

CREATIVE ECONOMY BASED ON WASTE: “CIRCULAR ECONOMY ENTREPRENEURSHIP EDUCATION FOR STUDENTS AND COMMUNITIES IN ACEH TAMIANG”

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Abstract

Low public awareness and understanding of waste management with economic value. The ever-increasing volume of household and plastic waste has not been optimally utilized, thus creating environmental problems as well as lost economic opportunities for the community. On the other hand, students and the community in Aceh Tamiang still have limited knowledge and skills in processing waste into creative products that have sales value. The concept of a circular economy that emphasizes the reuse of waste into useful products is also not widely understood and applied in everyday life. Community service was carried out in Kota Lintang Village, Hasanah Hamlet, Kota Kuala Simpang District, Aceh Tamiang Regency, which was affected by flooding through an educational and participatory approach to students and the community from May 20 to 22, 2026. After receiving educational materials on the impact of plastic waste and the concept of 3R management (Reduce, Reuse, Recycle), there was a significant increase in participants' understanding of environmental issues. Through evaluations in the form of post-tests and discussion sessions, it was found that around 70% of participants were able to explain in a coherent manner the negative impact of plastic waste on the environment, the importance of reducing the use of single-use plastics, and the benefits of creative plastic waste processing. Regular mentoring for students and the community is needed to ensure that circular economy programs are not only educational but also provide sustainable business opportunities. Support from Adiwiyata partners, local governments, and universities is expected to strengthen the implementation of environmental and entrepreneurship programs, creating a more independent, creative, and environmentally conscious community

Keywords: Plastic waste, 3R management, business opportunities, environment

INTRODUCTION

The issue of waste management in rural areas of Indonesia remains a fundamental problem. which impacts the environment and community welfare. Based on data Ministry of Environment and Forestry (2024), waste generation in Indonesia reached more than 68 million tons per year, and about 60% of it comes from non-urban areas (Santosa et al., 2026). Following the flood, the Directorate General of Human Settlements, Ministry of Public Works (PU), continues to take swift and measured steps in handling environmental infrastructure, particularly the Final Processing Site (TPA) and Fecal Sludge Treatment Plant (IPLT) in Aceh Tamiang Regency. The handling carried out includes cleaning the affected area, rehabilitation of wastewater treatment installations, repair of weighbridges, and restoration of the function of existing landfills. In addition, the Directorate General of Human Settlements will increase the new landfill cell area of 1 hectare with a processing capacity of 100 tons of waste per day. Post-disaster management of landfills and wastewater treatment plants is a priority to prevent further impacts on public health and the environment. Rehabilitation and capacity building efforts, waste management and sanitation services are part of the commitment of the central and regional governments to support post-disaster recovery, maintain environmental quality, and protect the community from potential health risks. The Directorate General of Human Settlements continues to strive to ensure safe, sustainable environmental services and support the recovery of the Aceh Tamiang Regency community (Cipta Karya, 2026) . The term Circular Economy or Circular Economy is said to be circulating

for more than 30 years. However, until now, there is no definition of "economy" circular" which was agreed upon global, even though there are many international organizations that provide understanding of this economic model. In the year 2019, United Nations Environment Assembly defines the economy circular as an economic model involving all products and designed materials to be reused, remanufactured, recycled (recycled) or taken back the benefits (recovered), and maintained in activities economy as long as possible. The circular economy model is designed to replace the linear economic model, where products designed to be made, worn, and disposed of (take-make-dispose principle) so that producers will continue continuously taking natural resources to produce new products, assuming that natural resources limited. In a circular economy, mark the true benefits of a product can continue to be utilized in a cycle so that it can extend the service life product (Bappenas, 2022).

The concept of a sustainable economy allows a product that has been used by consumers to be recycled. Implementing this concept can increase the power of the economy. competitiveness of a business in the future. This circular economy system allows plastic waste recycled into new products. In fact, this concept is claimed to be able to encourage environmentally friendly economic growth. Plastic recycling management will making business sustainable. Plastic waste can provide added value as a raw material raw materials for industries that utilize plastic's potential. This plastic potential can be developed by various parties, both business communities and the industry itself. surrounding community (general public), community in the world of education and so on. It is time to participate in overcoming the plastic problem in Indonesia which is getting worse. piling up. For this reason, a massive movement to overcome the onslaught of garbage will take hundreds of years. years for it to decompose, it must be continuously encouraged. Not only can it save the environment Utilization of recycling can provide economic value, because it provides a selling value is quite high and has competitiveness (Rahardjo et al., 2021).

Some of the research results and community service that have been conducted by Sanuriza et al. (2025) in Perampuan Village, West Lombok by providing education environment, introduction of recycled product innovations, practical training in making decorations, as well as evaluation and reflection. The results of the activity showed high enthusiasm from the participants, where all Participants successfully produced at least one type of decoration independently. 90% of participants shows increased understanding of the impacts of plastic waste and the principles of 3R management. Apart from mastering technical skills, this activity also gives rise to business ideas based on creative economy from some participants. Meanwhile, according to Rofiqi et al. (2026), there was a significant increase: students' understanding of the contribution of the circular economy increased from 20% to 100%, environmental participation increased from 15% to 85%, and students' managerial skills reached 85% with the formation of an eco-entrepreneurship group approved by the Principal's Decree. In addition, a roadmap for PBLHS implementation and a business model document based on the digital Business Model Canvas (BMC) were prepared. Then, according to Mulyono and Sunyoto (2026), community service programs prove that applied environmental education can increase ecological awareness, strengthen community participation, and provide opportunities for local economic empowerment through the utilization of household waste.

Community service activities with the theme **"Waste-Based Creative Economy: Circular Economy Entrepreneurship Education for Students and Communities in Aceh Tamiang"** is motivated by the low level of public awareness and understanding of economically valuable waste management. The ever-increasing volume of household and plastic waste has not been optimally utilized, creating environmental problems and missing economic opportunities for the community. Furthermore, students and the community in Aceh Tamiang still have limited knowledge and skills in processing waste into creative products with market value. The circular economy concept, which emphasizes the reuse of waste into useful products, is also not widely understood and applied in everyday life. This situation demonstrates the need for environmental-based entrepreneurship education and mentoring to foster creativity, improve community skills, and build an innovative and sustainable entrepreneurial spirit. Therefore, the Nurdin Abdurrahman Institute of Health Sciences and Technology (INAR) Pidie and Bumi Persada University are striving to present a community service program as a solution to increase the capacity of students and the community through creative and circular economy-based waste management.

The purpose of this community service activity is to increase the knowledge, awareness, and skills of students and the community in Aceh Tamiang in managing waste into creative economic products with sales value through circular economy-based entrepreneurship education, so that it can support community economic empowerment and sustainable environmental conservation. This community service was also carried out in the framework of the Study Tour Activities of the Diploma Three Sanitation Study Program of the Nurdin Abdurahman Institute of Health Sciences and Technology (INAR), this study tour activity was also filled with the distribution of social assistance to communities affected by flash floods by providing assistance in the form of basic food packages to communities affected by hydrometeorological disasters in Aceh Tamiang.

Based on the situation analysis, the priority of the problems to be solved is determined. are as follows:

1. Providing an understanding of creativity and proactive personality to students and communities affected by disasters in Aceh Tamiang Regency;
2. Providing students with an understanding of the green economy by creating creative products that have economic sales value;
3. How to process used goods into creative products that can have economic value for the community.

LITERATURE REVIEW

The creative economy is a development approach that places creativity, innovation, knowledge, and the utilization of local resources as the main factors in creating added economic value. From a sustainability perspective, waste is no longer viewed as residue to be discarded, but as a resource that can be reprocessed into products of economic value through recycling, reuse, and creative product innovation. The development of a waste-based creative economy contributes to increasing community income, creating new jobs, and reducing environmental pressures due to the increasing volume of domestic and industrial waste. The utilization of plastic, paper, textile, and organic waste into various craft products, accessories, furniture, compost, and other innovative products is a concrete implementation of a sustainability-oriented creative economy. Ramli et al. (2024) This approach aligns with the green economy paradigm, which emphasizes a balance between economic growth, environmental preservation, and social welfare. A waste-based creative economy is also a crucial strategy for supporting efficient and sustainable resource management. Nemani, S. (2024).

METHOD

Community service activities were carried out in Kota Lintang Village, Hasanah Hamlet, Kota Kuala Simpang District, Aceh Tamiang Regency, which was affected by the flood through an educational and participatory approach to students and the community from May 20 to 22, 2026. The activity began with the identification of environmental conditions and post-flood waste problems, then continued with counseling on waste management, the concept of a circular economy, and environmental-based entrepreneurship. Next, participants were given practical training in processing waste into creative economic products that have sales value, such as recycled crafts and environmentally friendly products. In addition, mentoring was provided to participants in developing creative business ideas based on waste so that they can become economic opportunities for flood-affected communities. This method is expected to be able to increase environmental awareness, skills, and economic independence of the community in a sustainable manner.

The implementation methods used in this community service activity are:

1. Socialization and Education
Education is carried out with material about the impact of plastic waste on the environment and an introduction to the concept of a circular economy in waste management.
2. Plastic Waste Processing Training
The training aimed to provide basic technical skills in processing plastic waste into craft materials. The participants also practiced making plastic waste-based products, such as flower vases, bags, accessories, and home decor (Nursi et al., 2025).
The stages of the Community Service Implementation Method are as follows:
 1. Preparation
Conducting an initial survey of the community to determine their interests, knowledge and skills in the field of entrepreneurship and plastic waste processing.
Identifying the types of plastic waste available in the surrounding environment and the potential for processing them into craft products with economic value.
 2. Preparation of Materials and Training
Develop training modules related to entrepreneurship and plastic waste processing techniques.
Prepare the tools and materials needed for training, such as plastic waste, processing tools, and examples of craft products.
 3. Implementation of Workshops and Training
Conducting entrepreneurship training, covering business mindset, marketing strategies, and small business management.
Providing technical training on how to process plastic waste into craft products that have sales value.

Conducting demonstrations and hands-on practice in making various products based on plastic waste.

4. Business Mentoring and Incubation

Assisting participants in developing innovative and high-value craft products.

Guiding participants in packaging, promoting and marketing products via digital and offline platforms.

Building networks with entrepreneurial communities and potential markets.

5. Evaluation and Monitoring

Evaluate participants' understanding and skills after participating in training and mentoring.

Carrying out program improvements based on evaluation results for the sustainability of the community service program (Nursi et al., 2025).

The training materials for Plastic Waste Management for Craft Products with Economic Value are as follows:

1. Introduction, including: Understanding plastic waste and its impact on the environment, Types of plastic waste and their characteristics, and the urgency of managing plastic waste in schools and communities.
2. Basic Concepts of Plastic Waste Recycling, including: The 3R Principle (Reduce, Reuse, Recycle) in plastic waste management, Methods for collecting and sorting plastic waste, and Basic techniques for processing plastic waste into raw materials for crafts.
3. Plastic Waste Processing Techniques, including: Methods for washing and sterilizing plastic waste, Techniques for cutting and shredding plastic for various purposes, Process for heating and forming plastic into craft materials, and Combination of plastic waste with other materials (cloth, metal, wood) to increase aesthetic value.
4. Making Craft Products from Plastic Waste, including: Inspiration for design and innovation of plastic waste-based products, Product making techniques such as: Accessories (bracelets, earrings, bags, wallets), Home decorations (flower pots, decorative lamps, photo frames), Functional products (pencil cases, tissue holders, multipurpose containers), and Direct practice of making craft products from plastic waste.
5. Entrepreneurial Aspects in Plastic Waste Management, including: Business potential of recycled plastic waste products, Environmentally based product marketing strategies, Attractive and environmentally friendly branding and packaging, Online and offline marketing to expand customer reach, and Case studies of successful entrepreneurs in the recycling industry (Nursi et al., 2025).

RESULTS AND DISCUSSION

The target of this PKM activity is to increase students' knowledge about recycling creativity, utilizing used products in the school area and each residence to become a more useful and creative product has economic selling value. In this activity, we provide training to Students learn how to make recycled creations to help reduce waste. plastic waste to the earth's surface. This method is by applying the 3R principle namely reducing (Reduce), reusing (Reuse), and reprocessing or recycling money (Recycle) (Rahardjo et al., 2021).

In this service, participants were introduced to various types of plastic waste that can be recycled. recycle, examples of creative decorative products, and the potential for a creative economy based on recycling plastic recycling. Participants were also given an understanding of the recycling process plastic, starting from sorting plastic types, cleaning, to basic techniques processing. This session aims to foster inspiration and motivation for participants to creating innovative products based on local potential.

After receiving educational materials on the impact of plastic waste and the 3R management concept (Reduce , Reuse , Recycle), there was a significant increase in participants' understanding of environmental issues. Through evaluations in the form of a post-test and discussion sessions, it was found that around 70% of participants were able to explain in a coherent manner the negative impact of plastic waste on the environment, the importance of reducing the use of single-use plastics, and the benefits of creative plastic waste processing. This increased understanding is expected to be the initial capital for participants to start implementing environmentally friendly waste management independently and in their surrounding environment.

Through hands-on practice sessions, all participants successfully demonstrated basic techniques for processing plastic waste into decorative products independently. Each participant was able to complete at least one decorative piece using plastic waste, such as decorative flowers, hanging pots, wall hangings, or simple accessories. The mentoring process was conducted in stages, from material selection, cutting, shaping, coloring, and finishing . Some participants even demonstrated creativity by developing more varied product designs using available waste materials.

The successful mastery of these basic skills shows that the experiential approach Learning is very effective in implementing practice-based skills service (Sanuriza et al., 2025). This is evident in their ability to apply skills directly in the field. Furthermore, the emergence of entrepreneurial ideas from several participants is an early

indication that this service program has the potential to provide an environmentally based creative economic impact. This is in accordance with Razi et al. (2025), that every human activity and behavior affects the environment. Every human being has different behavior depending on how humans or individuals interact with their environment. In relation to the environment, human behavior can determine the sustainability of environmental conditions. Environmental management behavior aims to meet current life needs without damaging or reducing the ability of future generations to meet their life needs .

CONCLUSION

Community service activities can have multidimensional impacts, encompassing environmental, social, and economic aspects. The success of this program underscores the importance of synergy between universities, cooperatives, local governments, and communities in addressing environmental issues based on local potential. This can only be achieved if similar activities are carried out sustainably and supported by policies and ongoing mentoring (Razi et al., 2026). A community service activity on circular economy entrepreneurship education for students and the community in Aceh Tamiang was successfully implemented. This activity provided participants with an understanding of the importance of waste management and its utilization into economically valuable products, as an effort to increase community creativity and independence. Furthermore, this activity also demonstrated social responsibility by distributing aid to communities affected by hydrometeorological disasters. This activity, combined with a student study tour, is expected to foster an entrepreneurial spirit, environmental awareness, and social awareness among students and the community.

This community service activity succeeded in increasing knowledge, skills, and environmental awareness of participants in utilizing plastic waste to become creative decorative products. In addition to contributing to reducing waste volume plastic, this activity also opens up opportunities for creative economic-based entrepreneurship circular in society. Strengthening practice-based learning as well as further development based on green entrepreneurship, recommended for the continuity of similar programs in the future. This aims to ensure that participants not only gain theoretical understanding but also have practical skills. directly applicable and able to develop environmentally friendly businesses environmental and sustainable.

Lecturer and as Head of the Community Service Team of the Sanitation Study Program of the Nurdin Abdurahman Institute of Health Sciences and Technology (INAR) Pidie Regency Mr. T. Khairil Razi , ST, MT, C.Ed., said that this community service activity was combined with a student study tour and the distribution of social assistance to communities affected by the hydrometeorological disaster in Aceh Tamiang. In addition, Rasya as a representative of INAR Pidie students, also hopes that the assistance distributed can provide a little benefit to the community and hopefully can ease the economic burden on the community. Then on another occasion, one of the residents of Kotalintang Village, Mrs. Nurul Husna Putri (42) expressed her gratitude to the students who were willing to attend among us who were still grieving due to this flash flood, and we, the people of Kotalintang Village, really appreciate the activities of the INAR Pidie students, which are real actions that are really felt by the people of Kotalintang Village, especially in Hasanah Hamlet (Wartaharian.com, 2026).



Figure 1. Aid Distribution Activity by Mrs. Fairus, S.Pd., M.Pd. to Hydrometeorological Victims in Aceh Tamiang Regency

Further mentoring support is needed, in the form of design training and more varied product marketing, as well as strengthening community institutions green entrepreneurship based on plastic waste. This support will help increase product capacity and quality, and increase awareness and community participation in reducing plastic waste. Thus, Green entrepreneurial communities can be an example and inspiration for other communities. To ensure optimal and sustainable community service activities focused on waste-based circular economy entrepreneurship education for students, collaboration with schools and institutions implementing the Adiwiyata program is recommended. This collaboration can foster a culture of environmental stewardship through waste management, recycling, and the development of creative, economically valuable products within the school and community.

Adiwiyata, also known internationally as Green School, is a program of the Ministry of Environment and Forestry (KLHK) aimed at fostering knowledge and awareness among school residents about environmental conservation. It is expected that every member of the school community will participate in school activities that promote a healthy environment and avoid negative environmental impacts (DLHK Salatiga, 2026). Furthermore, regular mentoring for students and the community is needed to ensure that circular economy programs are not only educational but also provide sustainable business opportunities. Support from Adiwiyata partners, local governments, and universities is expected to strengthen the implementation of environmental and entrepreneurship programs, creating a more independent, creative, and environmentally conscious community.



Figure 3: Group Photo of INAR Pidie Lecturers and Students, Local Community Leaders, and Participants in Activities in Aceh Tamiang Regency

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