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GENERAL MANAGEMENT

A Circular Economy, Waste Management, and Sustainable Development: A Case Study of a Transmigration Rural Area on the Indonesian Island of Sumatra

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Abstract

It is widely stated in the literature that the worldwide use of material resources is rising in tandem with population growth. In proportion to the rise in human population, it is anticipated that the amount of waste will increase as well. Therefore, those environmental issues that pose a growing threat to life and ecosystems must be addressed. As stated in the literature, by implementing a circular economy, for example, the amount of unprocessed trash generated at the household level can be effectively managed. The concept of a circular economy provides a solution to the problem of community waste by creating new products from waste resources that have economic value. Therefore, the purpose of this study is to identify obstacles to achieving sustainable development with a circular economy system in terms of household waste management in the Rawa Pitu district, Lampung province on the Indonesian island of Sumatra. The study is qualitative in nature, with data analysis techniques including interviews, observations, and questionnaires, with a total of 104 participants. The data analysis included data collection, data reduction, data display, and conclusion drawings. The findings indicate that in the Rawa Pitu district, it has not been possible to maximize public participation in addressing waste management issues. This is due to the fact that there has been no action taken by the local government regarding the management of household waste, and there has been no shift in the community's approach to waste management. For this, we need an alternative solution in the form of a circular economy by implementing the 3Rs (Reduce, Reuse, Recycle). Consequently, the involvement of stakeholders in shaping community participation in achieving sustainable development is crucial, and there is a need for continuous oversight. As well as discussing the implications of the findings, we offer several suggestions for additional studies.

Keywords: *Circular Economy; Sustainable Development; Transmigration Rural Area*

Introduction

It is widely stated in the literature that the worldwide use of material resources is rising in tandem with population growth [1], which is predicted to surpass 6 billion by 2045 [2]. In proportion to the rise in human population, it is anticipated that the amount of waste will increase as well [3], causing new environmental issues such as air pollution, water pollution, soil pollution, loss of biodiversity, depletion of the ozone layer, and other environmental issues [4]. These environmental issues will inevitably jeopardize human existence today and in the future [5]. Inadvertently, environmental problems have a complicated and problematic effect on people's lives, political, economic, and social existence [6]. Therefore, those environmental issues that pose a growing threat to life and ecosystems must be addressed.

The findings of empirical research have demonstrated that quality of the environment and public health will be affected if the amount of waste continues to grow unchecked and is not appropriately managed [7]. In other words, ineffective and inefficient waste management that does not employ environmentally friendly waste management methods and technology has a negative influence on population health and can contaminate the environment [8]. This, for example, has occurred in the subdistrict of Rawa Pitu, which has a population of 18,114 and generates numerous types of organic and inorganic trash [9]. The area's waste management still employs individual practices, such as burning, burying, and dumping into the river. There are a number of reasons why the Rawa Pitu community, including the community's majority of transmigrants,

may continue to practice this, including the characteristics of the people, and the lack of waste management facilities and infrastructure in the area.

From a policy standpoint, the Government of Indonesia has shifted its attention to inclusive and environmentally sustainable development, and the natural resource management sector has received high priority support [10]. A grand design and grand plan for Indonesia's construction sector, termed Constructing Indonesia 2030, already exists as a template for the country's rising economy [3], which employs a circular economy approach to promote sustainable national economic development [11]. By setting a goal to reduce overall waste generation by 30 percent by 2025—as outlined in laws passed in 2009 and 2008—the government shows its support for the development of a circular economy. The concept of sustainable development is strongly linked to the concept of a circular economy [11], with enhancing the well-being of the community at the heart of development [12]. Thus, multiple development actors and development projects require a synergistic development concept [13]. According to [14], there are four elements necessary to achieve sustainable development: the satisfaction of fundamental needs, environmental protection, social justice for future generations, and the freedom to select one's own destinies. Therefore, local governments must determine preventive steps to reduce the occurrence of negative externalities, such as providing education, help, and socialization concerning the concept of reducing, reusing, and recycling [15] because development that takes into account the factors of environmental quality will promote the community's and the environment's well-being in a manner that is inclusive for both [16]. By implementing a circular economy, the amount of unprocessed trash generated at the household level can be effectively managed [7], [17].

Recently, the concept of a circular economy has emerged as a topic of attention in public discussions regarding new and more sustainable industrial paradigms and methods [18], [19]. The circular economy provides a fresh perspective for industrial ecosystems, encompassing materials and products that are reintroduced into the resource supply chain, resulting in less use of primary resources and landfill waste [20]. In other words, recent years have witnessed a rise in circular economy research [4], [21]–[26].

Circular economy refers to an economic system based on a business model that replaces the concept of end-of-life by reducing or reusing, recycling, and recovering materials in production/distribution and consumption, with the goal of achieving sustainable development, which means creating environmental quality, prosperity, economic and social justice for the benefit of present and future generations [27]. The circular economy seeks to isolate growth from environmental concerns by optimizing the use of resources and decreasing waste and pollution [28]. It is one of the implementations of the green economy concept aimed at achieving sustainable development by symbiotically integrating economic growth and environmental conservation [29]. The circular economy is primarily focused on the 3Rs (Reduce, Reuse, and Recycle) principle with optimal production levels in exploiting natural resources by minimizing natural exploitation, minimizing environmental degradation, lowering emissions and waste levels by applying a sustainable concept [30].

According to the literature, experts have proposed definitions of circular economy from a variety of perspectives [4]. From an environmental standpoint, it considers resource inputs, wastes, and emission outputs in relation to sustainability challenges. Others characterize a circular economy in terms of resource scarcity, environmental impact, and economic benefits, or resource optimization in relation to cleaner manufacturing, thereby improving the value of the technological and biological cycles of materials through a circular strategy. The notion of the circular economy tackles the reuse, repair, remanufacturing, and recycling of products, materials, and components [31].

Moreover, the 3Rs concept is a strategy proposed to reduce industry trash, community waste, and family (home) waste. The government and associated parties are intensifying the development of programs to preserve the quality of life of the community [5]. The application of the circular economy concept with a variable approach to city waste per capita, city waste recycling rate, packaging waste recycling rate by type of packaging, organic waste recycling rate, and electronic waste recycling rate can increase sustainable quality economic growth and inclusive gross domestic product (GDP) growth while reducing the use of natural resources and ensuring greater environmental protection [32]. Research findings in the literature [21] state that a business model that is based on sustainable investment in eco-innovation in the environment can generate long-term benefits and benefits because trash is transformed into a valuable resource through the implementation of the circular economy system carried out in various enterprises in Italy. This is due to the fact that natural resources are becoming increasingly scarce, regional distribution is not symmetrical, and environmental concerns are getting worse. If this is able to be implemented at the regional level, the amount of investment will increase, which will be followed by an increase in economic growth at the regional level. If this is successful over the long term, it will be possible to reduce environmental damage, unemployment, and poverty [21].

There are a great number of studies on the circular economy, but each one focuses on a different aspect, such as the research carried out by [8] which emphasizes on the function that product waste can play in a circular economy to boost the productivity of enterprises located in rural regions. Other studies [8], [33] put an emphasis on developing waste management practices that are consistent with a circular economy, the potential for the reuse of plastic grocery bags [34]–[36], the transformation of organic waste into goods with marketable worth [37], the proper disposal of glass bottles [38], household waste management strategies [39], circular economy-based waste management comprehension of rural communities [40], constructing a network of waste banks as a solution for waste management and as a means of establishing a circular economy for people in communities other than their own [41], social, economic, and demographic aspects of circular migratory decision-making [42], [43], and the influence of circular migration on the socioeconomic circumstances of migrant households [44], [45]. However, to the best of our knowledge, research on sustainable development in transmigration areas has not yet been conducted on the circular economy. Therefore, this study sought to investigate how local residents of Rawa Pitu, Lampung, Indonesia, perceive their own behaviour in relation to waste management challenges and what waste management techniques they have employed. It is hoped that by doing so, the community will become more conscious of waste management and the value of recycling garbage into useful and economically viable products.

Literature Review

The basic concept of waste management is an effort to prevent the accumulation of waste and emphasize the negative impacts that may occur. Problems that will arise from waste

include the loss of aesthetic value in the environment, both in the form of soil, water, and air pollution to cause disease sources [49], [50]. One of the solutions offered is a circular economy with the concept of 3Rs (Reuse, Reduce, Recycle) [51], [52]. Circular economy is a concept and strategy that can be applied in society in practice and policy to achieve sustainability in the use of materials and energy [53]. In other words, a circular economy conceptualizes the desired future state of dealing with natural resources [25]. From an environmental perspective, the circular economy takes the issue of sustainability from resource inputs, wastes and emission outputs [54], [55]. Define a circular economy with themes of resource scarcity, environmental impacts and economic benefits, or resource optimization related to cleaner production [31]. The circular economy concept raises the issue of reuse, repair, remanufacturing, and recycling of products, materials, and components.

The application of the 3Rs concept is expected to minimize problems caused by industrial waste, community waste, and family waste [3], [56]. The 3Rs concept is developing and is better known as the green environment or green economy tagline, or other languages that use the word "green". Green is considered to represent or reflect the concept of environmental sustainability [5], [57]. The 3R concept is a concept to integrate economic activities with the aim of creating sustainability. The concept of 3Rs, green economy, green environment that we are familiar with uses a linear economic approach. Increasing community participation in environmental sustainability. developing the latest concept offered to achieve the Sustainability Development Goals' (SDGs) target in the form of sustainability [5].

Sustainability is a strategic issue that will be achieved by the whole world in accordance with the agreement of the heads of state and is stated in the SDGs in 2030 [58]. Sustainable development is aimed at meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. The three main pillars that become the focus of development, namely social, economic, and environmental are interrelated. Sustainable development is expected to reduce poverty and reduce damage to natural resources and the environment, natural resource management is carried out optimally without reducing the quality of natural resources which are part of the ecosystem [59]. In other words, sustainable development is environmentally sound development.

Method

This study was conducted utilizing a qualitative methodology [60] with a multisite case study design because the research settings shared similar characteristics. This study was carried out in the Rawa Pitu District, which is comprised of nine villages, including Andalas Cermin, Batang Hari, Bumi Sari, Gedung Jaya, Mulyo Dadi, Panggung Mulya, Rawa Ragil, Sumber Agung, and Yoso Mulyo. The authorities of the sub-district administration, the officials of the villages, and the people living in the Rawa Pitu District all took part in this research, and we used a snowball sampling technique to collect information.

This study adopted participatory observation, semi-structured interviews, and questionnaires for data collection [61]. At the sub-district level, five informants from the local administration, nine village heads, nine community elders, nine adults, and 18 informants from the general public were interviewed. A total of 54 informants were surveyed to acquire information and attitudes about waste management. In the nine villages in the Rawa Pitu district, questionnaires were handed out to the villagers. The garbage dump, as well as a variety of communal settlements where rubbish was regularly burned and disposed of, were visited for observations.

After that, using an interactive model, the data were analysed qualitatively [60]. The qualitative data analysis was done in real time, and it continued until the data were well triangulated as follows.

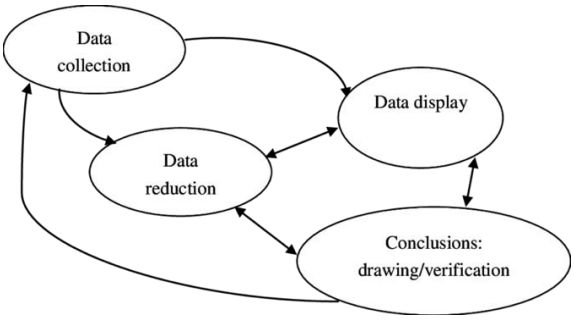

Fig. 1: Data Analysis Model

The components of the data analysis steps depicted in Figure 1 are as follows: Initially, data were collected via participant observation, semi-structured interviews, and questionnaires. Second, the collected data were whittled down by selecting the most essential information and concentrating on the most vital aspects. The data were then presented in third step. After completing the first, second, and third phases, the fourth step was to reach a conclusion. Conclusions refer to the responses to the posed questions.

Results and Discussion

Behaviour of the People of the Rawa Pitu District towards Waste Management Practices

The growth in population in the Rawa Pitu Subdistrict as a result of transmigration has resulted in inefficient waste management, with only a portion of the community using the accessible dump.

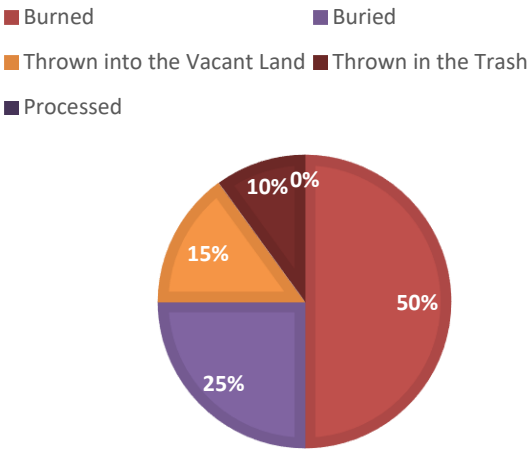

Fig 2: Community Practices in Waste Management

According to the data above, 50% of the participants burn their waste, 25% bury it, 15% dump it onto vacant land, and 10% throw it into a rubbish dump, and no one has yet processed waste as well as the selection of waste (organic and inorganic). Garbage management activities such as waste selection and recycling are critical to the success of waste management, and the village government and the community must collaborate in its implementation. While the survey results show that the people of Rawa Pitu District are interested in recycling household waste, it is hoped that the district and village governments will support and provide alternative waste management in addition to keeping the environment clean and beautiful and increasing economic value.

Perceptions of the people of the Rawa Pitu District on Waste Management Issues

The attitudes of residents in the Rawa Pitu District regarding waste management are divided into three categories: reducing waste, selecting garbage, and recycling waste. A poll of 54 people said that having a lifestyle and behavior that reduces, chooses, and recycles waste is extremely significant. The community also decides to implement waste retribution as a kind of support for waste management, as well as the pattern of preserving or selling garbage as a way to stimulate people to desire to process waste. They believe that including all stakeholders in waste management is critical to achieving this goal.

The government's role in improving the quality of services and waste management, including socialization and training, the provision of garbage dumps, waste transportation facilities, the development of integrated waste management, the enforcement of laws/rules for discipline, and the provision of incentives and disincentives for various parties involved in waste management, was also mentioned by the participants. They are aware that waste management will not be successful if they do not support it. The idea that the community will refuse to respond to waste management is based on a lack of understanding and awareness about the impact of trash on current and future generations' health and the environment. A total of 56% of the participants demand waste management socialization and training. Thus, it is critical for local governments to take educational (advocacy) actions with an environmental perspective, such as Go Green Campaigns, in order to change patterns or lifestyles, habits or routines that have been ingrained in the community for a long time, in the hopes of broadening community thinking about the benefits of environmentally friendly living and making the community more receptive to these ideas.

Sustainable Development of Transmigration Rural Areas

The achievement of a balance between development in the social, economic, and environmental protection sectors is referred to as sustainable development. The potential to preserve social, economic, and ecological stability in the change of human biosphere services, then to fulfil current and future requirements, and to sustain the required and desirable systems indefinitely, is defined as sustainable development [62]. Sustainable development is defined in Law No. 32 of 2009 on Environmental Protection and Management as a type of planned effort that collaborates with the environment, economy, and society in development strategies to ensure the integrity of the environment and the safety, welfare, capability, and quality of life of current and future generations. The development paradigm, as described above, concentrates on economic concerns and transitions to an environmental and social sector development paradigm that cannot be abandoned.

The focus or concentration of sustainable development is on three pillars: economic development, social development, and environmental development. In order for these three advances to be realized, there must be harmony between them and reference to sustainable development. In sustainable development, there are four guiding principles: a) equal distribution of social justice, b) appreciation of variety, c) an integrative approach, and d) a long-term vision. Of the four principles, it must be able to operate in accordance with sustainable development goals. The four points must be interdependent and in harmony with one another [49].

The four development concepts described in the previous paragraph cannot be isolated from sustainable development in rural transmigration areas. In order to preserve present and future generations, equity and social justice necessitate that development achieve the equitable distribution of natural

resources and land. To value diversity is to value various types of biological and cultural diversity so that it can be preserved for future generations. Because humans and nature cannot be separated, an integrated approach prioritizes development that is interdependent with both. Finally, the long-term vision is focused on sustainable growth that can last into the future.

Sustainable development in marshy transmigration settlements is anticipated to adhere to the sustainable development concepts outlined above. To achieve sustainable development, a balance must be maintained between humans and nature. Humans must be capable of preserving natural resources for future generations. For example, preserving sustainability in the future involves managing recyclable or reusable household waste so as not to contaminate the environment and minimize the use of natural resources that are not actually required.

Population growth has an impact on sustainable development. It is feared that if the very rapid increase in population is not balanced by waste management from home garbage, it may result in ecological harm and a depletion of non-renewable natural resources, such as fossil-based resources.

4.4 Waste Management Strategy

The primary problem of waste is a matter of paradigm, behaviour, and awareness [63] consequently, there is a need for a paradigm shift from the previous mentality, which is primarily concerned with waste management, to one that focuses on managing waste resources. According to [64], Deputy Minister of Environment and Forestry of the Republic of Indonesia, waste can be converted into money and energy to boost economic growth, so waste is viewed as a resource rather than a problem. Moreover, he stated that the circular economy is the most suitable concept to be implemented in Indonesia as a developing nation aspiring to become a developed nation, as it includes ecosystems such as end users, recycling industry, Waste Banks, 3R-based waste dumps, primary waste management cooperatives, recycling centres, and social entrepreneurship.

Waste processing in accordance with the 3R circular economy concept is waste processing that recycles waste into new, reusable products. In addition, the fundamental principle for managing household waste and waste is to reduce non-biodegradable raw materials – use/reuse – and recycle them on the basis of community empowerment [65]. In dealing with waste and household waste, the community empowerment is anticipated to be able to forge strong community ties [66]. With the existence of a circular economy, it is hoped that waste and household waste production can be reduced and prevented [67].

The concept of the circular economy must be communicated to the community, particularly the transmigration community, so that they have the knowledge, skills, and abilities to manage waste and household waste correctly. The socialization process can be simplified so that it is readily accepted and understood by the community. Communities require a paradigm shift to be able to convert waste into economic goods in order to sustain ecosystem stability in the future [68]. In so doing, it will have an impact on the efficient use and utilization of energy derived from nature, such as non-renewable fossil fuels, if ecosystem stability is maintained in the future.

It takes considerable time to implement a circular economy in order to realize sustainable development. The government cannot immediately implement and issue circular economy-related regulations in order to achieve sustainable development in the transmigration zone. The implementation of a circular economy must involve the community, government, and the environment. The government is required to conduct research and identify the nature-related issues that arise and occur in people's lives. These three factors must be considered when determining which policies the government will issue, such as those pertaining to waste management in implementing a circular economy to achieve sustainable development.

Regarding waste management in the application of a circular economy, the Rawa Pitu District government can socialize and advise the transmigration community, that has occupied nine villages in Rawa Pitu District, on the 3R principles. In question is how the transmigration community can process waste from household waste by decomposing non-biodegradable waste, such as plastic waste, so that it can be produced. Plastic waste that is difficult to decompose, such as plastic bottles, can be used by the community as a hydroponics-based planting medium for flowers and vegetables, and it can also be processed into eco-bricks. In addition to plastic waste, organic waste can also be converted into organic fertilizer and used to fertilize community-maintained plants. In this manner, not only can individuals reduce their purchases of products that generate plastic waste, but they can also save money for their families.

In reality, however, the transmigration community still faces a number of issues, including a lack of waste management knowledge, the continued mixing of organic and inorganic waste, inadequate temporary disposal sites, and the absence of waste dumps in certain transmigration areas. The government must address these issues in order to implement a circular economy and realize sustainable development. Moreover, transmigration communities continue to utilize the conventional concept of waste disposal, namely consumption and disposal. There are still transmigration communities that discard their food waste without reprocessing it, and the transmigration community still piles and burns a significant amount of plastic waste. This condition is obviously extremely concerning for future survival. The equilibrium between humans and nature will experience a significant imbalance. It was explained in the explanation of the previous sub that the circular economy is influenced and that the relationship between humans and nature must be balanced. For future survival, humans must be able to utilize natural resources as efficiently as possible.

As mentioned previously, garbage from household waste is one of the largest factors that can impede the implementation of a circular economy. Therefore, Presidential Regulation No. 97 of 2017 on National Policies and Strategies for the Management of Household Waste and Types of Household Waste was issued by the government in 2017 [69]. In addition, Presidential Regulation Number 83 of 2018 concerning the Handling of Marine Debris regulates waste management policies [70]. This is what led to the implementation of the Circular Economy National Action Plan. In other words, the circular economy is created not only for business purposes, but also for future purposes. This occurs because it relates to the environment in accordance with the 3R principles. By collaborating or symbiotically integrating with disciplines such as entrepreneurship, environmental science, and sustainable development science to transform household waste into a valuable and useful asset, a circular economy that embodies the 3R concept will be able to provide a solution to waste problems in the community [24].

Conclusions

On the basis of the aforementioned findings and discussion, several conclusions can be drawn. For the sustainable management of household waste, the government must first establish and implement a circular economy. Household waste cannot be managed sustainably at this time. The presence of individuals in the Rawa Pitu district who continue to discard food scraps and burn plastic without first managing waste exemplifies this point. This must be the government's top priority in order to achieve sustainable development and preserve nature for future sustainability.

Second, sustainable development in villages of transmigration must be optimally managed so that humans and nature can coexist in harmony. Sustainable development must be capable of balancing the social, economic, and environmental sectors in addition to the growing population. Without a balance, life in the future will have limited access to non-renewable natural resources, such as those derived from fossils. With the balance of various sectors, it is hoped that the implementation of a circular economy will lead to the realization of sustainable development. However, the application of a circular economy necessitates time, thought, and the development of mature concepts in response to society's extremely dynamic problems; consequently, continuous monitoring and control are required. The contribution of the circular economy to long-term quality economic growth is substantial, so it must be implemented immediately as a precaution.

Implication

Theoretical and practical implications that can be drawn from the research's findings include the following:

Theoretical Implications

Because it has a direct bearing on sustainable development, the circular economy is a subject that receives particular emphasis in public discourse. The circular economy is anticipated to give the industrial ecosystem a fresh viewpoint on how to use raw materials and trash.

The 3Rs concept includes three areas in which waste management should continue to be practiced, especially by the residents of Rawa Pitu. Sustainable development dictates that effective waste management will have a significant impact on environmental preservation. However, significant waste management can be achieved with the assistance of all pertinent parties.

The accomplishment of a balance between development in the social, economic, and environmental protection domains is known as sustainable development. The objective of sustainable development is to be able to preserve the stability of natural resources so that the future generations can still utilise them in the future.

Practical Implications

The findings of this study can inform policymaking and social change. We are getting better at waste control, sustainable development, and the circular economy in Sumatra's transmigration communities. In order to preserve the economic, social, and environmental sectors in the future, we should be able to balance the circumstances of rural transmigration with nature. Additionally, Sumatran's rural transient residents desperately require good and proper garbage management.

Suggestions

The notion of sustainable development, which links social, economic, environmental protection, and governance issues, offers suggestions for future research on more extensive topics. The implementation of a circular economy calls for a complex idea and a lot of effort. Additionally, the circular economy debate has created some highly complex issues in the community, particularly in the transmigration group. Therefore, ongoing oversight and management are required. In order for future research to be most effective and valuable in creating a circular economy, it must be able to effectively reach the community. As a result, it needs to be prepared more effectively as a precaution.

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References

[1] Behrens, A., Giljum, S., Kovanda, J., & Niza, S. (2007). The material basis of the global economy. Ecological Economics, 64(2), 444–453. https://doi.org/10.1016/j.ecolecon.2007.02.034

[2] N. United, '2014 revision of the World Urbanization Prospects', New York, Report, 2014. Accessed: May 12, 2022. [Online]. Available: https://www.un.org/en/development/desa/publications/2014-revision-world-urbanization-prospects.html

[3] Wahyu Adi, T. J., & Wibowo, P. (2020). Application of circular economy in the Indonesia construction industry. IOP Conference Series: Materials Science and Engineering, 849(1), 012049. https://doi.org/10.1088/1757-899x/849/1/012049

[4] Geissdoerfer, M., Savaget, P., Bocken, N. M. P., & Hultink, E. J. (2017). The Circular Economy – A new sustainability paradigm? Journal of Cleaner Production, 143, 757–768. https://doi.org/10.1016/j.jclepro.2016.12.048

[5] N. Dwiningsih, 'Pengenalan Ekonomi Sirkular (Circular Economy) Bagi Masyarakat Umum', vol. 1, p. 7, 2022.

[6] - Sriyanto, 'Kondisi lingkungan hidup di jawa tengan dan prospek pembangunan ke depan', J. Geogr. Media Inf. Pengemb. Dan Profesi Kegeografian, vol. 4, no. 2, Art. no. 2, 2007, doi: 10.15294/jg.v4i2.102.

[7] Kristianto, A. H., & Nadapdap, J. P. (2021). Dinamika Sistem Ekonomi Sirkular Berbasis Masyarakat Metode Causal Loop Diagram Kota Bengkayang. Sebatik, 25(1). https://doi.org/10.46984/sebatik.v25i1.1279

[8] Firmansyah, G. C., Herlambang, A. S., & Sumarmi, W. (2021). Peran Sirkular Sampah Produk Untuk Meningkatkan Produktivitas Usaha Masyarakat Desa Bagorejo. Jurnal Pemberdayaan Masyarakat, 9(2), 172. https://doi.org/10.37064/jpm.v9i2.9769

[9] BPS, 'Badan Pusat Statistik Kabupaten Tulang Bawang'. https://tulangbawangkab.bps.go.id/indicator/12/550/1/-sp2020-jumlah-penduduk-kecamatan-rawa-pitu-menurut-desa-persentase-terhadap-kecamatan-dan-sex-ratio.html (accessed May 23, 2022).

[10] Y. de Boer, 'Peta jalan ini membantu para pembuat kebijakan

dan pihak lain memahami kemajuan pembangunan ekonomi hijau Indonesia yang sangat potensial dan mengesankan. Saya percaya, dokumen ini akan sangat membantu untuk lebih menguatkan lagi komitmen Indonesia terhadap pembangunan ekonomi hijau.', p. 21, 2015.

[11] Holman Fasa, A. W. (2021). Aspek Hukum Dan Kebijakan Pemerintah Indonesia Mengenai Ekonomi Sirkular Dalam Rangka Mencapai Tujuan Pembangunan Berkelanjutan. Jurnal Rechts Vinding: Media Pembinaan Hukum Nasional, 10(3), 339. https://doi.org/10.33331/rechtsvinding.v10i3.774

[12] M. Makmun, 'Green Economy: Konsep, Impelentasi dan Peran Kementerian Keuangan', J. Ekon. Dan Pembang., vol. 19, no. 2, Art. no. 2, 2011, doi: 10.14203/JEP.19.2.2011.1-15.

[13] G. Nemes, 'Integrated rural development - The concept and its operation', Inst. Econ. Hung. Acad. Sci. IEHAS Discuss. Pap., Jan. 2005.

[14] Sudharto. P. Hadi, Reformasi Pembangunan Lingkungan Hidup. Semarang: PPLH Undip, 1998.

[15] Khairunisa, N. S., & Safitri, D. R. (2020). Integrasi Data Sampah Sebagai Upaya Mewujudkan Zero Waste Management: Studi Kasus Di Kota Bandung. Jurnal Analisa Sosiologi, 9. https://doi.org/10.20961/jas.v9i0.39829

[16] Abdelaal, M. R. M., & Sallam, I. (2019). Green Economy Themes: Pathway to Sustainable Urban Development. The Academic Research Community Publication, 3(2), 38–47. https://doi.org/10.21625/archive.v3i2.501

[17] A. D. Sartono, 'Potensi implementasi ekonomi sirkular dalam mengelola sampah plastik di kabupaten bogor', vol. 7, no. 3, p. 12, 2022.

[18] Ari, I., & Yikmaz, R. F. (2019). Greening of industry in a resource- and environment-constrained world. Handbook of Green Economics, 53–68. https://doi.org/10.1016/b978-0-12-816635-2.00004-3

[19] M. F. Ellen, Towards the Circular Economy: Accelerating the Scale-up Across Global Supply Chains. 2014. [Online]. Available: https://www3.weforum.org/docs/WEF_ENV_CircularEconomy_MainStream_ProjectOutline_2014.pdf

[20] Bilal, M., Khan, K. I. A., Thaheem, M. J., & Nasir, A. R. (2020). Current state and barriers to the circular economy in the building sector: Towards a mitigation framework. Journal of Cleaner Production, 276, 123250. https://doi.org/10.1016/j.jclepro.2020.123250

[21] Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems. Journal of Cleaner Production, 114, 11–32. https://doi.org/10.1016/j.jclepro.2015.09.007

[22] Lieder, M., & Rashid, A. (2016). Towards circular economy implementation: a comprehensive review in context of manufacturing industry. Journal of Cleaner Production, 115, 36–51. https://doi.org/10.1016/j.jclepro.2015.12.042

[23] Blomsma, F., & Brennan, G. (2017). The Emergence of Circular Economy: A New Framing Around Prolonging Resource Productivity. Journal of Industrial Ecology, 21(3), 603–614. Portico. https://doi.org/10.1111/jiec.12603

[24] Sauvé, S., Bernard, S., & Sloan, P. (2016). Environmental sciences, sustainable development and circular economy: Alternative concepts for trans-disciplinary research. Environmental Development, 17, 48–56. https://doi.org/10.1016/j.envdev.2015.09.002

[25] Murray, A., Skene, K., & Haynes, K. (2015). The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context. Journal of Business Ethics, 140(3), 369–380. https://doi.org/10.1007/s10551-015-2693-2

[26] Lewandowski, M. (2016). Designing the Business Models for Circular Economy—Towards the Conceptual Framework. Sustainability, 8(1), 43. https://doi.org/10.3390/su8010043

[27] Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. Resources, Conservation and Recycling, 127, 221–232. https://doi.org/10.1016/j.resconrec.2017.09.005

[28] Baldassarre, B., Maury, T., Mathieux, F., Garbarino, E., Antonopoulos, I., & Sala, S. (2022). Drivers and Barriers to the Circular Economy Transition: the Case of Recycled Plastics in the Automotive Sector in the European Union. Procedia CIRP, 105, 37–42. https://doi.org/10.1016/j.procir.2022.02.007

[29] D'Amato, D., & Korhonen, J. (2021). Integrating the green economy, circular economy and bioeconomy in a strategic sustainability framework. Ecological Economics, 188, 107143. https://doi.org/10.1016/j.ecolecon.2021.107143

[30] Strielkowski, W. (2016). Entrepreneurship, sustainability, and solar distributed generation. Entrepreneurship and Sustainability Issues, 4(1), 9–16. https://doi.org/10.9770/jesi.2016.4.1(1)

[31] Munaro, M. R., Tavares, S. F., & Bragança, L. (2020). Towards circular and more sustainable buildings: A systematic literature review on the circular economy in the built environment. Journal of Cleaner Production, 260, 121134. https://doi.org/10.1016/j.jclepro.2020.121134

[32] Sverko Grdic, Z., Krstinic Nizic, M., & Rudan, E. (2020). Circular Economy Concept in the Context of Economic Development in EU Countries. Sustainability, 12(7), 3060. https://doi.org/10.3390/su12073060

[33] S. B. Ananda, 'Strategi Inovasi Berbasis Circular Economy Pada Pengolahan Limbah Faba (Fly Ash Bottom Ash) Studi Kasus : PT Pupuk Indonesia', Undergraduate, Institut Teknologi Sepuluh Nopember, 2022. Accessed: May 23, 2022. [Online]. Available: https://repository.its.ac.id/93377/

[34] Astuti, N., Khairani, F., Destini, F., & Sulistyawati, S. (2021). The role of scout activities and learning environment at school toward students' characters. International Journal of Educational Studies in Social Sciences (IJESSS), 1(1), 28–37. https://doi.org/10.53402/ijesss.v1i1.4

[35] Rahmayetty and A. Bahauddin, 'Pengembangan Pengolahan Industri Sampah Plastik Terpadu Berbasis Circular Economy di Kota Cilegon-Banten', Universitas Sultan Ageng Tirtayasa, 2021. Accessed: May 23, 2022. [Online]. Available: https://eprints.untirta.ac.id/7040/

[36] L. Warlina, 'Pengelolaan sampah plastik untuk mitigasi bencana lingkungan', presented at the Seminar Nasional FST Universitas Terbuka, 2019.

[37] Kristianto, A. (2020). Pendampingan dan Pelatihan Pengelolaan Limbah Organik Menjadi Produk Bernilai Ekonomi di SMA Negeri 1 Bengkayang. Jurnal Abdimas BSI: Jurnal Pengabdian Kepada Masyarakat, 3(2), 190–197. https://doi.org/10.31294/jabdimas.v3i2.8093

[38] Andriana, Y. F., Nurrul Haq, B., & Septiana, U. (2021). Pelatihan Pengolahan Sampah Botol Kaca dengan Teknik Decoupage di Desa Cibitung Wetan, Kabupaten Bogor. BERDAYA: Jurnal Pendidikan Dan Pengabdian Kepada Masyarakat, 3(3), 117–124. https://doi.org/10.36407/berdaya.v3i3.472

[39] I. W. Nenobais, 'Strategi Pengelolaan Sampah Rumah Tangga: Solusi Alternatif bagi Pemerintah Kota Kupang', p. 15.

[40] Hermawan, S., Waluyo, W., Subekti, R., Astuti, W., SR, P., Sugandha, W., Triwahyudi, P., & Nugroho, A. (2020). Peningkatan Pemahaman Masyarakat Desa Daleman Terkait Penatakelolaan Sampah Berbasis Circular Economy. Prosiding Konferensi Nasional Pengabdian Kepada Masyarakat Dan Corporate Social Responsibility (PKM-CSR), 3, 607–615. https://doi.org/10.37695/pkmcsr.v3i0.918

[41] A. Athaillah, A. S. Numairi, M. H. As-Shidqi, K. A. Basit, and I. R. Wahyuni, 'Membangun Jaringan Bank Sampah Sebagai Solusi Penanganan Sampah Serta Menumbuhkan Sirkular Ekonomi Masyarakat Desa Hantakan', Proc. UIN SUNAN GUNUNG DJATI Bdg., vol. 1, no. 28, Art. no. 28, Dec. 2021.

[42] N. A. I. Putri, 'Pengaruh faktor sosial, ekonomi, dan demografi terhadap keputusan bermigrasi sirkuler ke kecamatan ngoro, kabupaten mojokerto / Nindy Ayu Isdiana Putri', diploma, Universitas Negeri Malang, 2021. Accessed: May 23, 2022. [Online]. Available: http://repository.um.ac.id/152880/

[43] S. T. Alhakim, S. T. Alhakim, and S. T. Alhakim, 'Pengaruh faktor sosial, ekonomi dan demografi terhadap migrasi sirkuler di Kecamatan Bekasi Utara Kota Bekasi / Sidqi Taufik Alhakim', SKRIPSI Mhs. UM, vol. 0, no. 0, Art. no. 0, May

2022, Accessed: May 23, 2022. [Online]. Available: http://mulok.library.um.ac.id/index3.php/92486.html

[44] N. F. Nurbaiti and S. Gunawan, 'Hubungan migrasi sirkuler dengan keadaan sosial ekonomi masyarakat di kelurahan utama kecamatan cimahi selatan', vol. 1, no. 1, p. 4, 2018.

[45] Siti Vina Rahma Septiani, Martua Sihaloho, & Rai Sita. (2022). Pengaruh Migrasi Sirkuler terhadap Kondisi Sosial Ekonomi Rumah Tangga Migran. Jurnal Sains Komunikasi Dan Pengembangan Masyarakat [JSKPM], 5(06.), 785–795. https://doi.org/10.29244/jskpm.v5i06..918

[46] Dermawan, D., Lahming, L., & S. Mandra, Moh. A. (2018). Kajian Strategi Pengelolaan Sampah. UNM Environmental Journals, 1(3), 86. https://doi.org/10.26858/uej.v1i3.8074

[47] J. Sahil, M. H. I. A. Muhdar, F. Rohman, and I. Syamsuri, 'Sistem Pengelolaan dan Upaya Penanggulangan Sampah Di Kelurahan Dufa- Dufa Kota Ternate', J. BIOEDUKASI, vol. 4, no. 2, Art. no. 2, Oct. 2016, doi: 10.33387/bioedu.v4i2.160.

[48] Ponisri, P., Syam, M. I., & Susena, P. R. (2019). Penanggulangan Dan Pengelolaan Sampah Di Lingkungan Sekolah. Abdimas: Papua Journal of Community Service, 1(1), 13–20. https://doi.org/10.33506/pjcs.v1i1.346

[49] A. F. Rahmawati, A. Amin, R. Rasminto, and F. D. Syamsu, 'Analisis pengelolaan sampah berkelanjutan pada wilayah perkotaan di indonesia', Bina Gogik J. Ilm. Pendidik. Guru Sekol. Dasar, vol. 8, no. 1, Art. no. 1, Mar. 2021, Accessed: Jul. 25, 2022. [Online]. Available: https://ejournal.stkipbbm.ac.id/index.php/pgsd/article/view/597

[50] Ramadhanti, F. (2020). Analisis Potensi Pengelolaan Sampah Berkelanjutan Berbasis Masyarakat Di Desa Saribaye Nusa Tenggara Barat. Ecotrophic : Jurnal Ilmu Lingkungan (Journal of Environmental Science), 14(1), 37. https://doi.org/10.24843/ejes.2020.v14.i01.p04

[51] M. L. Tseng, V. Ardaniah, T. D. Bui, M. H. Ali, and A. S. F. Chiu, 'Lingkaran Ekonomi Perlukan Sistem Daya Tahan dalam Pandemik COVID-19', J. Pengur., vol. 59, pp. 1–4, 2020, doi: 10.17576/pengurusan-2020-59-01.

[52] Darmastuti, S., Cahyani, I. P., Afrimadona, A., & Ali, S. (2021). Pendekatan Circular Economy Dalam Pengelolaan Sampah Plastik di Karang Taruna Desa Baros, Kecamatan Baros, Kabupaten Serang. Indonesian Journal of Society Engagement, 1(2), 1–18. https://doi.org/10.33753/ijse.v1i2.13

[53] A. Helin, A Framework for Assessment of and Advancement Towards Sustainable Circular Economy : An application on automotive brake calipers. 2020. Accessed: Jul. 25, 2022. [Online]. Available: http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-280486

[54] Syarif Agustin, A. E., & Rianingrum, C. J. (2021). Pendekatan Ekonomi Sirkular Dalam Pemikiran Desain Sebagai Materi Pendidikan Desain Untuk Pembangunan Keberlanjutan. Jurnal Seni Dan Reka Rancang: Jurnal Ilmiah Magister Desain, 2(1), 93–106. https://doi.org/10.25105/jsrr.v2i1.10100

[55] Y. M. Manik, 'Ekonomi sirkular, pola berfikir dan pendidikan untuk keberlanjutan ekonomi', p. 14, 2022.

[56] R. D. Arisona, 'Pengelolaan sampah 3R (reduce, reuse, recycle) pada pembelajaran IPS untuk menumbuhkan karakter peduli lingkungan', Al Ulya J. Pendidik. Islam, vol. 3, no. 1, pp. 39–51, 2018.

[57] Fataron, Z. A. (2022). Elaborasi Green Marketing dan Islamic Marketing Ethics (Studi Kasus UMKM di Indonesia). Jurnal Ilmiah Ekonomi Islam, 8(1), 80. https://doi.org/10.29040/jiei.v8i1.4250

[58] SDGs, 'Circular Economy Needs the Resilient Systems in COVID-19 Pandemic.' https://web.p.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=01272713&AN=146460656&h=vOIXzMmykrej9E3nenxquhqZ7MGjj1tQiJNd00jKEfGLGmB5BX7pKUuVbYEad8CNpxI2BlZaipT7dEa%2fTX5Y2A%3d%3d&crl=c&resultNs=AdminWebAuth&resultLocal=ErrCrlNotAuth&crlhashurl=login.aspx%3fdirect%3dtrue%26profile%3dehost%26scope%3dsite%26authtype%3dcrawler%26jrnl%3d01272713%26AN%3d146460656 (accessed Jul. 26, 2022).

[59] Kazancoglu, I., Sagnak, M., Kumar Mangla, S., & Kazancoglu, Y. (2020). Circular economy and the policy: A framework for improving the corporate environmental management in supply chains. Business Strategy and the Environment, 30(1), 590–608. Portico. https://doi.org/10.1002/bse.2641

[60] M. B. Miles, A. M. Huberman, and J. Saldaña, Qualitative data analysis: a methods sourcebook, Third edition. Thousand Oaks, Californinia: SAGE Publications, Inc, 2014.

[61] R. C. Bogdan and S. K. Biklen, Qualitative Research in Education. An Introduction to Theory and Methods. Third Edition. Allyn & Bacon, A Viacom Company, 160 Gould St, 1998.

[62] Ordóñez, C., & Duinker, P. N. (2010). Interpreting Sustainability for Urban Forests. Sustainability, 2(6), 1510–1522. https://doi.org/10.3390/su2061510

[63] R. P. Mahyudin, 'Strategi pengelolaan sampah berkelanjutan', Enviro Sci., vol. 10, p. 8, 2014.

[64] E. Prima, 'Wamen LHK: Persoalan Sampah Diatasi dengan Menjadikannya Sebagai Sumber Daya', Tempo, Nov. 12, 2020. https://tekno.tempo.co/read/1404749/wamen-lhk-persoalan-sampah-diatasi-dengan-menjadikannya-sebagai-sumber-daya (accessed Jun. 10, 2022).

[65] Moraga, G., Huysveld, S., Mathieux, F., Blengini, G. A., Alaerts, L., Van Acker, K., de Meester, S., & Dewulf, J. (2019). Circular economy indicators: What do they measure? Resources, Conservation and Recycling, 146, 452–461. https://doi.org/10.1016/j.resconrec.2019.03.045

[66] A. Luthfi and E. Kismini, 'Partisipasi masyarakat dalam sistem pengelolaan sampah di tpa sukoharjo kabupaten pati', J. Abdimas, vol. 17, no. 1, Art. no. 1, Jun. 2013, doi: 10.15294/abdimas.v17i1.9788.

[67] A. Marino and P. Pariso, 'From linear economy to circular economy: research agenda', Int. J. Res. Econ. Soc. Sci., vol. 6, no. 5, pp. 270–281, 2016.

[68] Rachim, H. A., & Ginting, P. A. (2019). Pemberdayaan Masyarakat Di Desa Pota Wangka Labuan Bajo Melalui Program Peduli Lingkungan (Sekolah Lingkungan) Dengan Metode Partisipatory Learning And Action. Prosiding Penelitian Dan Pengabdian Kepada Masyarakat, 6(1), 46. https://doi.org/10.24198/jppm.v6i1.22785

[69] 'PERPRES No. 97 Tahun 2017 tentang Kebijakan dan Strategi Nasional Pengelolaan Sampah Rumah Tangga dan Sampah Sejenis Sampah Rumah Tangga [JDIH BPK RI]', 2017. https://peraturan.bpk.go.id/Home/Details/73225/perpres-no-97-tahun-2017 (accessed Jul. 26, 2022).

[70] 'PERPRES No. 83 Tahun 2018 tentang Penanganan Sampah Laut [JDIH BPK RI]', 2018. https://peraturan.bpk.go.id/Home/Details/94716/perpres-no-83-tahun-2018 (accessed Jul. 26, 2022).