

**OPTIMIZATION OF *WASTE BANK* AND *MAGGOT* CULTIVATION AS A SOLUTION TO ENVIRONMENTAL CONSERVATION BASED ON THE PRINCIPLE OF *HIFDZUL BI'AH***

**Ahmad Rizkhan Nurullah<sup>1</sup>, Zainul Abidin<sup>2</sup>, Novia Ramadhan<sup>3</sup>**

Sharia Economic Law, Faculty of Sharia, Universitas Islam Negeri Antasari Banjarmasin

Email: [ahmadrizkhannurullah20@gmail.com](mailto:ahmadrizkhannurullah20@gmail.com)<sup>1</sup>, [abidinzainul724@gmail.com](mailto:abidinzainul724@gmail.com)<sup>2</sup>, [nov.xynamadhan@gmail.com](mailto:nov.xynamadhan@gmail.com)<sup>3</sup>

***Abstract***

*The phenomenon of environmental degradation is increasingly alarming, characterized by high pollution and poor waste management. In Indonesia, more than 65 million tons of waste are generated every year, most of which have not been managed properly. Environmental conservation concepts, such as Waste Bank and maggot cultivation, can be a solution. Waste Bank manages recycled waste, while Black Soldier Fly (BSF) maggot decomposes organic waste, produces fertilizer, and reduces waste volume. The principle of hifdzul bi'ah in Islam supports this effort to maintain the balance of nature and improve the quality of life. This research uses a qualitative method that is a literature study. After being analyzed through the study of relevant literature, the author then classifies based on the subtitles contained in the discussion points. The results of this study show that the application of the principle of hifdzul bi'ah in the management of Waste Bank and maggot cultivation can be seen from the community's efforts by establishing Waste Bank, the community practices waste sorting as a form of concern for the environment in accordance with the values of hifdzul bi'ah. Similarly, the use of maggot in decomposing organic waste is not only a practical solution, but also reflects awareness of the importance of managing waste without damaging the ecosystem. This synergy has a positive impact on the environment, such as reducing waste to landfill, reducing pollution, and reducing methane emissions from organic waste.*

***Keywords: Waste Bank, Maggot Cultivation, Environmental Preservation (Hifdzul Bi'ah)***

**A. Introduction**

The current environmental phenomenon is increasingly concerning, characterized by the increasing number of pollution problems and ecosystem damage that occur in various regions. Examples are water pollution in large rivers, harmful gas emissions in urban areas, and forest degradation that destroys the natural habitat of flora and fauna. This condition is caused by various factors, ranging from massive industrial development to the behavior of

people who do not care about environmental hygiene. The impact of this phenomenon not only affects the quality of human life, but also threatens the overall balance of the ecosystem.<sup>1</sup>

One of the major problems in environmental pollution is waste management, both organic and non-organic. Organic waste such as food scraps and leaves often accumulate in public places, causing odors and potential diseases. Meanwhile, non-organic waste such as plastics and metals are difficult to decompose and can pollute the environment for tens to hundreds of years. Ineffective waste management often results in these wastes ending up in rivers, beaches, or even scattered in forests, threatening the environment and public health.<sup>2</sup>

The high *volume of* waste piling up in various places is caused by several main factors, including the increasing consumption and production of disposable goods. Concrete data shows that in Indonesia, more than 65 million tons of waste is generated annually, and most of it has not been managed properly. In big cities, waste often ends up in landfills that are already over capacity, while in rivers and other bodies of water, plastic and domestic waste have resulted in serious pollution. Even in forest areas far from settlements, waste problems have begun to damage natural ecosystems due to tourism activities and illegal logging.<sup>3</sup>

This condition shows how important environmental conservation is as a step to maintain the balance of nature and the quality of life of the community. To deal with this waste problem, an innovative and sustainable approach is needed, one of which is by implementing the *Waste Bank* concept and *Maggot* cultivation. *Waste Bank* serves as a collection point for recyclable waste, while maggots from the *Black Soldier Fly* (BSF) species are able to decompose organic waste quickly, produce organic fertilizer, and help reduce waste volume.<sup>4</sup>

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<sup>1</sup> Rizqi Puteri Mahyudin, "Study of Waste Management Problems and Environmental Impacts in Tpa (Final Processing Site)," *Jukung (Journal of Environmental Engineering)* 3, no. 1 (April 3, 2017): 70, <https://doi.org/10.20527/jukung.v3i1.3201>.

<sup>2</sup> Hetty Krisnani et al., "Changes in Community Mindset Regarding Waste Through Processing Organic and Non-Organic Waste in Genteng Village, Sukasari District, Sumedang Regency," *Proceedings of Research and Community Service* 4, no. 2 (July 31, 2017): 286, <https://doi.org/10.24198/jppm.v4i2.14345>.

<sup>3</sup> Andhyagis Suatrat and Daniel A. Sihasale, "Community Behavior in Waste Disposal Along the Banks of the Durian River, Namaelo Subdistrict, Masohi City, Central Maluku Regency," *GEOFORUM Journal of Geography and Geography Education*, March 4, 2024, 50, <https://doi.org/10.30598/geoforumvol3iss1pp46-54>.

<sup>4</sup> Junaidi Hendro and Antaiwan Bowo Pranogyo, "Sustainable Innovation: ESG Initiatives for a

The concept of *hifdzul bi'ah*, which means protecting the environment in the Islamic view, is very relevant in the implementation of *Waste Bank* and *Maggot* cultivation. *Hifdzul bi'ah* emphasizes the importance of human responsibility as a khalifah to maintain and care for nature.<sup>5</sup> As, Allah SWT says in the Qur'an about the importance of maintaining the balance and preservation of nature. In Surah Al Qasas Verse 77, Allah SWT says:

وَابْتَغِ فِيهَا آتَاكَ اللَّهُ الدَّارَ الْآخِرَةَ وَلَا تَنْسَ نَصِيبَكَ مِنَ الدُّنْيَا وَأَحْسِنْ كَمَا أَحْسَنَ اللَّهُ إِلَيْكَ وَلَا تَبْغِ الْفُسَادَ فِي الْأَرْضِ إِنَّ اللَّهَ لَا يُحِبُّ الْمُفْسِدِينَ

Meaning: "And seek in that which Allah has bestowed upon you (the happiness) of the Hereafter, and forget not your share of the pleasures of this world, and do unto others as Allah has done unto you, and do not cause mischief on the earth, for Allah loves not those who cause mischief." (QS. Al Qasas Verse 77)

This verse emphasizes the importance of protecting nature from damage and fosters awareness of human responsibility for the environment. As khalifah on the face of the earth, humans have a major role in preserving nature and managing resources wisely. However, the current environmental conditions are increasingly worrying, due to pollution and damage to ecosystems caused by waste and irresponsible human activities. One of the real efforts to maintain this natural balance is by managing waste through innovations such as *Waste Bank* and *Maggot* cultivation, which are in line with Islamic principles, namely *hifdzul bi'ah* or preserving the environment. By implementing *Waste Bank* and *maggot cultivation*, the community can implement these values in real actions, helping to reduce waste and manage the environment sustainably. This approach not only focuses on immediate results, but also educates the community to be more responsible towards nature, in accordance with religious principles and holistic environmental conservation efforts.<sup>6</sup>

## B. Methods

The method used in this paper is through a qualitative method that is a literature study. The data used as references for this writing include books, journals, articles, laws

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Responsible Future," *Journal of Social Science, Management, Accounting and Business* 4, no. 4 (November 7, 2023): 156, <https://doi.org/10.47747/jismab.v4i4.1445>.

<sup>5</sup> Maya Sarofah, "Analysis of the Application of the Circular Economy System in Waste Recycling Management at the Kamandaka Bobodsan Recycling Center (PDU)" (State Islamic University Professor Kiai Haji Saifuddin Zuhri, 2022), 60.

<sup>6</sup> "Surah Al-Qasas Verse 77," Tafsir AlQuran Online, accessed November 3, 2024, <https://tafsirq.com/permalink/ayat/3329>.

related to the topic of discussion. The data that has been obtained is then collected by reading, understanding and analyzing through literature studies related to the topic of discussion. After being analyzed through relevant literature studies, the authors then classify based on the subtitles contained in the discussion points.

### **C. Results and Discussion**

#### **1. Waste Bank and Maggot Cultivation Conceptually**

*Waste Bank*, or Bank Sampah, is a community participation-based waste management concept, where waste is seen as a resource that has economic value. Through this system, people can deposit their segregated waste, and then get incentives or rewards according to the amount and type of waste they deposit.<sup>7</sup> One case study that successfully implemented this concept in South Kalimantan is the "Berkah Bersama" Parent Waste Bank in Banjarmasin City. This program has not only succeeded in reducing the amount of waste that goes to landfills but has also raised public awareness about the importance of recycling. With the support of the local government, Bank Sampah Berkah Bersama now involves thousands of members and has helped reduce plastic waste in the urban environment. This success shows that the *Waste Bank* approach not only contributes to environmental cleanliness but also provides a positive economic impact to the surrounding community.<sup>8</sup>

This waste bank program is in accordance with the empowerment program where the community has the value of independence in the management of this waste bank. waste bank is a place where people can dispose of their household waste for recycling with the 3R system (reduce, reuse, recycle) which allows people to independently reuse their waste and process their own waste at the household level through the waste bank.<sup>9</sup>

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<sup>7</sup> Yuwanda Nila Ariyani, "Housewife Empowerment Strategy through Waste Management Program at Mekar Sari Waste Bank, Mampang Prapatan Village, South Jakarta City" (bachelorThesis, Faculty of Da'wah and Communication Sciences, Syarif Hidayatullah State Islamic University Jakarta, 2023), 65, <https://repository.uinjkt.ac.id/dspace/handle/123456789/72506>.

<sup>8</sup> Antara News Agency, "Director of Waste Bank says waste bank built to create clean Banjarmasin City," ANTARA News South Kalimantan, accessed January 13, 2025, <https://kalsel.antaranews.com/berita/370527/direktur-bank-sampah-sebut-bank-sampah-dibangun-until-ciptakan-kota-banjarmasin-bersih>.

<sup>9</sup> Zam Zam et al., "Village Community Empowerment through Maggot Cultivation," *Tamkin: Journal of Islamic Community Development* 8, no. 2 (2023): 232, 2, <https://doi.org/10.15575/tamkin.v8i2.25003>.

Maggot is an organism that comes from *black soldier fly* eggs that undergo metamorphosis in the second phase after the egg phase and before the pupa phase which then turns into an adult fly. The characteristics of maggot include dewatering (absorbing water), and has the potential to manage organic waste, and can make burrows for waste aeration, besides that, maggot is resistant to temperature, migrates close to the pupal period, hygienic as house fly control, high protein content reaching 45%. Based on the results of Fauzi's research (2018) maggot has potential as an alternative to catfish feed. The use of 50% pellets and 50% maggot can save feed procurement costs by 22.74%. Thus, maggot cultivation is the right solution for waste bank management.<sup>10</sup>

The cultivation of *maggot*, especially the *Black Soldier Fly* (BSF), has become an innovative solution in effective and environmentally friendly organic waste management. *Maggots* have the ability to rapidly break down organic waste, converting it into biomass that can be utilized as a source of high protein for animal feed as well as producing quality organic fertilizer. The advantage of this system lies in its natural and efficient process, where organic waste such as food scraps, vegetables, and other household waste can be decomposed in a short time. In addition to reducing the *volume of* waste that ends up in landfills, *maggot* cultivation also produces economically valuable products that benefit the agriculture and livestock sectors. Thus, a waste management system using maggots not only helps reduce the burden of environmental pollution, but also provides economic benefits to the communities that implement it.<sup>11</sup>

## **2. *Hifdzul Bi'ah***

Fiqh *al-bi'ah* among scholars is a breakthrough of a new paradigm for environmental management through a religious teaching and as an alternative solution in environmental management so that the right to the environment does not only belong to Westerners but to every people in the world. Indonesia, whose people are Muslims, awareness of

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<sup>10</sup> Wazirul Luthfi et al., "Optimization of Maggot Cultivation by Dadali Waste Bank through the Melimpah Program: Economic Synergy and Environmental Sustainability," *Journal of Syntax Admiration* 5, no. 11 (November 27, 2024): 5150, <https://doi.org/10.46799/jsa.v5i11.1616>.

<sup>11</sup> Kis Dewantoro and Mahfud Efendi, *Raising Maggot Black Soldier Fly* (PT. AgroMedia Pustaka, 2018), 4.

environmental sustainability is determined by the role of the ulama and kyai who participate in environmental conservation.<sup>12</sup>

The environment can be defined in two ways: First, the environment that has existed by itself since long ago and formed naturally. Second, the social environment in which humans interact with nature and its contents by building ideologies, values, and cultures so as to be able to determine steps to develop the environment. The second aspect of this environmental group is what is called environmental ethics, which is an awareness of humanity regarding the environment that exists in the present or future. Awareness about environmental ethics really needs to be intensified to the wider community considering that currently the environment is starting to show critical symptoms.<sup>13</sup>

Based on this, the relationship between humans, nature, and God can be seen from two perspectives. First, humans are seen as primary beings that have a higher position, with nature as a secondary being that is subject to human actions. This view is based on the privilege given by God to humans to be caliphs on earth, so humans have the right to utilize nature according to their needs. This understanding is widely held by Muslims. Second, humans are considered equal to nature, as both are God's creations. Therefore, humans need to make nature the controller of their lives, considering that both humans and nature only deserve to submit to God.

*Hifdzul Bi'ah* is a concept in Islam that emphasizes the importance of protecting and preserving the environment as part of human responsibility as khalifah on earth.<sup>14</sup> In this context, *hifdzul bi'ah* refers to the human obligation to preserve nature and prevent damage that could threaten the balance of the ecosystem. This concept is rooted in the verses of the Qur'an that instruct mankind not to do damage on earth and warn that any form of damage will have a detrimental return impact. On the basis of *hifdzul bi'ah*, environmental preservation is not just an option, but a moral and religious obligation that must be carried

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<sup>12</sup> Ridan Muhtadi et al., "Review of Maqashid Sharia and Fiqh al-Bi'ah in Green Economy," *Islamic Economics* 10, no. 2 (2019): 244, 2.

<sup>13</sup> Putri Vidya Adhania, "The Application of Hifdzul Bi'ah in KUPI's Fatwa on the Haram of Environmental Damage," *An-Nawa: Journal of Islamic Studies* 5, no. 2 (December 28, 2023): 199, <https://doi.org/10.37758/annawa.v5i2.643>.

<sup>14</sup> Ahmad Rizkhan Nurullah and Novia Ramadhan, "Maqashid Syariah Perspective on the Phenomenon of CyberBegging Via Youtube Media," *The Proceedings of the 8th Borneo Undergraduate Academic Forum*, 2024, 5, <https://scholar.google.com/scholar?cluster=8503120636919117552&hl=en&oi=scholar>.



out for the sustainability of life. Through the application of this principle, humanity is expected to always maintain harmony between human activities and the preservation of nature.<sup>15</sup>

### 3. Relevance of *Hifdzul Bi'ah* to *Waste Bank* and *Maggot Cultivation*

The synergy between *Waste Bank* and *maggot* cultivation is one example of an innovative approach in creating a sustainable waste management ecosystem. *Waste Bank* focuses on collecting and sorting non-organic waste such as plastic and paper, while *maggots* can decompose organic waste efficiently. When these two systems work together, the positive impact on the environment becomes even greater as almost all types of waste can be managed and utilized. The environmental impacts of this synergy include a reduction in the *volume of* waste going to landfills, a decrease in pollution, as well as a reduction in methane gas emissions from organic waste. In addition, the products from maggot cultivation, such as organic fertilizer and animal feed, become valuable products that can support the agriculture and livestock sectors in a sustainable manner.<sup>16</sup>

In practice, the application of the principle of *hifdzul bi'ah* in the management of *Waste Bank* and *maggot* cultivation can be seen from the community's efforts to manage waste responsibly and sustainably. By establishing a *Waste Bank*, the community practices waste segregation as a form of concern for the environment in accordance with the values of *hifdzul bi'ah*. Similarly, the use of *maggot* in decomposing organic waste is not only a practical solution, but also reflects an awareness of the importance of managing waste without damaging the ecosystem. These practices show how religious values can be implemented in concrete actions, so that not only the environment is protected, but also a collective awareness is created to live more sustainably and responsibly towards nature.<sup>17</sup>

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<sup>15</sup> Putri Vidya Adhania, "The Application of Hifdzul Bi'ah in KUPI's Fatwa on the Haram of Environmental Damage," *An-Nawa: Journal of Islamic Studies* 5, no. 2 (December 28, 2023): 199, <https://doi.org/10.37758/annawa.v5i2.643>.

<sup>16</sup> Dewi Ayu Nur Wulandari et al., "Science and Technology-based Waste Management, Used Cooking Oil Waste, and Maggot Cultivation Assistance to Overcome Environmental Pollution and Improve Community Welfare at Orchid Green Park Depok Garbage Bank," *Abdimas BSI Journal: Journal of Community Service* 5, no. 2 (2022): 2, <https://doi.org/10.31294/jabdimas.v5i2.13466>.

<sup>17</sup> Annisa Nur Fitriana, "Analysis of Maqashid Syariah and Fiqh Al-Bi'ah on Waste Bank in Realizing Green Economy in Bantul Regency (Case Study on Gemah Ripah Waste Bank Badegan Bantul)" (masters, Iiq An Nur Yogyakarta, 2023), <https://repository.nur.ac.id/id/eprint/25/>.

An ethical approach to environmental management is very important because it provides a strong moral foundation for nature conservation actions. When people have a deep ethical understanding of the importance of protecting the environment, they will not only manage waste properly, but will also take various preventive actions to prevent pollution and damage to nature. This ethical approach also includes environmental justice, where everyone has the right to live in a clean and healthy environment. Thus, environmental management is not only the responsibility of certain individuals or groups, but it is a shared responsibility to create inclusive sustainability.<sup>18</sup>

#### **D. Conclusion**

The synergy between *Waste Bank* and *maggot* cultivation in the concept of *hifdzul bi'ah* has proven that a sustainable waste management approach can be effectively implemented in the community. Through *Waste Bank*, non-organic waste can be collected, sorted, and recycled, while organic waste can be managed with the help of maggots, which are able to decompose it quickly and produce useful fertilizer and animal feed. This synergy not only contributes to the reduction of the *volume of* waste polluting the environment but also helps foster community awareness of the importance of waste segregation and utilization of existing resources. Thus, this concept succeeds in realizing one of the objectives of *hifdzul bi'ah*, which is to protect and preserve the environment as a form of human responsibility to nature.

In addition to having a positive environmental impact, the implementation of *Waste Bank* and *maggot* cultivation also has a significant economic impact. The results of maggot cultivation, such as organic fertilizer and animal feed, can be an additional source of income for the communities involved, while supporting the agriculture and livestock sector. With this economic value, the community has more motivation to be active in waste management, thus creating an independent and sustainable system. Through this synergy, waste management, which was once only seen as a cleaning task, is now a productive activity that supports economic resilience and environmental resilience simultaneously.

In the end, the concept of *hifdzul bi'ah* applied in the management of the *Waste Bank* and *maggot* cultivation is a clear example of how religious values can play a role in

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<sup>18</sup> Ana Nadhya Abrar, *Understanding Environmental Journalism* (Gadjah Mada University Press, 1993), 20.



protecting the environment. *Hifdzul bi'ah* reminds us that protecting nature is not just an option, but an obligation that has an ethical and moral foundation. By managing waste wisely and sustainably, people can practice this teaching in their daily lives, so that the environment is maintained and the quality of human life can be improved. This concept shows that nature conservation can be realized in a way that is in accordance with spiritual values, so that waste management activities become more meaningful and beneficial.

In closing, the importance of caring for the environment must continue to be realized by every individual and community. Nature is the source of life for all of us, and environmental sustainability is a legacy that we must preserve for future generations. By keeping the environment clean and sustainable, we not only maintain the balance of the ecosystem but also honor our role as khalifah on earth. Only with collective awareness and shared responsibility can we realize a clean, healthy and sustainable environment, and protect nature as a form of our appreciation for the gifts given by the Creator.

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