to the material, the delivery

uses a module in the form of a photocopy. Simple modules are made with easy-to-understand language and use pictures to make them more interesting and easier to understand.

The implementation activities consisted of: 1) Warming up (warming up) first to determine the participants' understanding of the topic. Warming up by providing a questionnaire about the circular economy through a Google form given to participants by sharing an accessible link, 2) Presentation of material on the Circular Economy delivered by 2 (two) resource persons who are lecturers who are competent enough to share knowledge about the Circular Economy, 3) Questions and answers regarding the understanding and implementation of the circular economy. The observation and evaluation stages were carried out with the aim of determining the impact or change in understanding of the training participants before and after the training. Observation and evaluation were in the form of a questionnaire containing several questions. The evaluation was carried out using the help of Google Forms to facilitate the distribution of questionnaires and feedback. In general, the evaluation results showed a slight change in the level of acceptance and understanding of the material provided by the presenter. Initially, almost all participants did not know about the circular economy, but after being given the material and questions and answers, there was a slight change in knowledge and understanding received by the participants. The final stage was reflection carried out by the implementation team to determine the effectiveness of the implementation of the socialization and education and can be used as a basis for organizing further socialization, education and training.

3. Results and Discussion

All figures should be numbered with Arabic numerals (1, 2, ..., n). All photographs, schemas, graphs and diagrams are to be referred to as figures. Line drawings should be good quality scans or true electronic output. Low-quality scans are not acceptable. Figures must be embedded into the text and not supplied separately. Lettering and symbols should be clearly defined either in the caption or in a legend provided as part of the figure. Figure is center, as shown Figure 1 and cited in the manuscript.

To provide an understanding of the circular economy, outreach and education on the topic have been conducted. The author presented material on the circular economy entitled "Community Contributions to Environmental Sustainability". The material presented included:

1) The Sustainable Development Goals (SDGs), which consist of 17 targets,
2) Development of economic concepts in society,
3) Differences between linear economy and circular economy,
4) Barriers to implementing circular economy, and
5) The role and contribution of the general public to the realization of circular economy.

Community Service (PKM) activities involve outreach and education to educate the general public about and understand the circular economy, enabling them to participate and contribute to achieving the Sustainable Development Goals (SDGs). Public awareness and education about the circular economy are essential to assist the government in resolving or mitigating environmental issues. Environmental issues impact various aspects of human life, including economic, social, educational, and other aspects. Environmental issues negatively impact human life and the quality of life of the community.

Of the 17 SDG targets, as shown in Figure 1, including Eradicating Poverty, Reducing Hunger, addressing climate change, preserving ecosystems, and others, it is our shared responsibility. In this PKM implementation, the author invited the participants, most of whom were housewives, to play an active role and contribute to realizing the SDG targets in Figure 1.

Figure 1. Target 17 SDGs

The purpose of this activity is to help the community around the Bening Saguling Foundation, located on Jl. SDN Cianjur, Babakan, Cihampelas, Cihampelas District, West Bandung Regency, West Java 40562, understand and practice

the concept of a circular economy in their daily lives. The hope is that this outreach and education will prevent or slow down the occurrence of environmental problems that ultimately disrupt sustainable living.

A simple example of a circular economy that participants can understand: collecting and sorting plastic waste for recycling is a crucial step in waste management. This process involves collecting plastic waste, sorting it by type, cleaning it, and preparing it for further recycling, as shown in Figure 2.

Figure 2. The process of collecting and sorting plastic bottle waste

Plastic recycling not only reduces waste volume but also creates new jobs and business opportunities. Through this process, plastic waste can be transformed into new raw materials or other products with economic value, such as handicrafts or building materials.

With community participation and contributions towards achieving sustainable living through circular economic practices, it is hoped that environmental problems occurring in society in general can be reduced. By protecting and preserving the current environment, life for future generations will continue to exist and be preserved. Through these Community Service Program (PKM) activities, the community can actively participate in environmental movements, environmental preservation, environmental awareness, and other social movements.

This outreach and education activity was held for one day on Wednesday, June 11, 2025, using a community outreach and education method. The activity was conducted concurrently with the community's weekly routine, namely morning exercise. This approach and method were chosen to accommodate the target audience and facilitate communication between the resource person and the target community.

The results achieved by the target audience after receiving the socialization and educational materials were increased knowledge, insight, and curiosity about the circular economy concept. Furthermore, the target audience began to be motivated to contribute and play an active role in supporting the circular economy movement.

4. Conclusion

The “Socialization and Education about Circular Economy” activity at the Bening Saguling Foundation, Jl.SDN Cianjur, Babakan, Cihampelas, Cihampelas District, West Bandung Regency, West Java 40562, was well received by the participants. Most of the participants were residents of the community around the Bening Saguling Foundation, which is certainly very appropriate for gaining an understanding of the circular economy. The positive response from the participants is good news for the implementation of PKM and is expected to continue. Almost all participants in the socialization and education had never known about the circular economy, including its impact and relationship to the SDGs targets. With this activity, participants seemed to begin to understand and be aware of the importance of implementing a circular economy in their daily lives.

Overall, the PKM program went smoothly and received positive feedback from participants. Participants felt the benefits of participating and were motivated to begin applying the material presented by the speakers.

Acknowledgments

Thank you to the management of the Bening Saguling Foundation, Jl.SDN Cianjur, Babakan, Cihampelas, Cihampelas District, West Bandung Regency, West Java 40562, who have facilitated the activities, so that the implementation of PKM can be carried out smoothly.

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