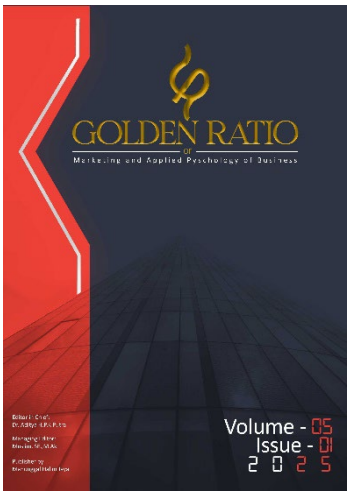
https://doi.org/10.52970/grmapb.v5i1.784

*Website:* https://goldenratio.id/index.php/grmapb

OPEN ACCESS

ISSN [Online]: 2776-6349




Received: September 19, 2024
Revised: November 13, 2024
Accepted: December 01, 2024

*Corresponding author: Vicky F Sanjaya, Department of Islamic Economics and Business, Faculty of Islamic Economics and Business, Universitas Islam Negeri Raden Intan Lampung, Lampung, Indonesia.

E-mail: vicky@radenintan.ac.id

MARKETING | RESEARCH ARTICLE

# Circular Economy Development to Achieve Indonesia's SDGs in 2030 in the perspective of Islamic Economics in the Era of society 5.0

**Vicky F Sanjaya***

[1,2,3] Department of Islamic Economics and Business, Faculty of Islamic Economics and Business, Universitas Islam Negeri Raden Intan Lampung, Lampung, Indonesia. Emai: vicky@radenintan.ac.id

**Abstract:** The application of linear economics makes economic actors think about how to get the maximum benefit through activities to explore existing natural resources, with the concept of make, use, and dispose of. The problems of waste, climate change, gas emissions, industrial waste, and water sources require us to switch to a more sustainable economic system. The circular economy is an environmentally friendly economy by maximizes the use of goods over a long period. The type of research in this study is qualitative research, after all the data is collected there is a stage of data credibility test where researchers check and triangulate research data. This study aims to answer the formulation of the problem, namely How is the circular economy development model in the era of society 5.0? What factors affect the success of the circular economy? What is the Islamic view related to the development of the circular economy in the era of Society 5.0? The results show that the development of a circular economy in the era of Society 5.0 can be carried out through the management of cattle waste into fertilizer and biogas. 4 factors influence the success of the circular economy, namely literacy, experience, technology, and financial adoption. The development of circular economy in Islam reflects the value of maslahah which refers to its usefulness and goodness.

**Keywords**: Circular Economy, SDGS 30, Sustainable.

**JEL Classification Code**: Q50, O10, Q56, Z12

## 1. INTRODUCTION

Nowadays, the topic of global warming is widely discussed, one of which is the problem of garbage waste. The world is capable of producing as much as 438 million plastic waste per point of which only 9% of the waste is recycled 12% burned and most of it ends up in landfills or pollutes rivers then anchored in the high seas (Tsakona et al. 2021). the world economic forum predicts that by 2025 the oceans will have 1 ton of plastic per 3 tons of fish (Veza et al, 2022). The main cause of the condition of the application of the traditional economic system is the linear economy. Linear economy means make, use and dispose, economic actors think about how to get the maximum benefit through exploring existing natural resources (Velenturf & Purnell 2021). Other problems include climate change, gas emissions, and industrial waste (Veza et al, 2022). Clean water sources are also an issue worth discussing (Firmansyah et al, 2021). These problems can be fundamentally fixed through changes in the economic system. The linear economic system already has an urgent need to shift to a sustainable socio-technological system (Vision 2050: The New Agenda for Business - World Business Council for Sustainable Development (WBCSD, 2022). One of the economic models offered to the world is the circular economy model, where in this model goods that have been consumed can be processed again (Reduce, Reuse, Recycle, Replace, Repair). The circular economy is an economic system that applies a circular or sustainable cycle, this system seeks to extend the life cycle of a product, raw materials and existing resources so that they can be used as long as possible and utilize the waste of the production process as a resource again (Macarthur 2013). It is important to assess the concept of circular economy as it is currently gaining momentum by both academics and practitioners (Geissdoerfer et al. 2017).

https://doi.org/10.52970/grmapb.v5i1.784

*Website:* https://goldenratio.id/index.php/grmapb

ISSN [Online]: 2776-6349

The United Nations (UN) has adopted a series of 2030 Sustainable Development Agenda that includes 17 Sustainable Development Goals (SDGs). The Sustainable Development Goals include 17 goals 169 of which are global over the next 15 years (applicable from 2016 to 2030).


**Figure 1. SDGs 2030 Goals**

The need for SDGS for global economic development is certainly indisputable, supporting the many organizations that participate in playing an active role in the success of SDGS (Greenhill and Lupu 2017). These organizations also continue to commit and synergize with the government to make the best efforts for the success of these SDGS (Haas & Stevens 2017). The circular economy system encourages the Indonesian government to succeed SDGS (Gunawan et al. 2020). Given the importance of the circular economy for the success of SDGS 30, it is necessary to know how the development of the circular economy itself over the past few years and what factors influence the success of the circular economy. The process of exploring natural resources as a factor of production is often done excessively, this is done in order to get the maximum profit from these natural resources. Allah SWT has warned humans not to damage the environment because Allah SWT created it in its best form. Allah SWT does not like people who do damage on earth, as he says in the Qur'an letter Al-Qashash verse 77 which means:

> "And seek in what Allah has bestowed upon you (the happiness) of the hereafter, and do not forget your share of (the enjoyment of) the worldly and do good (to others) as Allah has done good, to you, and do not do damage on (the) earth. Indeed Allah does not like those who do damage."

The Qur'anic verse instructs humans not to damage the earth and everything in it and instructs humans to protect and preserve nature and the environment. Society 5.0 is a concept of society initiated by the Japanese government (Skobelev & Borovik 2021), where the concept of a human-centered society based on technology through products and services in the amount and at the time needed through the process of collecting big data through the internet of things (IOT) then transformed by Artificial Intelligence (AI) (Özdemir & Hekim 2018). The circular economy has several problems, including the gap between the theory and practice of the circular economy so far (Barreiro-Gen & Lozano 2020). Business actors and the public are considered to still have low knowledge about the circular economy itself. based on this problem, of course, it is hoped that Era society 5.0 will be able to accelerate the process of socializing the circular economy itself. Based on this explanation, the researcher decided to conduct research with the title "Circular Economy Development to Achieve Indonesia's SDGs in 2030 in the perspective of Islamic Economics in the Era of society 5.0".

https://doi.org/10.52970/grmapb.v5i1.784
*Website:* https://goldenratio.id/index.php/grmapb
ISSN [Online]: 2776-6349

## 2. LITERATURE REVIEW

### *2.1. Circular Economy*

Human needs are unlimited but natural resources are limited, perhaps this is one of the principles that can describe the state of resources. Natural resources continue to be explored to be used as raw materials for production but it is unfortunate that excessive exploration activities without being balanced with the improvement of nature cause many environmental problems. Environmental problems ranging from air pollution, water, soil, loss of biodiversity, depletion of earth layers, and other environmental problems (Geissdoerfer et al. 2017). The circular economy is an environmentally friendly-based economy by maximizing the use of goods with a long period of time. This is an effort to minimize and prevent humans from massively exploiting existing natural resources. So this can be a solution to build and grow an environmentally friendly economy (Macarthur, 2013). China was the first country in the world to use the circular economy system in 2008 as a guideline for legislation. Currently, many countries are implementing policies with circular economy in mind, including the United States, European countries, Sweden, Finland, the United Kingdom, Japan, and the Netherlands (Völker et al, 2020). The circular economy changes the paradigm of the linear economy. Linear economy has the basic concept of extraction and production - consumption - collection - landfill. This concept will be changed with a circular concept, namely from processing - design / manufacturing - consumer good - collection - recycle. It is done in a continuous circular manner. A circular economy is an economy that is built that maximizes the production process with the minimum possible materials, with a consumption sector that maximizes a product and manages back waste both in the consumption sector and in the production process. The waste generated will be managed back into a raw material that can be reused for the production process.

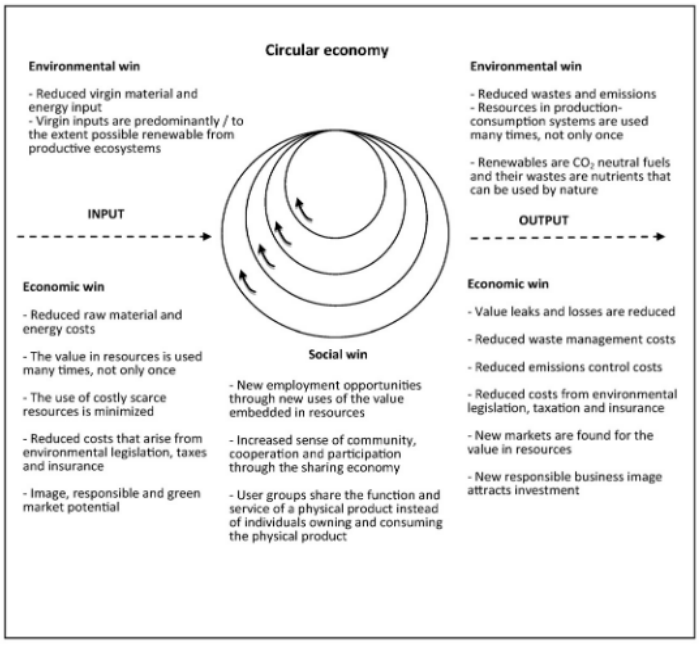



**Figure 2 Circular economy concept for sustainable development (Source: Korhonen et al, 2018)**

### *2.2. Sustainable Development Goals (SDGs)*

The United Nations (UN) has adopted the 2030 Sustainable Development Goals (SDGs). The SDGs build on the Millennium Development Goals (MDGs). The SDG program accommodates solutions to a wider range of problems compared to the MDGs. The SDGs provide a more comprehensive set of targets, both qualitative and quantitative, with resolutions for goals and objectives. The SDG program defines sustainable development as a means of development that meets the needs of the present without compromising the ability of future generations to meet their own

https://doi.org/10.52970/grmapb.v5i1.784
*Website:* https://goldenratio.id/index.php/grmapb ISSN [Online]: 2776-6349

needs. The SDGs call for efforts to build an inclusive, sustainable and resilient future for humanity and the planet. Over a 15-year period (2015-2030), new targets will be universally applied covering all countries, with each country having to prioritize their efforts to end all forms of poverty, fight inequality, and tackle climate change, and to ensure that no country is left behind. This is the essence of the SDGs and the commitment to achieve the targets will be the responsibility of each country (SCP 2020). Sustainable Development Goals:

Goal 1: End poverty in all its forms everywhere;
Goal 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture;
Goal 3: Ensure healthy lives and promote well-being for all people at all ages;
Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all;
Goal 5: Achieve gender equality and empower all women and girls
Goal 6: Ensure availability and sustainable management of water and sanitation for all;
Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all;
Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all;
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation;
Goal 10: Reduce inequalities within and among countries;
Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable;
Goal 12: Ensure sustainable consumption and production patterns;
Goal 13: Take urgent action to combat climate change and its impacts;
Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development;
Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss;
Goal 16: Achieve peaceful and inclusive societies, rule of law, effective and capable institutions;
Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development.

In 2021, the Ministry of National Development Planning/Bappenas together with the United Nations Development Programme (UNDP) Indonesia and the Government of the Kingdom of Denmark launched the "Economic, Social and Environmental Benefits of Circular Economy in Indonesia" report. Indonesia has the potential to generate additional GDP in 2030 amounting to IDR 593 to 638 trillion. The circular economy system also creates new jobs in 2030, amounting to 4.4 million with 75% of the workforce being women. CO2-ek emissions will be reduced by 126 million tons. In 2030 Indonesia is expected to be able to reduce waste in priority sectors by 18% to 52%. And finally, Indonesia is expected to be able to reduce water usage in 2030 by 6.3 M3 (Circular economy – LCDI, 2022.).

According to research conducted by (Dantas et al. 2021) with the title How the combination of Circular Economy and Industry 4.0 can contribute towards achieving the Sustainable Development Goals shows that the circular economy is able to influence the government's success in carrying out SDGs, the circular economy directly affects the goals of SDG 7, SDG 8, SDG 9, SDG 11, SDG 12 AND SDG 13. According to (Panchal, Singh, and Diwan 2021) that the more research conducted on the circulation economy will help align the performance of the circulation economy with the SDGs. According to a study conducted by (Cavicchi et al, 2022) shows that the higher a person's knowledge about economic circulation, the higher his ability to apply economic circulation to a business. Research conducted by (Samarasinghe & Wijayatunga 2022) shows that the application of the circulation economy can reduce factory waste emissions, increase the ability to recycle waste, increase the amount of compost produced and also produce promising biogas power energy. The study by Van Bruggen et al (2022) shows that the circular economy is a solution offered to

https://doi.org/10.52970/grmapb.v5i1.784
*Website:* https://goldenratio.id/index.php/grmapb ISSN [Online]: 2776-6349

stakeholders to find obstacles and solutions in implementing sustainable industries. The application of the circular economy in China is able to encourage the government to repair climate damage and create good urban governance (Bleischwitz et al. 2022).

## 3. RESEARCH METHOD AND MATERIALS

The type of research in this study is qualitative research. Judging from the format of the discussion, this research is included in descriptive research. The purpose of this descriptive research is to systematically, factually and accurately describe, describe, or illustrate the facts, characteristics, and relationships between the phenomena studied. At this stage, the researcher first identifies the object of research. After that, approach the object and the surrounding environment. The researcher then conducted an initial interview with the respondent while explaining the purpose of the research. After that the researcher extracted research data by conducting interviews both structured and unstructured. After all the data is collected, there is a stage of data credibility testing where researchers conduct member checks and triangulation of research data. The triangulation carried out is method and time.

## 4. RESULTS AND DISCUSSION

### *4.1. How is the Circular Economy Development Model in the Era of Society 5.0?*

Circular economy development in the era of Society 5.0 is a step towards a more sustainable society and focuses on human welfare. cattle farming is one type of individual business in the field of animal husbandry that is widely owned by people in Lampung. Dairy farming is able to produce dairy products that have high economic value. In line with the benefits obtained, the dairy farming business also produces products in the form of waste which is quite high. Livestock waste consists of liquid (water), solid and gas waste. Farm wastewater has the physical properties of 99.9% liquid (urine, water and a mixture of feces with urine) and 0.1% solid in the form of a solid suspension mixed with organic and inorganic materials of farm waste. Non-optimal treatment of livestock wastewater can cause environmental contamination around the farm, Processing of cattle waste can be done through the following:

### *4.2. How is the Circular Economy Development Model in the Era of Society 5.0?*

Circular economy development in the era of Society 5.0 is a step towards a more sustainable society and focuses on human welfare. cattle farming is one type of individual business in the field of animal husbandry that is widely owned by people in Lampung. Dairy farming is able to produce dairy products that have high economic value. In line with the benefits obtained, the dairy farming business also produces products in the form of waste which is quite high. Livestock waste consists of liquid (water), solid and gas waste. Farm wastewater has the physical properties of 99.9% liquid (urine, water and a mixture of feces with urine) and 0.1% solid in the form of a solid suspension mixed with organic and inorganic materials of farm waste. Non-optimal treatment of livestock wastewater can cause environmental contamination around the farm, Processing of cattle waste can be done through the following processing of cattle farm waste.

Cattle waste can be categorized into two types: solid and liquid. Each type requires specific treatment processes to ensure effective waste management. Liquid waste, primarily composed of urine, contains substances such as water, ammonia, urea nitrogen, and other compounds. The treatment process for liquid waste involves several steps. First, the urine is collected and then filtered to remove coarse particles, like straw, dirt, or other foreign materials. After this initial screening, the filtered urine is directed to a temporary holding pond or storage tank. During storage, it is crucial to regularly monitor the water quality, particularly focusing on chemical levels, such as ammonia, to ensure they remain within environmentally safe limits. For solid waste, which consists of the manure produced by the cattle, a different treatment process is required. Cow manure contains organic matter, including fiber, cellulose, and undigested nutrients. To manage this waste effectively, it is collected and placed in a temporary storage area that is waterproof and easily accessible. During this stage, foreign materials such as plastic, metal, or paper are separated from the manure. If the goal is to produce organic

https://doi.org/10.52970/grmapb.v5i1.784
*Website:* https://goldenratio.id/index.php/grmapb
ISSN [Online]: 2776-6349

fertilizer, the solid waste can undergo a composting process. Composting involves mixing cow dung with other organic materials, such as straw, dry leaves, and household waste, while maintaining the appropriate carbon-nitrogen ratio, moisture levels, and air circulation. Once the composting process is complete, the resulting organic fertilizer should be stored in a suitable location protected from weather conditions to allow further maturation. Finally, the organic fertilizer can be used as a nutrient source for agricultural crops or gardens, following established guidelines for its application.

Waste Processed Products

Biogas derived from cow dung is a form of natural gas generated through an anaerobic fermentation process, which means it occurs in the absence of oxygen. In this process, organic matter such as cow dung, along with other organic materials, is broken down by specific microorganisms known as methanogenic bacteria. These bacteria decompose the cow dung to produce methane gas (CH4) and carbon dioxide (CO2) as the main by-products. The entire fermentation process takes place in a closed, airless environment like a biodigester. To begin producing biogas, the biodigester must be prepared as it is the primary device responsible for this process. The first step involves collecting cow waste, primarily cow dung, from the barn or a suitable storage area. This collected cow dung acts as the main raw material for biogas production. In some cases, additional organic materials can be incorporated to enhance the process. These may include rhizome plants such as ginger, turmeric, and kencur, which are typically added in small amounts (1% of the total materials). These additional organic materials are prepared by boiling, blending, and cooling them before introducing them into the biodigester. Once all materials are in place, the biodigester is sealed to create the necessary anaerobic conditions. Inside this sealed environment, microorganisms begin breaking down the organic matter, initiating the fermentation process. This phase typically lasts for around 21 days, during which the bacteria work to decompose the materials and produce biogas. An added benefit of using these organic additives is that they can significantly reduce the characteristic odor of biogas, yielding a nearly odorless end product. The biogas produced during fermentation is then collected through a pipe system connected to the biodigester. To store the gas, the biogas is transferred to a secure and sealed gas storage tank. For cost efficiency, large plastic containers like those used in fish farming can be adapted to serve as gas storage units. Once collected, biogas can be used for various purposes, such as cooking, or as a renewable energy source that can replace electricity, making it an effective alternative for household energy needs. Maintaining the biodigester is crucial to ensure optimal performance. Regular monitoring of temperature, pH levels, and acidity within the biodigester is essential. Additionally, periodic cleaning of the biodigester prevents the accumulation of solid residues that could obstruct its operation. After the completion of the fermentation process, the leftover organic material, known as "digestate," can be utilized as an organic fertilizer rich in nutrients. The digestate, often in the form of sludge, serves as a valuable organic fertilizer for plants, providing benefits similar to those of compost. Ongoing monitoring and maintenance are required to keep the biodigester functioning efficiently. This involves checking for leaks and ensuring all components are in good working order. With a well-maintained biogas system, as few as four cows can produce enough gas to continuously power three cooking stoves, effectively meeting daily household energy needs. Previously, an average household might have required two 3kg LPG gas cylinders per month for cooking. However, with the use of biogas, the dependency on LPG is eliminated, leading to significant cost savings over time. This shift not only contributes to more sustainable energy consumption but also offers substantial financial benefits by reducing gas expenses annually.

Organic fertilizer produced from cow dung is a type of manure fertilizer created through a sustainable fermentation process that utilizes local microorganisms (MOL). This method not only creates a nutrient-rich fertilizer but also effectively utilizes organic waste materials, making it an environmentally friendly practice. The first step in producing organic fertilizer is gathering the necessary raw materials, such as cow dung, plant residues, leaves, and other organic substances. These materials serve as the primary ingredients for creating the fertilizer. Cow dung, in particular, is spread out on a drying plastic sheet, which measures approximately 25 meters by 6 meters, and is left to dry for one day. Next, local microorganisms (MOL) are either collected from the environment or cultivated specifically for the fermentation process. MOL can consist of bacteria, yeast, or other beneficial microorganisms essential for breaking down the organic materials. To cultivate these

https://doi.org/10.52970/grmapb.v5i1.784
*Website:* https://goldenratio.id/index.php/grmapb
ISSN [Online]: 2776-6349

microorganisms, one can use growth media like sugar water, coconut water, and rice washing water. These media provide the nutrients and environment needed for the microorganisms to multiply effectively. Once the raw materials and MOL are prepared, they are combined into a homogeneous mixture. This mixture must be uniform to ensure that the microorganisms are evenly distributed and can work efficiently. The mixture is then placed into a suitable fermentation container, such as a barrel or an open container. To prevent external contamination, the container is covered with cloth or paper. The fermentation process begins once the mixture is securely stored. During the fermentation phase, which typically lasts several weeks, the microorganisms in the MOL decompose the organic materials into a nutrient-rich fertilizer that plants can easily absorb. Throughout this process, it is crucial to monitor various conditions, such as temperature, humidity, and the aroma of the mixture. Maintaining an optimal environment is vital for the growth of the desired microorganisms and to avoid unwanted microbial contamination. After the fermentation is complete, the mixture is left to mature for an additional few weeks. This maturation period allows the microorganisms to continue breaking down the materials, refining the fertilizer into its final form. The matured fertilizer is then stored in airtight containers to protect it from moisture and prevent contamination with foreign materials. The finished organic fertilizer can then be utilized in agriculture or gardening as a natural source of nutrients for plants. It's important to follow recommended guidelines for applying organic fertilizer to maximize its benefits. This MOL fermentation method not only produces high-quality fertilizer but also helps in reducing organic waste and promoting a sustainable agricultural practice. In terms of production scale, the cattle farm produces around 600 kilograms of organic waste daily, which, after processing, results in approximately 200 kilograms of fertilizer. The final product is packaged in 25-kilogram bags and sold at a price of Rp. 15,000 per bag. With a monthly output of around 300 bags, the marketing of the fertilizer is conducted both offline and online. Offline sales involve distributing the fertilizer directly from the cattle farm, while online sales are carried out through platforms like Shopee and Instagram. This dual approach ensures a wide reach and accessibility for potential customers, contributing to a sustainable and profitable business model for organic fertilizer production.

### *4.3. The Implementation Model of Circular Economy in Cattle Farming*

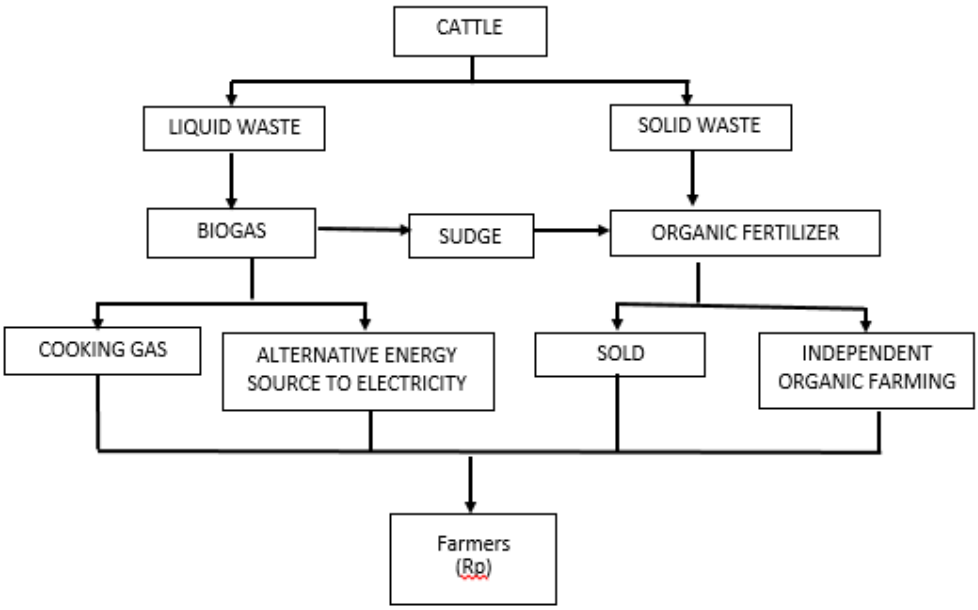



**Figure 3. Circular Economy by Cattle Farm Waste**

The application of circular economy can be seen through the pattern of livestock integration or integrated farming. It starts with the liquid waste from cattle that is processed into biogas, which will be used for cooking. Biogas can also be processed as an alternative energy source for electricity. Each household requires waste from 2-4 cattle to meet daily gas and electricity needs. During the biogas

https://doi.org/10.52970/grmapb.v5i1.784
*Website:* https://goldenratio.id/index.php/grmapb
ISSN [Online]: 2776-6349

production process, waste such as sludge will remain. Sludge can be processed or used directly as organic fertilizer. Solid waste from cattle is also processed into organic fertilizer; solid waste can be used directly as organic fertilizer after drying. The MOL method can be used to obtain high-quality organic fertilizer, which can be sold directly. Fertilizer production can be tested to determine whether the produced fertilizer meets Indonesian national standards or SNI. The use of organic fertilizer can be done independently by planting vegetables that use organic materials for every process.

The application of circular economy in the cattle farming sector is closely related to achieving sustainable development goals (SDGs 30), particularly target point 6 (clean water and sanitation), which is how to ensure the availability and management of clean water and sustainable sanitation for all. The waste from cattle manure that is disposed of carelessly will affect water quality. Through good sanitation in farming and the processing of liquid waste into biogas, there will be no more water contaminated by cattle farm liquid waste. Target point no 7 (affordable and clean energy) ensures access to affordable, reliable, and sustainable energy. The use of biogas as an alternative energy source to electricity not only saves costs but also reduces the use of non-renewable energy sources, considering that the average electricity in Indonesia is generated from coal. Point 12 (responsible consumption and production) can be achieved through the efficient use of natural resources in production and consumption, as well as reducing negative environmental impacts alongside additional income that will be obtained.

### *4.4. What Factors Influence the Success of a Circular Economy?*

Traditional cattle farming has yet to fully grasp the concept of waste processing and has not incorporated a circular economy approach in its practices. The initial step towards achieving success in the circular economy is to introduce this concept to the community through continuous education and technical guidance. This literacy effort, encompassing periodic training and information dissemination, aims to enhance understanding and awareness. As farmers become more literate in livestock waste management, they are more likely to be inspired to remain committed to their farming activities. The community comprises individuals with diverse social characteristics, leading to variations in their abilities to manage livestock businesses. These differences are influenced by factors such as attitudes, skills, knowledge, capital, leadership, and other socio-economic attributes. By providing recommended technological solutions, opportunities for learning arise, allowing farmers to practice their knowledge in hands-on activities. This experience-based learning enables farmers to replicate successful practices observed within their community. In cases where experience is limited, technical skill guidance, entrepreneurial training, and collaboration abilities are provided. As more farmers successfully implement circular economy practices, their peers are encouraged to follow suit, learning directly from these real-life experiences.

The adoption of new technology in the livestock sector plays a pivotal role in advancing the industry, particularly in embracing a circular economy. Technology adoption involves applying innovations that result from scientific research or new discoveries. Farmers may accept or reject these technologies, depending on their socio-economic circumstances. For instance, older farmers might adhere to traditional methods, while younger ones are more likely to experiment with new approaches. Higher levels of education within the community generally facilitate quicker acceptance of technology. Additionally, communities with larger livestock populations find it easier to implement technology due to greater efficiency, while higher income levels among farmers make technology adoption more accessible. The use of tools and materials conditioned by the circular economy model helps farmers adjust their implementation to fit their financial capacity. Overall, technology adoption is a key indicator of success in the circular economy.

Financial considerations are crucial in implementing a circular economy within the livestock farming sector. Since livestock farming is a significant livelihood, greater profits contribute to the successful adoption of the circular economy. Economic analysis is essential to assess the costs associated with applying livestock processing technologies and their impact on profitability. This can be observed by comparing the costs and benefits before and after adopting technologies like biogas. For instance, farmers can evaluate the savings achieved in LPG usage costs by comparing pre- and

https://doi.org/10.52970/grmapb.v5i1.784
*Website:* https://goldenratio.id/index.php/grmapb ISSN [Online]: 2776-6349

post-implementation expenses and the duration of usage each month. These financial aspects help gauge the success of circular economy practices and their impact on the community's livelihood.

### *4.5. What is the Islamic Perspective on Circular Economy Development in the Era of Society 5.0?*

The application of circular economy in managing cattle waste into biogas does not have strong and specific legal evidence in Islamic law. Some scholars or fiqh experts argue that the management of cattle waste into biogas is permissible because this process produces a product that no longer has najis properties. This opinion is based on the principle of maslahah (benefit) in Islamic law. The use of biogas as a renewable energy source can provide economic and environmental benefits by reducing pollution and utilizing renewable energy sources. The statement that the management of cattle waste into biogas is permissible according to Islamic law is based on the principle of Hukmiyah and because the processed animal waste into biogas is considered a najis object that is excused. The concept of Hukmiyah in Islamic law refers to the principle that allows for the change of the status of najis (impure) to halal or not najis. This principle takes into account human actions in altering the characteristics of an object or material. In this context, animal waste (such as cow dung) is initially considered najis in Islamic law. However, when animal waste is processed into biogas through certain methods, its characteristics can undergo a transformation. This processing can eliminate the najis nature of the waste and turn it into a source of renewable energy. Therefore, based on the principle of Hukmiyah, an object that was initially najis can become "*najis* that is *Ma'fu*," which means its najis status is forgiven or removed due to having undergone a change in status or form.

The process of managing cattle waste using circular economy principles in Islam can be considered very beneficial as it reflects the values of Maslahah, which refer to the principles of utility and goodness in Islamic law. First, "Benefits of Renewable Energy" Managing cattle waste into biogas is a concrete example of the application of renewable energy. Biogas is an energy source that can be used for various purposes, such as cooking, lighting, and heating. This helps reduce dependence on fossil fuels, which can lessen the negative impact on the environment, including greenhouse gas emissions. Second, "Environmental Benefits" Managing cattle waste into biogas can reduce environmental pollution caused by animal waste. By converting animal manure into biogas, the waste no longer contaminates the soil and water. This supports environmental values included in the concept of Maslahah. Third, "Agricultural Benefits" The organic fertilizer produced from animal waste can be used to enhance soil fertility. This helps farmers improve their agricultural yields naturally and sustainably.

This contribution to the sustainability of agriculture and the welfare of the community is a manifestation of the principle of Maslahah. Fourth, "Economic Welfare": The production of biogas and organic fertilizer from cattle waste can also provide economic benefits. Farmers or livestock owners can sell biogas or organic fertilizer, which can become an additional source of income. This supports the value of economic benefit in Islam. Fifth, "Social Welfare": By reducing environmental pollution and improving the quality of agricultural land, the management of cattle waste into biogas and organic fertilizer can contribute to social welfare. This reflects the concept of Maslahah in providing benefits to society at large.

The management of cattle waste through a circular economy in Islam is a strategic effort that can yield promising profits. However, in practice, business owners must pay attention to the social and environmental values emphasized in Islamic teachings. In this context, several key principles and values must be understood and applied to align with Islamic beliefs. The first principle focuses on the potential for generating promising profits. Transforming cattle waste into biogas and organic fertilizer presents a lucrative opportunity. Biogas can serve as an energy source that can be sold or utilized for personal use, while organic fertilizer improves agricultural productivity and can be marketed as a valuable product. Another essential principle is fulfilling social obligations through zakat and charity. In Islam, profits from any economic activity, including the implementation of the circular economy, are subject to zakat. Zakat is a mandatory obligation for individuals or business owners who have wealth exceeding the nisab (the minimum threshold subject to zakat). The Quran addresses zakat in Surah At-Taubah

﴿ خُذْ مِنْ اَمْوَالِهِمْ صَدَقَةً تُطَهِّرُهُمْ وَتُزَكِّيْهِمْ بِهَا وَصَلِّ عَلَيْهِمْۗ اِنَّ صَلٰوتَكَ سَكَنٌ لَّهُمْۗ وَاللّٰهُ سَمِيْعٌ عَلِيْمٌ ١٠٣ ﴾ ( التوبة/9: 103)

https://doi.org/10.52970/grmapb.v5i1.784
*Website:* https://goldenratio.id/index.php/grmapb
ISSN [Online]: 2776-6349

> Allah Subhanahu wa Ta'ala says: Take zakat from their wealth (to) purify and cleanse them, and pray for them, for indeed your prayer is a source of tranquility for them. Allah is All-Hearing, All-Knowing. In addition to zakat as an obligation for a Muslim, charity (sedekah) is a voluntary act of giving to those in need. The activities of paying zakat and giving charity are actions to purify oneself through the wealth that has been obtained. This activity is intended to achieve the value of benefit or blessing.

Environmental considerations also play a crucial role in waste management efforts. Business owners are obligated to uphold environmental values, as preserving nature and the environment is a duty in Islam. This is emphasized in Surah Ar-Rum [30:41], which guides believers towards protecting the environment and not associating partners with Allah. By adhering to Islamic values in managing cattle waste, business owners can positively impact society and the environment while ensuring the success and blessings of their ventures. Ultimately, these principles underscore the alignment of circular economy practices with Islamic teachings, which emphasize the importance of social and environmental integrity in all aspects of life. Through these efforts, business owners can contribute to broader community welfare and sustainable environmental stewardship, achieving success that is both financially and spiritually fulfilling.

## 5. CONCLUSION

In conclusion, the research findings on the development of the circular economy within the framework of Society 5.0 yield significant managerial and theoretical implications that resonate globally. From a managerial standpoint, the integration of circular economy principles is crucial for industries, particularly in livestock management, as it enables effective waste management through practices such as converting livestock waste into fertilizers and biogas. This approach not only mitigates environmental impact but also generates additional revenue streams for farmers, promoting sustainable and economically advantageous waste management. Moreover, enhancing literacy and training for employees is essential for the successful implementation of circular economy practices. By fostering knowledge of sustainable practices and providing training on technological advancements in waste management, organizations can achieve greater operational efficiency, contributing to a more effective management paradigm. The alignment with Society 5.0 encourages managers to adopt modern technologies, including the Internet of Things (IoT) and Artificial Intelligence (AI), to optimize waste management processes, thus enhancing production efficiency and streamlining operations. Theoretical contributions of the research enrich the circular economy discourse by elucidating the factors of literacy, experience, and technology adoption as key determinants for success within this model. These variables warrant further exploration to broaden the theoretical understanding of the circular economy. Furthermore, the study highlights a strong relationship between the circular economy and the Sustainable Development Goals (SDGs), illustrating that circular economy practices advance environmental sustainability and align with goals such as clean water management and renewable energy promotion. This connection lays the groundwork for future research into the interplay between the circular economy and sustainable development. Finally, the introduction of an Islamic perspective on the circular economy underscores the integration of ethical and spiritual values into business practices, advocating for *maslahah* (benefit) and environmental stewardship. This perspective offers a novel approach to economic studies, intertwining ethical considerations with sustainable business strategies, thereby enriching the discourse on the circular economy.

## REFERENCES

Barreiro-Gen, M., & Lozano, R. (2020). How circular is the circular economy? Analyzing the implementation of circular economy in organisations. Business Strategy and the Environment, 29(8), 3484–3494. https://doi.org/10.1002/BSE.2590

Bleischwitz, R., Yang, M., Huang, B., Xu, X., Zhou, J., McDowall, W., Andrews-Speed, P., Liu, Z., & Yong, G. (2022). The circular economy in China: Achievements, challenges, and potential implications for

decarbonisation. Resources, Conservation and Recycling, 183, 106350. https://doi.org/10.1016/J.RESCONREC.2022.106350

Bruggen, A. R. van, Zonneveld, M., Zijp, M. C., & Posthuma, L. (2022). Solution-focused sustainability assessments for the transition to the circular economy: The case of plastics in the automotive industry. Journal of Cleaner Production, 358, 131606. https://doi.org/10.1016/J.JCLEPRO.2022.131606

Cavicchi, C., Oppi, C., & Vagnoni, E. (2022). Energy management to foster circular economy business model for sustainable development in an agricultural SME. Journal of Cleaner Production, 368, 133188. https://doi.org/10.1016/J.JCLEPRO.2022.133188

Dantas, T. E. T., de-Souza, E. D., Destro, I. R., Hammes, G., Rodríguez, C. M. T., & Soares, S. R. (2021). How the combination of circular economy and Industry 4.0 can contribute towards achieving the sustainable development goals. Sustainable Production and Consumption, 26, 213–227. https://doi.org/10.1016/J.SPC.2020.10.005

Ekonomi circular – LCDI. (2022, August 31). LCDI. https://lcdi-indonesia.id/ekonomi-circular/

Firmansyah, Y. W., Setiani, O., & Darundiati, Y. H. (2021). Kondisi sungai di Indonesia ditinjau dari daya tampung beban pencemaran: Studi literatur. Serambi Engineering, 6(2), 1879–1890.

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

Greenhill, B., & Lupu, Y. (2017). Clubs of clubs: Fragmentation in the network of intergovernmental organizations. International Studies Quarterly, 61(1), 181–195. https://doi.org/10.1093/ISQ/SQX001

Gunawan, J., Permatasari, P., & Tilt, C. (2020). Sustainable development goal disclosures: Do they support responsible consumption and production? Journal of Cleaner Production, 246, 118989. https://doi.org/10.1016/J.JCLEPRO.2019.118989

Haas, P. M., & Stevens, C. (2017). Ideas, beliefs, and policy linkages: Lessons from food, water, and energy policies. In Governing through goals: Sustainable development goals as governance innovation (pp. 137–164). https://doi.org/10.7551/MITPRESS/9780262035620.003.0006

Korhonen, J., Honkasalo, A., & Seppälä, J. (2018). Circular economy: The concept and its limitations. Ecological Economics, 143, 37–46. https://doi.org/10.1016/J.ECOLECON.2017.06.041

KPPN. (2020). Pedoman teknis penyusunan rencana aksi - Edisi II Tujuan Pembangunan Berkelanjutan/ Sustainable Development Goals (TPB/SDGs). Kementerian PPN. Jakarta: Kedeputian Bidang Kemaritiman dan Sumber Daya Alam, Kementerian Perencanaan Pembangunan Nasional/ Badan Perencanaan Pembangunan Nasional.

Macarthur, E. (2013). Towards the circular economy. Journal of Industrial Ecology, 2(1), 23–44.

Özdemir, V., & Hekim, N. (2018). Birth of Industry 5.0: Making sense of big data with artificial intelligence, the internet of things, and next-generation technology policy. OMICS: A Journal of Integrative Biology, 22(1), 65–76. https://doi.org/10.1089/OMI.2017.0194/Asset/Images/Large/Figure3.Jpeg

Panchal, R., Singh, A., & Diwan, H. (2021). Does circular economy performance lead to sustainable development? – A systematic literature review. Journal of Environmental Management, 293, 112811. https://doi.org/10.1016/J.JENVMAN.2021.112811

Samarasinghe, K., & Wijayatunga, P. D. C. (2022). Techno-economic feasibility and environmental sustainability of waste-to-energy in a circular economy: Sri Lanka case study. Energy for Sustainable Development, 68, 308–317. https://doi.org/10.1016/J.ESD.2022.04.005

Skobelev, P., & Borovik, S. (2021). On the way from Industry 4.0 to Industry 5.0: From digital manufacturing to digital society. International Scientific Journal, 6, 307–311. https://www.researchgate.net/publication/356284207_On_the_way_from_Industry_40_to_Industry_50_from_digital_manufacturing_to_digital_society

Soejono, H. A. (2005). Metode penelitian: Suatu pemikiran dan penerapan. Bina Adiaksara. https://opac.perpusnas.go.id/DetailOpac.aspx?id=673185

Suryabrata, S., & Kurniawan, Z. (2006). Metodologi penelitian. PT Raja Grafindo Persada.

Tsakona, M., Baker, E., Rucevska, E., Rosendahl Appelquist, L., Macmillan-Lawler, M., & Harris, P. (2021). Drowning in plastics – Marine litter and plastic waste vital graphics.

Velenturf, A. P. M., & Purnell, P. (2021). Principles for a sustainable circular economy. Sustainable Production and Consumption, 27, 1437–1457. https://doi.org/10.1016/j.spc.2021.02.018

Veza, I., Idris, M., & Fattah, I. M. R. (2022). Circular economy, energy transition, and role of hydrogen. Mechanical Engineering for Society and Industry, 2(2), 54–56. https://doi.org/10.31603/mesi.7134

Vision 2050: The new agenda for business - World Business Council for Sustainable Development (WBCSD). (2022, August 31). WBCSD. https://www.wbcsd.org/Overview/About-us/Vision_2050/Resources/Vision-2050-The-new-agenda-for-business

Völker, T., Kovacic, Z., & Strand, R. (2020). Indicator development as a site of collective imagination? The case of European Commission policies on the circular economy. Culture and Organization, 26(2), 103–120. https://doi.org/10.1080/14759551.2019.1699092