Waqf-based Waste Management: A Proposed Model in Indonesia

Ririn Riani[1], Ahlis Fatoni[2]
[1]SMART Indonesia
[2]INCEIF University, Malaysia

Indonesia is now facing critical environmental problems, in addition to cases of growing waste, deforestation of scale such as air pollution, and lack of air supply and air services, raining down on Indonesia for some serious irregularities and deficiencies in environmental management. These serious issues must be addressed, and appropriate solutions must be implemented to reduce disaster risks and promote the growth of a better and more sustainable country. Since Islam is the main religion for the Indonesian people, an Islamic approach will be encouraged to solve this problem. Previous researchers requested that waqf is the most important Islamic legal entity that can be used for this purpose. Sustainable and integrated waste management or ISWM/Integrated Sustainable Waste Management focuses on waste management as a multi-actor. Waqf can contribute to long-term management that is used to manage and manage waste. Waqf institutions and others have pioneered some of these innovative schemes, but they have been massively implemented. So, this research will examine the concept of Waqf-Based Waste Management.

Keywords: Waste Management; Waqf; Indonesia; SDGs

OPEN ACCESS

*Correspondence:
Ririn Riani
ririnriani@gmail.com

Received: 21 September 2023
Accepted: 29 November 2023
Published: 31 December 2023

Citation:
(2023) Waqf-based Waste Management: A Proposed Model in Indonesia. International Journal of Waqf 3.2.

INTRODUCTION

Indonesia's population continues to increase significantly and increase the production of domestic waste that has not been managed sustainably. In 2012 the Ministry of Health reported that only about 24.5% of the collected waste was properly processed, while the rest was burned or dumped into sewers, rivers, and the sea. Law No. 18 of 2008 on waste management calls for all open landfills (TPAs) to be replaced with controlled landfills or sanitary landfills. Article 21 paragraph 4 PP No. 81 of 2012 concerning household waste management shows that waste management in Indonesia is the responsibility of local governments, including landfill management [1]. The rapid population growth and urbanization have a significant effect in increasing the volume of waste in urban areas (Sujauddin, et al., 2008).

Waste can be defined as a burden or a valuable resource depending on how the waste is managed (Zaman, 2009: 1). According to Law no. 18 of 2008 Chapter 1 Article 1 waste is the residue of human daily activities and/or natural processes in solid form. McDougall et al. (2001:1) defines waste as something less useful and valuable, or useless remnants. Garbage is a product of human activities. Physically it consists of the same materials as useful goods, only distinguished by their lack of value. The reason for the lack of value or usefulness can be attributed to the mixing of the waste and the unknown composition of the waste.

According to the EPA Waste Guidelines (2009: 11) waste is anything that is discarded, rejected, neglected, unwanted, or unused material, the unused material is not for sale, recycling, reprocessing, repair or purification by separate activities. who produced the material. In addition, waste is also defined as everything declared by environmental protection regulations or policies that are defined as waste, whether valuable or not. From the various definitions above, there is a common definition of waste in general, namely waste is material that is discarded and decreases in value. McDonough and Braungart (2002: 92) in Scheinberg (2010: 9) say that waste has the same value as food. This statement can be interpreted that McDonough and Braungart view that waste has a very high and valuable value even to the point of having the same value as food.

Waste has become an important element in the management and reuse business in developed countries. However, this is not the case in developing countries, which continue to struggle with waste management issues. According to the World Bank, the waste management budget in any country may account for 20 to 50 percent of the total development costs. Citing data from the Ministry of Environment and Forestry (KLHK) on the total national waste production, which reached 67.8 million tons in 2020. This shows that 270 million people produce around 185,753 tons of waste per day. Or, each household produces about 0.68 kg of waste every day. However, by 2021 the total waste as a whole has been reduced to 41.6 million tons. Unfortunately, the handling of waste has not yet reached the maximum number, only about 27.25% or 11.3 million tons of waste that can be handled through waste processing.

Indonesia is now facing critical environmental problems, in addition to cases of piling garbage, large-scale deforestation and associated forest fires causing heavy smog, air pollution, traffic jams, and lack of water supply and water services, raining down on Indonesia for some serious deviations and deficiencies in environmental management (Budiman, 2011). These serious issues must be addressed, and appropriate solutions must be implemented to reduce disaster risks and promote the growth of a better and more sustainable country. Since Islam is the religion of the majority of the Indonesian people, it is hoped that an Islamic approach will have more opportunities to solve these problems.

Environmental degradation has increased dramatically in recent decades, becoming one of the most pressing problems. Due to the extensive environmental damage caused by human activities, it was deemed necessary to investigate the role of Islam in environmental protection. Waqf, as an instrument of charity in Islam, has a similar purpose in this regard and can be used as an important tool for environmental protection (Yaakob et al., 2017). Waqf is intended to play an important role in environmental preservation thereby enabling more sustainable development in the country under an Islamic perspective (Rashid, 2018).

Bagader et al., (1994) have studied the role of waqf in environmental preservation and development. They consider that waqf is the most important Islamic legal entity that can be used for this purpose. Waqf is a source of significant contribution to the welfare of society (Robani & Salih, 2018). Waqf is not only distributed in the form of mosque buildings, schools, hospitals. However, in supporting the sustainability of environmental conservation, waqf can contribute to the long-term distribution of land for agriculture and ranges, wildlife propagation, public reservoirs, gardens, as well

as land used to accommodate and manage waste or can be in the form of funds to finance such projects. that.

Waqf institutions that focus on environmental protection are still very rare compared to other types of waqf, such as for religious purposes, education, health, and poverty alleviation. Although Islamic teachings and concepts have extensively encouraged Muslims to preserve and protect the environment, the discourse and practice of waqf for this particular reason seems to be very limited. Waqf is a relatively new project in Indonesia aimed at environmental protection and rehabilitation purposes. Waqf institutions and others have pioneered some of these innovative schemes, but they have not yet been implemented massively. So, this research will examine a concept regarding Waqf-based Waste Management.

LITERATURE REVIEW

Environmental Theory in Waste Management

Humans began to pay great attention to their environment, especially in the 1970s after the United Nations conference on the environment was held in Stockholm. This concern is mainly due to the increasing number of pollution caused by industrial waste so that it interferes with human life. Humans are ecologically part of the environment. Human survival depends on the integrity of the environment. The relationship between humans and the environment has undergone many changes from time to time. This change in relationship has brought the earth to a change which then made many observers read the phenomena that occur in the relationship between the environment and humans and create theories to manage the environment or also called environmental management.

Buchholz (1993) divides environmental management theory into two, namely traditional management and ecocentric management (table 2). The main cause of damage on earth is the existence of a global human moral crisis that is wrong about the perspective on humans, nature and the position of humans in the environment. Traditional management is characterized by a goal that focuses on obtaining economic benefits and profits. Traditional management is a form of management that adheres to anthropocentrism. Keraf (2010:1) views the importance of moral/ethical/human behavior as the basis for human treatment of the environment. Anthropocentrism is an understanding that is the basis for the error of the human perspective on nature where this understanding views only humans who have absolute value and power over nature so that nature becomes a tool to satisfy human needs.

Ecocentric management is a form of management which is the opposite of traditional management. An ecocentric form of management prioritizes sustainability, quality of life and welfare. Ecocentric and biocentric ideas are concepts that support ecocentric management. Ecocentrism biocentrism is an ideology that opposes anthropocentrism. Biocentrism views that ethics and values are not only owned by humans, but also all living things. The continuation of biocentrism is ecocentrism or deep ecology which views all ecological communities (living and non-living) as having values so that ethics covers a wider range than biocentrism.

The basic difference between traditional management and ecocentric management lies in how to view and utilize the role of the environment in meeting human needs. Traditional management still relies on the full use of the environment to meet human needs without thinking about the future of the environment in the future. Meanwhile, ecocentric management is a form of environmental utilization that is balanced with nature and uses sustainable principles.

Fundamental change to make the earth a better place is to start with a change in human morals/behavior. Viewing scavengers as an important community for the environment is one manifestation of this form of ecocentric management. As a community in harmony with nature, scavengers are still not seen as important for sustainable waste management.

Sustainable Waste Management

Sustainable development can mean that life is more meaningful, not just fulfilling needs. The term sustainability is widely used in various fields including sustainability in waste management. Chung and Lo (2003: 123) use four criteria in assessing the sustainability of waste management in Hong Kong, namely the criteria for environmental desirability, economic optimization, community acceptance, justice and administrative provisions.

In recent years in several countries, efforts have been made to reduce the amount of waste in landfills with stricter regulations, promoting source reduction, reuse of reusable waste and recycling, and energy production from waste. According to Huber-Humer and Lechner (2011:1427), a sustainable landfill is defined as a system aimed at achieving a balance that is acceptable to the environment within one generation (30-40 years). When physical barriers to landfill fail to contain pollution, the release of emissions results in a high

environmental burden that must be overcome to avoid threats to human health and the environment.

Sustainable and integrated waste management or ISWM/Integrated Sustainable Waste Management focuses on waste management as a multi-actor, multi-layered social-technical system agreement (Ijgosse, Anschütz and Scheinberg 2004; Spaargaren and van Vliet 2000 in Scheinberg 2010: 9). ISWM places the formal and informal business sectors in the overall technical social system in waste management. The ISWM framework as shown in Figure 3 below recognizes three main dimensions in waste management, namely stakeholders, elements of the waste system and aspects of sustainability (Scheinberg, 2010: 9).

The Potential of Waqf in Environmental Conservation

Waqf is a dynamic institution at the beginning of Islamic civilization which was introduced by Islam. "Holding maal (assets) and limiting its consumption with the aim of repeatedly extracting the proceeds for purposes that represent justice or generosity," according to Kahfi [13]. As long as the principal of the waqf is maintained, the waqf is a continuous yielding asset. The term "perpetual" refers to the concept of a waqf that lasts as long as the asset lasts. By attributing value to dedication, Sabit and Hamid [14] seek to replace the immortality of the object's physical existence with dedication, which is then preserved and invested.

Waqf institutions can be used to mobilize voluntary contributions from Muslims who are able to organize society. The main incentive to contribute to waqf institutions is religious encouragement. Islam has convinced its adherents that charitable donations for waqf can bring great joy to the donor. The rewards of waqf continue to flow as long as the waqf is active and beneficial for the recipient. Historically waqf was given to education, health, social welfare, and environmental welfare in Islamic civilization. In many cases, waqf also provides defense services and public utilities.

Environmental degradation has increased dramatically in recent decades, becoming one of the most pressing problems. Due to the widespread environmental damage caused by human activities, it is very important to investigate the role of Islam in environmental protection. As a result, all Muslims must make continuous efforts to ensure a safe and healthy atmosphere. Waqf, as a charitable institution in Islam, has promise in this regard and can be used as an important tool for environmental protection.

One of the Islamic Shari'a that can be maximized in this case is environmental waqf, or waqf for environmental preservation. Since waqf is a community-driven initiative, it does not require government funding. The government's most important task is to raise public awareness and provide appropriate support in terms of land management, legal issues, and incentives to those who participate in this noble cause.

Previous Study

Indonesia with a large population causes an increasing amount of waste which is a problem faced by the government. Meidiana & Gamse (2010) examined several factors that affect the quality of waste management services, including the lack of policies/strategies and financial support, low involvement of the private sector, inefficiency, and low public awareness. This problem occurs at all stages of waste management (storage, collection, transfer, transportation, processing) with a tendency to increase at the end point, TPA. According to research, it was found that the government was only able to process around 33% of waste. This shows that waste management services are still inadequate. This finding underlies further research on how strategic efforts can be offered to answer these challenges.

To overcome the problem of waste management, Indonesia has developed several management models that develop waste management efforts based on the "Waste Bank". Dwanto et al., (2018) examines the existence of a waste bank as a community-based project that can influence behavior patterns and the community's economy. The results show that the development of waste banks in Indonesia is an innovative breakthrough in waste management. These innovations can meet the needs of various communities, create new jobs, provide additional income, increase creativity, and provide free health insurance.

Furthermore, Andriani & Atmaja (2019) conducted research on waste management in Indonesia, whose main focus is the production of landfill gas using the LandGEM equation methodology and the Intergovernmental Panel on Climate Change (IPCC). This study shows that waste management in Indonesia can be improved by considering many factors such as technology, society, and policies. The findings of this article show that the 20,23,106 tons/year of waste produced in Indonesia can produce up to 875,130 tons/year of methane as the main component of landfill gas based on theoretical calculations. In theory, the amount of waste can generate electricity of 54,142 MW

per year. Depending on the total amount of waste generated and the implementation of the LFG recovery system at the landfill, the LFG and electricity generated from MSW may increase or decrease. The results of his study indicate that with proper management, waste can bring benefits to the environment.

Dwi Atmanti et al., (2018) investigated the optimal approach for long-term waste management in Indonesia. The Analytical Hierarchy Process (AHP) is used to evaluate and manage key people's perspectives. With regard to economic, environmental, social, and technological considerations, studies reveal that recycling is the optimal choice for sustainable waste management. According to research results, waste recycling is the optimal plan, with the government as the main waste manager. Waste recycling was chosen as a waste management technique because of its low cost, ease of implementation, simple technology, and ability to reduce pollution, thereby improving public health.

Next, research on waqf is very important and has potential for the Muslim community to elaborate on the potential of waqf in strengthening the economy of the people (Rusydiana & Al Farisi, 2016). According to Budiman (2011), waqf as a charitable institution in Islam, has promise and can be used as an important tool for environmental protection. His research describes the potential of waqf institutions in environmental protection issues and reveals the advantages and benefits of making waqf as a means of environmental protection. Several previous studies have examined the role of waqf in promoting environmental sustainability. According to Hasanah & Hakim (2017), the waqf system can be used to purchase a large plot of land for cultivation and environmental maintenance. Based on these publications, we can conclude that waqf, as an Islamic social finance tool, can be used as a viable and prospective source of money for environmental conservation in Indonesia.

Furthermore, Mohsin et al., (2016) examined the potential of waqf as an economic driver. The waqf sector is considered relatively resilient and recession-resistant. Waqf organizations are resilient to market downturns because their assets are unencumbered property rights and they have access to free funds and pro bono services. Their social mandate is to serve the needs of the people, and correct the imbalance between social strata. The business activities of waqf organizations are able to create jobs, generate economic output, stabilize prices and stimulate the economy. Thus, apart from being used as an instrument in environmental protection, waqf in parallel is able to offer the concept of sustainability to the economy.

Robani & Salih (2018) try to explain the concept and practice of Islamic philanthropy in encouraging the growth of participatory public spaces. The aspired public sphere refers to power in symbolic and discursive forms while pursuing dynamic economic transformation. Including one of the waqf instruments, waqf is a form of redistribution of wealth that can significantly increase the economy of the Muslim community. In this regard, great attention and effort should be given to developing proper organization and strategic governance of Islamic public spheres and philanthropic systems to ensure the achievement of the desired results, namely economic regeneration as well as in development efforts, especially in the sphere of environmental sustainability.

Furthermore, Alam (2018) emphasizes the need to develop the existing role of waqf in increasing the ability to generate income and the administrative welfare of waqf. In the post-economic environment and financial liberalization at the global level, it is important to utilize waqf in capacity building and economic empowerment of the Muslim community. Waqf funds can be channeled through various development institutions. Apart from the education, social and cultural sectors, issues regarding environmental development and empowerment need to be considered further. In this context, the research emphasizes that in this modern era, the economic dimension of waqf institutions needs to get the attention of stakeholders and economists to explore its potential role in economic life at large. In Indonesia, waqf institutions have played a very significant role and still have great potential to be developed. However, there is a need for regulation and support and control by government organizations in the right way to use it in managing the potential of waqf effectively. Other newest studies on waqf and SDGs for the example can be seen at Rusydiana et al., (2023), Irfany et al., (2023), Sukmana & Rusydiana (2023), and Yasin et al., (2023).

This study is designed to propose a model related to wakar-based waste management, where this paper is the first research to provide a scheme/model for waqf-based waste management. This paper aims to formulate a productive waqf scheme/model that can help achieve the Sustainable Development Goals (SDGs). Thus, studies that specifically address this topic have not been found in the literature. However, there is an almost similar study in which Ali & Kassim (2020) examine using the literature study method and interpretative analysis regarding the role of waqf on the waqf forest-

based environment. The results of his research show that productive waqf forests support several main points of the SDGs, such as in overcoming hunger, maintaining climate, health, biodiversity, and water supply, especially in reducing poverty.

RESEARCH METHOD

This study was designed using a qualitative study approach. This study analyzes and identifies a number of underlying themes related to waqf-based waste management, which are used in building the required conceptual model, based on a literature review. This research uses secondary data, with literature study method to collect data. The secondary data of this study were obtained from books, journals, reports, web pages, and other documents relevant to the topic of waqf, the environment, waste management, and other related issues.

The data analysis method of this research is interpretive analysis. There are three stages in interpretive analysis, namely deconstruction, interpretation, and reconstruction (Miles & Huberman, 1994). The first step is deconstruction, at this stage the secondary data is separated into several elements for analysis (Sargeant, 2013). The next step is interpretation, where at this stage the interpretation of data elements will be carried out, each aspect will also be compared with each other to study its relationships (Sargeant, 2013). In this section, the relationship between the elements of waqf and environmental control will be analyzed. The last part is reconstruction, which is intended to reconstruct these elements in the right position according to their relationship and explain them in principle based on theory and previous research (Sargeant, 2013). In this study, data reconstruction will be presented in the form of a scheme or model regarding waqf-based waste management.

RESULT AND DISCUSSION

Waste is something that must be managed so that it has added value, can be reused and does not pollute the environment. Historically, waste management has been identified with an engineering function. Increased production has created a problem that requires landfills. The flow of material in the community is schematically depicted in Figure 1. Waste is generated at the stage of extracting raw materials and during the production process. After the raw materials are obtained, more waste is produced during the processing of goods which will then be consumed by the community. The most effective way to reduce the waste problem is to reduce the amount and toxicity of the waste generated. But with the increasing desire for a better standard of living, humans have become more likely to consume higher levels of consumption and produce more waste. Consequently, the community must look for effective waste management methods and ways to reduce the amount of waste that needs to be disposed of in landfills (Tchobanoglous et al., 2002: 1.1). In accordance with Law no. 18 of 2008 which states that waste management aims to improve public health and environmental quality and make waste a resource.

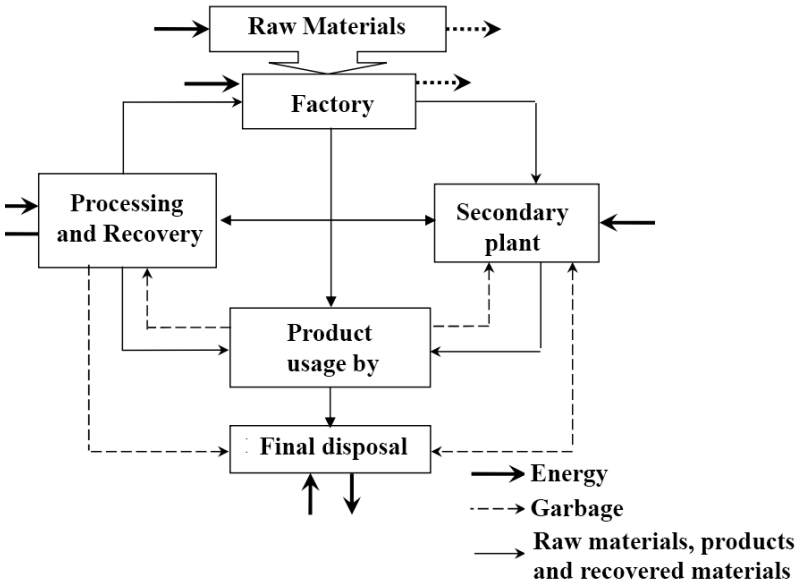

Figure 1: Material and waste flows in industrial societies (Tchobanoglous et al., 2002: 1.2)

The increase in the amount of waste has resulted in increasingly complex problems for managing waste. Solid waste management is a complex process because it includes many technologies and disciplines. Includes technology associated with control over the generation, storage, collection, transfer and transportation, processing and disposal of waste, which is acceptable and in accordance with the principles of public health, economics, engineering, aesthetics and other environmental considerations including responsiveness to the general public (Tchobanoglous et al., 2002: 1.2).

According to Scheinberg (2010:9) waste management will fail when there is too much waste, in the wrong place, not close enough to where to sell waste, or not recycled enough. The solution lies in redesigning products, packaging and processes so that they are suitable for input into the value chain. Initiatives and tools can also be used to support successful sustainable waste management strategies. Some examples of tools and initiatives have been carried out in several cities in an effort to support sustainable waste management (Roseland et al., 1998:74):

a. Provision of information and education

To popularize the recycling program, the Greater Vancouver Regional District, BC published the 1996 book "101 Uses for Your Old Shoes and Other Stuff" on how to recycle and repair household items as a source of direction for businesses and organizations to recycle, by repairing and rent goods in the area.

b. Cooperation and partnership

The community composting program in Switzerland consists of nearly 600 composting environments. Suitable venues, educational information and support are provided by the city. The maintenance/maintenance of the compost pile is shared with the participating households. Nearly 10% of the city's population participates in this program.

c. Mastery of the field of composter

In Seattle, Washington interested residents can join the composter training program. Participants who have mastered then enter the community to train residents. In Indonesia, training or mastery of education in waste technology is still low, with the establishment of a compost mastery school as a significant waste management effort.

d. The Waste reduction award program

One form of appreciation related to waste in Indonesia is Adipura. The Adipura award is applied to encourage local governments and the community to create a clean and shady city by applying the principles of good governance in environmental management. For Adipura, waste is one of the substances in environmental problems which is the main issue. For this reason, Adipura's assessment includes the cleanliness of the city and the condition of the landfill.

e. Eco-labelling

Product labeling that provides information about the percentage of recyclable content in a product can help consumers to choose products that are environmentally friendly. The process typically involves evaluating a product's lifecycle impact on the environment, including factors such as resource use, energy efficiency, emissions, and waste generation. If a product meets certain criteria set forth by an independent certifying body, it may be awarded an eco-label or certification mark. This label can then be displayed on the product packaging or marketing materials to inform consumers of its environmental attributes.

In addition to the strategic approach through tools and initiatives, in waste management the term waste hierarchy is known which is a concept and priority tool that can lead to developing waste management strategies aimed at reducing resource consumption and protecting the environment. Tchobanoglous et al. (2002: 1.20) reveals 4 (four) options for waste management (reduction of waste from source, recycling, waste into energy and landfilling) that can be done interactively or hierarchically (Figure 2a, 2b).

In areas with no emphasis on economic aspects, tools for waste management are selected based on the level of clarity of environmental acceptance. Reduction of waste from the source will be at the most important level to prevent waste problems from being managed. Recycling including composting will be the next management option because it can return the resources to be commercial after the original product no longer has a benefit. Waste to energy is the next option because waste can produce energy rather than just being burned or buried. Landfilling is the last option which is not better or even worse than incineration (Tchobanoglous et al., 2002: 1.20). UNEP Waste Climate and Change (2010: 5) lists a waste hierarchy similar to Tchobanoglous et al. (2002) (Figure 2c). With increasing problems in waste management, waste management cannot be solved with only one waste management option, but with a comprehensive and integrated management system.

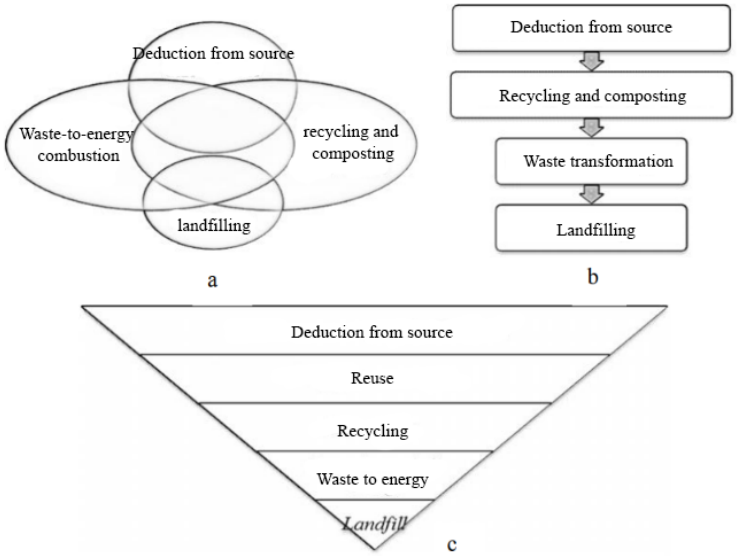

Figure 2: Relationship between compiled waste management options and integrated waste management: (a) interactive, (b) hierarchical (Tchobanoglous and Kreith, 2002: 1.20), (c) waste hierarchy according to UNEP Waste Climate and Change (2010:5).

CONCLUSION

This study tries to propose a model of waste management based on Islamic social finance based on waqf. Environmental issues have become a serious concern for the modern world, especially Indonesia, which is home to the world's largest Muslim country. Islam, as the religion of the majority of Indonesian people, provides various solutions that can be used to answer contemporary environmental problems. One of the Islamic Shari'a that can be maximized in this case is environmental waqf, or waqf for environmental protection.

This study presents how waqf schemes can contribute to environmental protection as an alternative for the government and waste management institutions in overcoming environmental problems as well as the consequences of lack of funds or non-commercial sustainability. This waste management-based waqf scheme will also support several key SDGs points, such as reducing environmental hygiene, maintaining a healthy life, conserving water supply, as well as encouraging economic growth and sustainable consumption and production for communities around the land who will contribute to waste processing. .

The waqf-based waste management scheme developed in this study can be used as a guide for waste management in all regions in Indonesia. The development of tangible benefits will encourage the community around the waqf land because the land is their source of livelihood. Furthermore, for the government, although environmental waqf continues to grow, the term waqf-based waste processing has not been found in Indonesian regulations. Regulations that specifically regulate waqf-based waste management are needed to provide a legal basis for waqf status. Thus, every waqf model developed by the community must be recognized by the state, especially by the Ministry of Environment and Forestry (KLHK) of the Republic of Indonesia. For future researchers, studies on the topic of environmental-based waqf can also be developed in research by proposing relevant models.

REFERENCES

Ahlgren, P., Jarneving, B., & Rousseau, R. (2003). Requirements for a co-citation similarity measure, with special reference to pearson's correlation coefficient. Journal of the American Society for Information Science and Technology, 54(6), 550–560.

Alam, M. M. (2018). Potent potential of awqāf in social and economic development. Journal of King Abdulaziz University, Islamic Economics, 31(2), 101–108. https://doi.org/10.4197/Islec.31-2.8

Ali, K. M., & Kassim, S. (2020). Waqf Forest: How Waqf Can Play a Role In Forest Preservation and SDGs Achievement? Etikonomi, 19(2), 349–364. https://doi.org/10.15408/etk.v19i2.16310

Andriani, D., & Atmaja, T. D. (2019). The potentials of landfill gas production: a review on municipal solid waste management in Indonesia. Journal of Material Cycles and Waste Management, 21(6), 1572–1586. https://doi.org/10.1007/s10163-019-00895-5

Bagader, Abubakr Ahmed et al. Environmental Protection in Islam, IUCN Environmental Policy and Law Paper No. 20 Rev., 1994

Budiman, M. A. (2011). The Role of Waqf for Environmental Protection in Indonesia. Aceh Development International Conference (ADIC), Malaysia, March 28-30.

Boyack, K. W., Klavans, R., & Börner, K. (2005). Mapping the backbone of science. Scientometrics, 64(3), 351-374.

Dhewanto, W., Lestari, Y. D., Herliana, S., & Lawiyah, N. (2018). Analysis of the business model of Waste Bank in Indonesia: A preliminary study. International Journal of Business, 23(1), 73–88.

Dwi Atmanti, H., Dwi Handoyo, R., & Muryani. (2018). Strategy for Sustainable Solid Waste Management in Central Java Province, Indonesia. International Journal of Advances in Scientific Research and Engineering, 4(8), 215–223. https://doi.org/10.31695/ijasre.2018.32853

EPA Waste Guidelines. 2009. Waste Definition. http://www.epa.sa.gov.au/xstd_files/Waste/Guideline/guide_waste_definitions.pdf.

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.

Hasanah, I., & Hakim, R. (2017). Pelestarian Hutan Kota Melalui Optimalisasi Wakaf Tunai (Conservation of Urban Forest through Optimization of Cash Waqf). Prosiding Seminar Nasional III Tahun 2017, "Biologi, Pembelajaran, dan Lingkungan Hidup Perspektif Indisipliner," April, 345–349

Irfany, M. I., Ningsih, S. R., Hasanah, Q., & Rusydiana, A. S. (2023). Proposing Green Waqf Development Strategy in Protecting Land Ecosystems in Indonesia: An Interpretive Structural Modeling Approach. *Ekonomi Islam Indonesia*, *5*(1).

Keraf AS. 2010. Etika Lingkungan Hidup. Kompas Media Nusantara. Jakarta.

Lettinga, G. (1995). Anaerobic digestion and wastewater treatment systems. Antonie van leeuwenhoek, 67(1), 3-28.

McDougall F, White P, Franke M and Hindle P. 2001. Integrated Solid wase Management: Life Cycle Inventory Second Edition. Blackwell Publishing Company. Malden USA.

Meidiana, C., & Gamse, T. (2010). Development of waste management practices in Indonesia. European Journal of Scientific Research, 40(2), 199–210.

Mohsin, M. I. A., Dafterdar, H., Cizakca, M., Alhabshi, S. O., Razak, S. H. A., Sadr, S. K., Anwar, T., & Obaidullah, M. (2016). Financing the Development of Old Waqf Properties. Financing the Development of Old Waqf Properties, 21–35. https://doi.org/10.1057/978-1-137-58128-0

Papargyropoulou, E., Lozano, R., Steinberger, J. K., Wright, N., & bin Ujang, Z. (2014). The food waste hierarchy as a framework for the management of food surplus and food waste. Journal of cleaner production, 76, 106-115.

Rashid, S. K. (2018). Potential of Waqf in contemporary world. Journal of King Abdulaziz University, Islamic Economics, 31(2), 53–69. https://doi.org/10.4197/Islec.31-2.4

Ridzuan, A. R., Zakaria, S., Fianto, B. A., Yusoff, N. Y., Sulaiman, N. F., Razak, M. I., et al. (2021). Nexus between Financial Development and Income Inequality before Pandemic Covid-19: Does Financial Kuznets Curve Exist in Malaysia, Indonesia, Thailand and Philippines? International Journal of Energy Economics and Policy, 260-271.

Robani, A., & Salih, K. (2018). Positioning islamic gift economy for sustainable development at the local level. Humanities and Social Sciences Reviews, 6(2), 111–120. https://doi.org/10.18510/hssr.2018.6214

Roseland M, Cureton M, and Wornell H. 1998. Toward Sustainable Communities, Resources for Citizens and Their Governments. New Society Publisher. Canada.

Rusydiana, A. S., & Al Farisi, S. (2016). How Far Has Our Wakaf Been Researched? Etikonomi: Jurnal Ekonomi, 15(1), 31–42. https://doi.org/10.15408/etk.v15i1.3110

Rusydiana, A. S., Sukmana, R., & Laila, N. (2023). Waqf and Partnerships for the Goals (SDG-17): A

Maqasid Framework. *Maqasid al-Shariah Review*, *2*(1).

Scheinberg A. 2010. The Need for the Private Sector in a Zero Waste, 3-R, and Circular Economy Materials Management Strategy. Discussion paper for the CSD 18/19 Intercessional, 16-18 February 2010. Tokyo, Japan.

Sharma, S., & Henriques, I. (2005). Stakeholder influences on sustainability practices in the Canadian forest products industry. Strategic management journal, 26(2), 159-180.

Sujauddin, M., Huda, S. M. S., & Hoque, A. R. (2008). Household solid waste characteristics and management in Chittagong, Bangladesh. Waste management, 28(9), 1688-1695.

Sukmana, R., & Rusydiana, A. S. (2023). Waqf Model for Climate Change: A Delphi Method Approach. *International Journal of Waqf*, *3*(1).

Tchobanoglous G, Kreith F, Williams ME. 2002. Chapter 1 Introduction. In G. Tchobanoglous & F. Kreith, Handbook of Solid Waste Management Second Edition. (pp. 1.1-1.27). McGraw-Hill. United States of America.

Tordoff, G. M., Baker, A. J. M., & Willis, A. J. (2000). Current approaches to the revegetation and reclamation of metalliferous mine wastes. Chemosphere, 41(1-2), 219-228.

UNEP. 2010. Waste and Climate Change: Global trends and strategy framework. United Nations Environmental Programme. Division of Technology, Industry and Economics. Internasional Environmental Technology Centre. Osaka/Shiga.

Wilson, D. C., Velis, C., & Cheeseman, C. (2006). Role of informal sector recycling in waste management in developing countries. Habitat international, 30(4), 797-808.

Yaakob, A., Mahzir, N., Supaat, D. I., Zakaria, M. Z., Wook, I., & Mustafa, M. (2017). Waqf as a means of forest conservation: Alternative for Malaysia. Advanced Science Letters, 23(5), 4860–4864. https://doi.org/10.1166/asl.2017.8928

Yasin, Y., Helmy, M. I., Ma'yuf, A., & Arwani, A. (2023). Waqf and sustainable development law: models of waqf institutions in the Kingdom of Saudi Arabia and Indonesia. *Ijtihad: Jurnal Wacana Hukum Islam Dan Kemanusiaan*, *23*(1), 93-114.

Zaman AU. 2009. Life Cycle Enviromental Asessment of Municipal Solid Waste to Energy Technologies. Global Journal of Enviromental Research 3. http://kth.academia.edu/AtiqUzZaman/Papers/121546/Life_Cycle_Environmental_Assessment_of_Municipal_Solid_Waste_to_Energy_Technologie