

Implementation of Regional Regulation Number 4 of 2018 by the Bangkalan Regency Government in an Effort to Reduce Flood Intensity in Arosbaya District Reviewed from Islamic Law

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| Received: 04-02-2024

|| Revised: 09-04-2025

|| Accepted: 10-04-2025

| Published On: 30-04-2025

Abstract: Flooding is a recurring environmental problem in Arosbaya Sub-district, Bangkalan Regency, which calls for an integrated and context-specific mitigation approach. This qualitative descriptive study examines flood mitigation efforts through the lens of community perceptions, policy implementation, and alignment with Islamic legal values. Data were collected through field observations, interviews, and documentation involving stakeholders such as BPBD Bangkalan, PUPR, and affected residents. Findings show that Regional Regulation No. 4 of 2018 provides a structured disaster mitigation framework, comprising pre-disaster (disaster-resilient villages and early warning systems), emergency response (evacuation, temporary shelters, and public kitchens), and post-disaster (rehabilitation of infrastructure and socio-economic recovery). These efforts are underpinned by Islamic legal principles including *Hifz al-Nafs*, *Al-Ta'awun 'ala al-Birr wa al-Taqwa*, *Al-Ihsan*, *Al-Takaful al-Ijtima'i*, *Islah*, and *Al-Tazkiyah al-Nafs*, which emphasize the sanctity of life, collective responsibility, mutual aid, and moral development. However, the implementation faces significant obstacles such as limited resources, low public participation, inadequate early warning systems, poor inter-agency coordination, and the neglect of local wisdom. Although the community shows strong commitment, a lack of disaster education and limited access to information hamper active engagement. This study contributes by offering a normative-empirical model that integrates Islamic law with contemporary disaster mitigation frameworks, recommending enhanced public outreach, stronger institutional collaboration, and the incorporation of local knowledge to achieve more sustainable and inclusive flood mitigation strategies.

Keywords: Flood, Normalization; Islamic law; Mitigation; *Hifz al-bi'ah*

Abstrak: Banjir merupakan masalah lingkungan yang terus berulang di Kecamatan Arosbaya, Kabupaten Bangkalan, sehingga memerlukan pendekatan mitigasi yang terpadu dan kontekstual. Penelitian ini menggunakan metode deskriptif kualitatif untuk mengkaji upaya mitigasi banjir melalui persepsi masyarakat, implementasi kebijakan, dan kesesuaiannya dengan nilai-nilai hukum Islam. Data diperoleh melalui observasi lapangan, wawancara, dan dokumentasi dengan melibatkan BPBD Bangkalan, PUPR, dan warga terdampak. Hasil penelitian menunjukkan bahwa Peraturan Daerah No. 4 Tahun 2018 menjadi dasar kerangka mitigasi bencana yang mencakup tiga tahap: pra-bencana (pembentukan desa tangguh bencana dan sistem peringatan dini), tanggap darurat (evakuasi, penyediaan tempat pengungsian, dan dapur umum), serta pasca-bencana (rehabilitasi infrastruktur dan pemulihan sosial ekonomi). Setiap tahap tersebut dilandasi oleh prinsip-prinsip hukum Islam seperti *Hifz al-Nafs*, *Al-Ta'awun 'ala al-Birr wa al-Taqwa*, *Al-Ihsan*, *Al-Takaful al-Ijtima'i*, *Islah*, dan *Al-Tazkiyah al-Nafs* yang menekankan perlindungan jiwa, tanggung jawab kolektif, saling tolong-menolong, dan pembinaan moral. Namun, pelaksanaan kebijakan menghadapi kendala signifikan seperti keterbatasan sumber daya, rendahnya partisipasi publik, lemahnya sistem peringatan dini, koordinasi lintas lembaga yang lemah, serta belum terintegrasinya kearifan lokal. Meskipun masyarakat menunjukkan komitmen tinggi, kurangnya edukasi kebencanaan dan akses informasi membatasi partisipasi aktif mereka. Penelitian ini berkontribusi melalui model normatif-empiris yang mengintegrasikan prinsip hukum Islam dengan praktik mitigasi kontemporer, serta merekomendasikan peningkatan edukasi publik, koordinasi kelembagaan, dan pelibatan kearifan lokal untuk strategi mitigasi banjir yang lebih berkelanjutan dan inklusif.

Kata kunci : Banjir; Normalisasi; Hukum Islam; Mitigasi; *Hifz al-Bi'ah*

How to cite this article:

Siti Maysaroh and Others, Implementation of Regional Regulation Number 4 of 2018 by the Bangkalan Regency Government in an Effort to Reduce Flood Intensity in Arosbaya District Reviewed from Islamic Law, *Jurnal Ilmiah Mizani: Wacana Hukum, Ekonomi Dan Keagamaan*, 12.1 (2025), 86-113

Doi: <http://dx.doi.org/10.29300/mzn.v12i1.7148>



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Jurnal Ilmiah Mizani: Wacana Hukum, Ekonomi, dan Keagamaan

Published by Faculty of Sharia, State Islamic University of Fatmawati Sukarno Bengkulu

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Introduction

Flood is a natural disaster that occurs when water overflows from the sea or river into the lowlands. Factors that cause flooding are quite varied, namely high rainfall, physiographic influences, erosion and sedimentation, river capacity, inadequate drainage capacity, the influence of high tide, changes in river basin conditions, slum areas of garbage, land drainage, damage to water control buildings, improper flood control system planning, and forest damage (loss of natural vegetation).¹ The social impacts of flooding disrupt daily activities, stop social interactions, damage public facilities, and cause health problems such as skin diseases caused by flood water mixed with bacteria and psychological trauma. In economic terms, flooding hampers economic activities and causes job losses for people, but property damage drains financial resources. These impacts are correlated with each other: the level of economic vulnerability to flooding is negatively correlated with the economic level of the community, which in turn affects social aspects.²

The Indonesian government is aware that the rainy season is a natural characteristic of Indonesia so that flooding has become a common thing, especially since Indonesia is dominated by lowlands. Based on this awareness, the Indonesian government in order to provide protection for all Indonesian people has formed Law Number 24 of 2007 concerning Disaster Management which regulates the disaster management system including planning, prevention, preparedness, emergency response, rehabilitation, and post-disaster

reconstruction. In addition, this law also regulates the formation of the National Disaster Management Agency (BNPB) which is responsible for coordinating disaster management at the national level.³

The Indonesian government also gives authority to regional governments (PEMDA) to create regional regulations within the framework of regional autonomy and government decentralization.⁴ The granting of authority to the regional government is an effort to strengthen regional autonomy, respond to local needs, and reduce the centralization of power within the framework of a diverse unitary state such as Indonesia. The main legal basis that regulates the authority of the regional government in making regional regulations is Law Number 23 of 2014 (Law No. 23 of 2014) concerning Regional Government. Therefore, the Bangkalan Regency Regional Government in accordance with the authority granted by law made Regional Regulation Number 4 of 2018 (PERDA No. 4 of 2018) concerning Disaster Management.⁵

The implementation of Regional Regulation (Perda) No. 4 of 2018 by the Bangkalan Regency Government is one of the legal steps aimed at overcoming natural disaster problems, including floods, which often occur in the Bangkalan area, especially Arosbaya District. As an area with certain geographical and environmental characteristics, Arosbaya District often faces flood problems that not only have an impact

¹ Kodoatie, Robert J, *Urban Flood Engineering and Management*, Yogyakarta: Andi Offset, 2021

² Muh. Fadli Natsir, "Analysis of Flood Problems in Karunrung Village, Rappocini District, Makassar City", Repository of UIN Alauddin Makassar, 2017

³ Tiodora Hadumaon Siagian, et al, "Measuring Disaster Risk and Vulnerability at Local Scale in Indonesia Through Downscaling World Risk Index", Research Report, College of Statistics (STIS), 2017

⁴ Rustam Akili, "Implementation of Legal Policy Formation Through the Legislation Process in the Framework of Legal Development", *Jurnal Legalitas*, 2012

⁵ Puspitasari, Diah et al, "Analysis of Public Participation in the Drafting of Law No. 27 of 2022 Concerning Personal Data Protection", *JRP: Jurnal Relasi Publik*, 2024

on infrastructure and environmental damage, but also threaten the social and economic lives of the local community. Repeated floods indicate an urgent need to implement comprehensive policies, both in terms of prevention and handling of disaster impacts. In this case, Perda No. 4 of 2018 is present as a legal basis for the regional government to carry out disaster management efforts in a more focused and systematic manner.⁶

Regional Regulation No. 4 of 2018 contains various provisions governing prevention, mitigation, emergency response, and post-disaster rehabilitation. In the context of flooding in Arosbaya District, the implementation of this regulation includes steps such as better spatial management, increasing public awareness of the importance of protecting the environment, and strengthening coordination between local governments and communities in disaster mitigation efforts.⁷ However, the effectiveness of the implementation of this regulation is still a big question, considering the complexity of the flood problem which is not only caused by natural factors alone, but also by human actions such as land conversion, poor waste management, and lack of collective awareness of the importance of protecting the ecosystem.⁸

To handle disasters, the Malang City Government issued Regional Regulation Number 1 of 2017 concerning disaster

management. Floods are one of the most common disasters. The local government has tried to overcome this problem by creating various policies such as the city drainage system, infiltration wells, the Malang Ijo Royo-Royo program, the million tree movement, and the formation of a disaster management implementation unit (Satlak PB). To reduce flooding, the Malang City government also normalized water channels. There is also a plan to build a bozem and a canal directly to the Brantas River. However, there are several things that hinder the performance of this policy. There are several obstacles: little funding, lack of supervision, and lack of cooperation between the government and the community. Malang Corruption Watch (MCW) also reported that the budget for drainage construction in 2021 was not executed properly. In addition, Green Open Space (RTH) in Malang City is only 4% of the total area, far below the standard of 20%, and the causes of flooding include land use, drainage systems, river functions, and people's habits of littering. There are no clear preventive measures and they are not in accordance with Malang City Regional Regulation No. 1 of 2007 concerning Disaster Management which emphasizes preventive measures.

Therefore, the Disaster Management Bylaw serves as a legal basis for both regions. The Bangkalan Regency seems to concentrate more on spatial management and increasing public awareness of flood management than Malang City. Meanwhile, Malang City concentrates on improving drainage, normalizing water channels, and building infrastructure such as bozem. However, there are several obstacles that prevent these two methods from functioning properly. These include lack of funds, supervision, and partnerships between the government and the

⁶ Marwiyah, Siti, Public Policy Textbook Administration, Formulation, Implementation, Implementation, Analysis and Evaluation of Public Policy, 2022

⁷ Moh Rosyid and Lina Kushidayati, 'Anticipating Disaster: The 'Urf Perspective of Rebo Wekasan Ceremony in Kudus, Central Java', *Al-Ihkam: Jurnal Hukum Dan Pranata Sosial*, 17.1 (2022), pp. 91 – 112, doi:10.19105/AL-LHKAM.V17I1.5705.

⁸ Rosyanti, Lilin et al, Reference Book of Disaster Management Concepts, Eureka Media Aksara, July 2024 Member of Ikapi Central Java No. 223/JTE/2021, 2024

community.

The Bangkalan Regency Government has developed laws to reduce the impact of flooding. Spatial planning, public education on the importance of protecting the environment, and government-citizen cooperation are all examples of these policies. But the problem is that flooding in Bangkalan is very complex. It is not only caused by heavy rain, but also by human actions. For example, on land that should function as a place for water to seep, houses or shops are built instead. In addition, garbage is dumped carelessly, causing water channels to become clogged. The government's policies are good, but flooding will still occur if people are not environmentally aware. If people continue to litter and turn catchment areas into buildings, these actions will not work even though the government has tried to regulate spatial planning and provide instructions.

Flood mitigation policies in Bangkalan are highly dependent on public awareness. If the public is aware of the importance of protecting the environment, they will support government policies, such as not littering, maintaining infiltration areas, and participating in environmental clean-up events. Thus, government policies will be successful and flooding will be reduced. Therefore, public awareness and government policies are like two sides of a coin: if only one is good, the results will not be optimal. To prevent flooding in Bangkalan, both must go hand in hand.

An analysis of how the concept of social capital is used in disaster mitigation management shows that this method has great potential to consistently increase the effectiveness of disaster management. A resilient and disaster-ready society is built by social capital, which consists of trust, norms, social networks, participation, and

cooperation. Here are some examples of the power of social capital that can be used to deal with disasters:

First, increasing community capacity and resilience. Social democracy allows communities to share experiences, knowledge, and resources in dealing with disasters. With strong social networks, communities can take appropriate preventive measures because information about disaster threats can be disseminated quickly and effectively. Social capital also helps communities adapt and recover from disasters. Second, increasing participation and cooperation. Social capital encourages communities to actively participate in every phase of disaster mitigation, from planning to implementation. Disaster mitigation policies and programs become more appropriate and in line with local needs because communities are directly involved. In addition, because cooperation is based on trust and mutual understanding, cooperation between government, communities, the private sector, and non-governmental organizations is more effective. Third, increasing the ability of disaster mitigation programs to succeed, because it is based on local needs and supported by active community participation, disaster mitigation programs based on social capital tend to be more effective. Communities with strong social capital are more likely to participate in training programs, simulations, and outreach on disaster mitigation. In addition, they are more likely to comply with government regulations and policies on disaster mitigation. Fourth, increasing trust and social solidarity. Social capital creates an environment that supports trust and social solidarity in the community. In a disaster situation, this is very important because the community must help and support each other to overcome challenges. Strong trust

and social ties can accelerate recovery after a disaster.

From the perspective of Islamic law, flood control efforts have strong moral and ethical justification. Islam as a comprehensive religion pays great attention to environmental issues and human welfare. Maqashid Syariah is the main objective of Islamic law or Sharia. This principle governs all aspects of life, including how we interact with the outside world. The purpose of Maqashid Syariah is to safeguard five main things: religion, life, mind, lineage, and property. If applied further, these principles will be essential for the formation of sustainable and equitable environmental policies.⁹

First, preserving religion (Hifdz al-Din) is not limited to acts of worship. In the context of the environment, it means preserving nature as pure and harmonious as it was created by Allah SWT. Polluting the environment is tantamount to tarnishing religion itself. According to Islam, nature is a promise that must be protected, and destroying it is tantamount to betraying that promise. Therefore, as a form of obedience to Allah SWT and to preserve the human soul (Hifdz al-Nafs), Islamic environmental policy must focus on preserving nature. This is a principle that clearly shows how important it is to preserve human life. Depletion of natural resources, environmental degradation, and pollution are direct threats to human health and safety.¹⁰ Real examples of how environmental damage can endanger human life are floods, landslides, droughts, and

diseases caused by polluted environments. Human health and safety must be a top priority in environmental policies based on Maqashid Syariah, by preventing all forms of activities that can damage the environment and threaten life. For example, the idea of a low-carbon green economy seeks to reduce the adverse effects of air pollution and climate change on human health because it is in line with the principle of preserving the soul and mind. Furthermore, maintaining the mind (Hifdz al-Aql). The mind is a gift given by God that distinguishes humans from other creatures. People have the mind that allows them to think, learn, and find solutions to problems.

Environmental damage can interfere with human cognition, especially in children. Diseases that can hinder children's cognitive development can be caused by polluted environments, lack of access to clean water, and poor sanitation. Environmental policies that are in accordance with Maqashid Syariah must ensure that a healthy and sustainable environment can fully support the development of human reason and potential. A low-carbon green economy also supports the maintenance of reason because it encourages the development and innovation of environmentally friendly technologies that require critical and innovative thinking. Fourth, protecting the next generation (Hifdz al-Nasl). This principle shows how important it is to maintain sustainability for the next generation. When natural resources are over-exploited, it will endanger the lives of future generations. They will inherit damaged land, diminishing resources, and polluted nature. Environmental policies based on Maqashid Syariah must ensure sustainable management of natural resources so that future generations can live a decent and prosperous life. In a green economy, the principle of efficient use of resources—or

⁹ Napitupulu, Abdul Khaliq, eall, Mitigation of ROB Floods in Pekalongan City from the Perspective of Environmental Jurisprudence, At-Thullab: Journallslamic Studies Student 5.3 (2023): 1420-1428

¹⁰ Narulita, Sari, et al, Strengthening the Role of the Bidara Cina Community in Flood Disaster Adaptation and Mitigation, Civitas: Journal of Community Service and Empowerment 3.2 (2023): 57-63

resource efficiency—seeks to reduce pollution and waste while maximizing the use of existing resources for current and future generations. Fifth, protecting property (Hifdz al-Mal). In Islam, property does not only consist of material and money, but also includes natural resources given by Allah SWT. Destroying valuable property is the same as destroying the environment. Over-exploitation of natural resources, deforestation, and environmental pollution can cause significant economic losses, such as loss of agricultural land, damage to infrastructure, and decreased productivity. Environmental policies in accordance with Maqashid Shariah must ensure wise and responsible management of natural resources so that they can generate sustainable economic benefits for society. Hifzh al-mal includes protecting the property of the people from damage. According to the principles of Islamic justice, exploitation of nature without considering its effects is a form of injustice.¹¹

Maslahah, or public interest, is an additional principle relevant to environmental policy in addition to the five main principles. This principle emphasizes that every policy and action should benefit or benefit society as a whole. Maslahah in the environment means preserving nature so that it remains healthy for present and future generations. This principle is opposed to actions that damage the environment and cause harm to society. Second, hifz al-bi'ah, which means preserving the environment.¹² This literally means preserving the

environment.¹³ Islam places great emphasis on protecting the environment. This includes ensuring that ecosystems remain healthy, avoiding pollution, and using natural resources wisely. This concept is based on the belief that humans are the khalifah, or stewards, of the earth, and they are responsible for caring for it. Third, collective obligation, or fardhu kifayah. an obligation that if carried out by some members of society, then the obligation will be waived for other members of society. However, if no one does it, then the whole society will be sinful. Fardhu kifayah means that some members of society must have the expertise and ability to handle environmental problems such as waste management, pollution control, and disaster management. If no action is taken, then society as a whole will be responsible. The fourth principle is the principle of justice. The Qur'an emphasizes justice as one of the most important universal values. In Islamic law, the principle of justice places humans in their "fair" position, both as a society and as individuals. Fifth, the prince of amar ma'ruf nahi munkar. The principle of amar ma'ruf nahi munkar consists of a combination of "amar ma'ruf" and "nahi munkar", which, in simple terms, functions as a social technique and social control. Sixth, the belief in monotheism. According to this principle, all Islamic legal structures are centered on the oneness of God, namely Allah SWT. Thus, implementing the law will be considered as worship. This principle states that monotheism, which is stated in the sentence "La Ilaha Illa Allah" (There is no god but Allah,"), applies to all humans.

In Islam, protecting the environment

¹¹ Aziz, Helmi, et al.II,Disaster Mitigation in Madrasah Diniyah with the Katumbiri Learning Model Integrated with Islamic Values,*Islamic Education: Journal of Islamic Education* 12.001 (2023).

¹² F A Al Munawar, "Abd al-Majid al-Najjār's Perspective on Maqāṣid al-Sharī'ah", *Juris: Jurnal Ilmiah Syariah*, 20.2 (2021), pp. 209–23, doi:10.31958/juris.v20i2.4281.

¹³ K Umam and others, 'Striking the Balance: Fiqh Bi'ah and Productive Waqf Forests (PWFs) for Sustainable Forest Management in Indonesia', *Journal of Islamic Accounting and Business Research*, 2024, doi:10.1108/JIABR-03-2024-0090.

is part of the mandate of humans as caliphs on earth. Allah SWT has given humans the task of managing the Earth in a wise and responsible manner. People have a moral and spiritual responsibility as caliphs to maintain the balance of the ecosystem, protect natural resources, and create a sustainable environment for all living things. This concept emphasizes that humans are not the owners of the earth, but only managers who are responsible for what they do. One of the important principles in Islamic law relating to the environment is the prohibition of causing damage (*fasad*). It is advisable to avoid all actions that can cause environmental damage, such as water, air, and soil pollution, illegal logging, and hunting of rare animals. This concept emphasizes that humans should not harm nature, but instead should take care of it as best they can. How humans can do good without doing harm, taking into account the preservation of nature, the environment, and human welfare is the core of *Maqasid Syariah*. *Maqasid Syariah* and the green economy share the same goal of improving the welfare of the environment and humans. Therefore, *Maqasid Syariah* provides a strong moral and ethical foundation for sustainable and equitable environmental policies that consider not only technical and economic aspects, but also spiritual and moral aspects, to achieve harmony between humans and the environment.¹⁴ In Islam, protecting the environment is an act of worship and a recommendation. The Quran and Hadith clearly forbid us from destroying nature because we ourselves will lose if nature is damaged.

In Surah Ar Rum verse 41, the Qur'an

emphasizes how important it is to maintain the balance of nature and how humans must be responsible for preserving the environment. The verse also emphasizes that environmental damage is the result of irresponsible human actions, and reminds humans to act wisely when utilizing natural resources.¹⁵

Hadith narrated by Ahmad:

"If the apocalypse is about to happen, and in the hands of one of you is a date palm seed, then if he is able not to wake up until he plants it, then plant it."

This hadith gives a very strong message about the importance of ¹⁶ in the worst conditions. Even though the apocalypse is near, we are advised to plant trees because it is part of our responsibility as humans towards the Earth and future generations. This hadith also teaches optimism and hope; we should always try to do good even though the results may not please us.

Hadith narrated by Bukhari: Rasulullah SAW said:

"Whoever gives life to a piece of dead land, then that land becomes his." (HR. Bukhari)

Revitalizing dead land means changing unproductive land into useful land, such as agriculture or plantations. This is a highly recommended act in Islam because it can increase food production, create jobs, and reduce poverty. In addition, reviving dead land can also prevent erosion and environmental damage.

The Qur'an and the above hadiths provide clear guidance on the importance of

¹⁴ Muhamad Hasan Sebyar, Harmonization of Islamic Legal Institutions and Customary Law in Marriage Dispensation Cases at the Panyabungan Religious Court. (2023). *MILRev: Metro Islamic Law Review*, 2(2), 155-174. <https://doi.org/10.32332/milrev.v2i2.7809>

¹⁵ C Rois, N Jannani, and M H Mufid, 'Islamic Law Paradigm Responding Conflicts of Interest of Economic Development and Ecological Conservation Hifdz Al-Bi'ah Perspective', *Al-Istinbath: Jurnal Hukum Islam*, 9.1 (2024), pp. 193-210, doi:10.29240/jhi.v9i1.8660.

¹⁶ A Gayo and others, 'Pengulu Uten's Forest Management in Central Aceh: A Perspective of Fiqh al-Bi'ah', *Ahkam: Jurnal Ilmu Syariah*, 24.1 (2024), pp. 17-36, doi:10.15408/ajis.v24i1.34518.

maintaining ecological balance. In addition, they provide a moral and spiritual foundation for just and sustainable environmental policies. We can help create a sustainable, healthy and prosperous environment for all by understanding and practicing these teachings.¹⁷

Hisbah is an important concept in Islam that can be used to monitor environmental policies. Hisbah simply means inviting people to do good and preventing them from doing evil. In the time of the Prophet Muhammad (PBUH), there were people who were responsible for monitoring the market to ensure there was no cheating. This concept of hisbah can be applied to the environment. Consequently, environmental hisbah can be defined as follows. First of all, there are people who supervise. Certain institutions and communities have the right and obligation to supervise governments and companies. Are they complying with environmental policies? Are they not damaging nature? They have the right to warn or report violations. Second, prevention is better than cure. We must prevent damage before it occurs. What is that? by educating, socializing, and teaching the community about the importance of protecting the environment. We must realize that this environment is a shared property that we must protect. Third, action must be taken if violations occur. Strict action must be taken if they have been reminded but the damage continues to occur. The government must punish people who damage the environment according to the law. No one should feel immune to the law. Basically, this hisbah is social control. All Muslims have an obligation to remind each

other in terms of goodness, including protecting the environment. We must actively invite people to care about the environment and prevent them from doing things that damage nature. In this way, environmental management will be more efficient and sustainable, so that the whole community, not just the government, will be responsible.

Regional Regulation Number 4 of 2018 concerning Disaster Management in Bangkalan Regency is an example of a supporting law in Indonesia. Positive law is a law made by an authorized institution and is officially enforced in a country. The source of positive law comes purely from society, which is taken or found through an inductive method by observing how other people act and think. In contrast, the Qur'an and Hadith, which are considered revelations from Allah SWT, are the sources of Islamic law. This law regulates the relationship between humans and Allah (*hablu min al-Allah*), humans (*hablu min an-Nas*), and nature (*hablu min al-'Alam*). However, positive law usually regulates the relationship between individuals and legal entities. Bangkalan Regency Regulation regulates how to prevent and overcome disasters to protect society and the environment. In terms of disaster management, Islamic law also has principles such as protecting lives (*Hifdz al-Nafs*), protecting property (*Hifdz al-Mal*), and realizing public welfare (*Maslahah*). Bangkalan Regency Regulation and Islamic law differ in terms of their origin and scope. Islamic law comes from divine revelation and covers more legal, moral, and social aspects than regulations, which are made by humans and only apply in the Bangkalan Regency area. However, Islamic values can influence Indonesian law, especially in terms of family, economy, and ethics. For example, regulations can use Islamic principles such as

¹⁷ Utami, Dian Paramesty Ken. Analysis of environmental journalism in the view of *fiqh al-bi'ah* on the documentary film *drowning in silence* produced by watchdoc and greenpeace. Diss. UIN KH Abdurrahman Wahid Pekalongan, 2024.

mutual cooperation, social awareness, and environmental preservation when dealing with disasters. Therefore, positive law and Islamic law can work together and strengthen each other to build a safe, just, and prosperous society.

This study aims to analyze the implementation of Regional Regulation No. 4 of 2018 by the Bangkalan Regency Government in an effort to reduce flood intensity in Arosbaya District by reviewing its relevance from an Islamic law perspective. This study will explore the extent to which the policy has been implemented effectively and how Islamic values can contribute to strengthening the government's approach to dealing with flood problems. In addition, this study will also discuss the challenges faced in implementing the regulation and provide strategic recommendations to improve policy effectiveness. With this approach, the study is expected to provide academic and practical contributions in understanding the integration between public policy and religious values in the context of disaster management.¹⁸ In addition, this study also aims to provide new insights for policy makers regarding the importance of a holistic approach that is not only technical-administrative but also reflects moral and religious ethical values in solving social problems such as flooding.¹⁹ Ultimately, this research is expected to be a reference for local governments and the wider community to work together to create a safer, more prosperous, and more sustainable life in accordance with the principles of social justice and environmental sustainability as taught in Islam.

Method

The following is a qualitative research methodology for flood mitigation in Arosbaya District, Bangkalan Regency. This study uses a qualitative approach with a descriptive research type. The qualitative approach was chosen because it aims to deeply understand the phenomenon of flood mitigation in Arosbaya District, including public perception, policy implementation, and alignment with Islamic legal principles. This study is descriptive because it aims to systematically describe and analyze facts and characteristics related to flood mitigation at the research location. The study was conducted in Arosbaya District, Bangkalan Regency, considering that this area has complex flood problems, so it is relevant for further research. The subjects of this study were informants who were considered relevant and competent in providing information related to flood mitigation in Arosbaya District. Informants include, related local government apparatus (BPBD, Environmental Service, Public Works and Spatial Planning Service), Community leaders (religious leaders, traditional leaders, youth leaders), Communities affected by flooding in Arosbaya District. Meanwhile, the research objectives include, Flood management policies in Bangkalan Regency, especially Regional Regulation Number 4 of 2018 concerning Disaster Management, Implementation of flood management policies in Arosbaya District, Public perception of flood mitigation policies, Islamic legal principles relevant to water resources management and disaster management.

Data collection techniques through in-depth interviews were conducted to obtain information from informants regarding their experiences, knowledge, and views on flood management, policy implementation, and its effectiveness. Interviews were conducted in

¹⁸ Sachs, JD, *The Age of Sustainable Development*, New York: Columbia University Press, 2015

¹⁹ Maryono Agus, *Handling Floods, Droughts, and the Environment*, Yogyakarta: Gadjah Mada University Press, 2014

a semi-structured manner with flexible interview guides to be able to adapt to the context and characteristics of the informants. Observations were conducted to directly observe the implementation of flood management policies in the field, including environmental conditions, flood control infrastructure, community activities, and interactions between the government and the community. Observations were conducted in a participatory manner, where researchers were directly involved in community activities to gain a deeper understanding. Data collection was conducted through document studies related to flood management policies, activity reports, statistical data, laws and regulations, and other relevant documents. These documents were analyzed to gain a comprehensive understanding of the context of flood management policies and implementation.

The data analysis, namely the analysis of Islamic law, was carried out by identifying the principles of Islamic law that are relevant to disaster management, such as the principle of *maslahah* (public interest), *hifz al-bi'ah* (environmental maintenance),²⁰ collective responsibility (*fardhu kifayah*), justice, and the prohibition of causing damage to the earth.²¹ These principles are then used as a reference framework to evaluate the alignment of flood management policies with Islamic values. This study uses a comparative approach by comparing existing flood management

policies (Regional Regulation Number 4 of 2018) with the principles of Islamic law. The aim is to identify similarities, differences, and potentials between the two. Data collected from interviews, observations, and documentation were analyzed qualitatively using content analysis and thematic analysis techniques. Content analysis was carried out to identify important themes that emerged from the data, while thematic analysis was carried out to organize these themes into relevant categories. This study uses a sociological approach to understand how social, cultural, economic, and political factors influence the implementation of flood mitigation policies and public perceptions of these policies. This approach is also used to analyze how social capital (trust, networks, norms) plays a role in increasing community resilience to disasters. Collection and analysis Public perceptions of flood mitigation policies were collected through in-depth interviews and participant observations. Interview questions focused on public understanding of the policy, its effectiveness in reducing flood risk, public participation in policy implementation, and public expectations and aspirations regarding flood mitigation. Public perception data were analyzed qualitatively to identify dominant themes, differences of opinion, and factors that influence public perceptions. To maintain the validity and reliability of the data, this study used data triangulation techniques, namely comparing and combining data from various sources (interviews, observations, documentation) and methods (Islamic law analysis, comparative approach, sociological analysis). In addition, researchers also conducted member checks, namely asking for feedback from informants regarding the interpretation and conclusions of the study to ensure the accuracy and representation of the data.

²⁰ S A Acim, 'The Concept Of Fiqh Al-Bi'ah In The Qur'an: A Study of the Quranic Verses on Environment in the Ulama's Views of Lombok', *Ulumuna*, 27.1 (2023), pp. 115–40, doi:10.20414/ujis.v27i1.694.

²¹ M M Amiruddin and others, 'Reforming Fiqh Al-Bi'ah (Ecological Jurisprudence) Based on Islam Hadhari: An Integration Conservation Framework of Muamalah and Culture', *International Journal of Law and Society*, 3.3 (2024), pp. 187–205, doi:10.59683/ijls.v3i3.99.

With this methodology, it is expected that this study can provide a comprehensive and in-depth understanding of flood management in Arosbaya District, Bangkalan Regency, as well as provide relevant and applicable recommendations to increase the effectiveness of policies and community participation in disaster mitigation.^{22, 23}

Results and Discussions

The legal policy made by the Bangkalan Regency Government in terms of disaster management is in the form of Regional Regulation Number 4 of 2018 concerning Disaster Management. According to article 11, the Regional Government determines a disaster map in spatial planning containing disaster threats in the Region consisting of floods, earthquakes, droughts, landslides, hurricanes or tornadoes, epidemics and disease outbreaks, fires, technological failures, and other disasters that are regional threats. The stages of disaster management are contained in article 13 of Regional Regulation Number 4 of 2018 which include 3 (three) stages, namely: a) pre-disaster, b) emergency response; and 3) post-disaster. In carrying out disaster management responsibilities, referring to article 6, the Regional Government delegates its main duties and functions to the BPBD. BPBD in carrying out its duties and functions can involve elements including: a) Government; b) Provincial Government; c) Community. In accordance with the provisions of article 11 paragraph (2) one of the disaster threats in the Bangkalan Regency area is flooding.

Bangkalan Regency Government's Strategic Steps in Flood Mitigation in Arosbaya District

Table 1. Strategic Steps for Flood Disaster Mitigation in Arosbaya District

Pre Disaster	Emergency	Response Disaster	Post
Formation of the Arosbaya Community Destana	Evacuation of flood victims	Infrastructure rehabilitation (normalization of 1 main river and 5 tributaries in Arosbaya District)	
Creating an early warning system located on the Tambengan River, Arosbaya District	Providing shelter for flood victims	Social and economic rehabilitation (Providing basic food assistance and livelihood recovery, especially for farmers)	
	Create a public kitchen and distribute free food to flood victims	Psychological recovery of flood victims (families of flood victims)	

The following are strategic steps taken by the Regional Government in dealing with flooding in the Arosbaya sub-district, forming a disaster-resilient village (DESTANA) and an early warning system. The Bangkalan Regency BPBD has taken proactive steps by forming a Disaster Resilient Village in the Arosbaya District. This initiative involves community leaders and the general public, who function to assist BPBD in disaster mitigation efforts.²⁴ The establishment of this disaster-resilient village is part of a pre-disaster strategy aimed at increasing community resilience to the threat of flooding that often hits Arosbaya District. Disaster Resilient Village aims to empower communities in facing disaster risks through increasing capacity

²² Noor, Juliansyah, Research Methodology, Jakarta: Kencana Prenada Media Group, 2011

²³ Rachman, Arif, Quantitative, Qualitative and R&D Research Methods, Bandung: Alfabeta, 2024

²⁴ Maulita, Ika et al, "Natural Disaster Preparedness Education in Karangbanjar Village, Bojongsari District, Purbalingga Regency", I-Com: Indonesian Community Journal, 2024

and knowledge.²⁵ According to the theory of disaster risk reduction by Wisner, community involvement in the planning and implementation of mitigation programs is essential to create sustainable resilience. By involving various elements of society, such as PKK mothers, village heads, and local organizations, BPBD hopes to build an effective and responsive communication network to emergency situations. The establishment of Disaster Resilient Villages also reflects a participatory approach to disaster management. According to the theory of community participation by Sherry Arnstein, active participation of residents in the decision-making process is the key to achieving better results in development programs.²⁶ By involving representatives from various groups, BPBD not only raises awareness of disaster risks but also strengthens social solidarity among residents. As part of this program, BPBD Bangkalan Regency has provided training and education to Destana members on how to deal with disasters, including making evacuation plans and managing resources during emergencies. According to the theory of education for disaster resilience by Ritchie, appropriate education and training can improve the community's ability to respond and recover from disasters effectively.²⁷ With the knowledge gained, it is hoped that the community can take appropriate preventive measures before flooding occurs.

The initiative to establish a Disaster

Resilient Village in Arosbaya District by the Bangkalan Regency BPBD is a strategic step in pre-disaster mitigation efforts. Through a participatory approach, training, and education, Arosbaya District is expected to increase community resilience to flood risks. By empowering residents to become key actors in disaster management, BPBD not only helps reduce the impact of disasters but also builds more resilient communities that are ready to face future challenges. This effort is in line with the principles of disaster risk reduction that emphasize the importance of community involvement in creating a safe and sustainable environment.²⁸

Next, create an early warning system, On September 13, 2019, BPBD Bangkalan Regency launched an early warning system Early Warning System (EWS) in Tambegan River, with the location of the EWS receiver in the yard of Arosbaya Village Hall. This initiative is part of an effort to increase community preparedness for flood disasters, especially in areas prone to impacts. With the EWS, it is hoped that the community can receive fast and accurate information about the potential for flooding, so that anticipatory actions can be taken before a disaster occurs.²⁹

The implementation of this early warning system is in line with the theory of disaster management which emphasizes the importance of preparedness and rapid response in facing disasters. According to William Nick Carter, there are three main stages in disaster management: prevention, preparedness, and emergency

²⁵ Noor, Abyan Fadilla et al, "Community Activity Data Collection in Categorizing Disaster Resilient Villages and Prioritizing Village Emergency Assistance", 2018

²⁶ Fatimah Syam, "Social Inclusion and Diversity in Disaster Resilient Villages: Case Study of Gampong Jawa, Banda Aceh", Indonesian Journal of Sociology of Religion (JSAI), 2024

²⁷ Seotikasari, Zela et al, "Disaster Risk Reduction and Prevention Education (DRR) as a Resilience Strategy for Elementary Schools in Disaster Management", Yogyakarta: Jurnal Ketahanan Nasional, 2022

²⁸ Agustian, Yanyan et al, "The Urgency of Establishing Disaster Resilience Volunteers in Parongpong District, West Bandung Regency", Journal of Collaborative Service and IPTEKS Innovation, 2024

²⁹ Herdiansyah, R, "Security Strategy in Mitigating Earthquake Disasters in Class IIB Cianjur Correctional Institution", Journal of Intellectuality: Islam, Social and Science, 2023

response.³⁰ The EWS system serves as a preparedness tool that provides early information to the community about flood risks, so that they can take the necessary steps to protect themselves and their property. This early warning system also supports research that shows that technology-based systems, such as water level sensors, can significantly improve the effectiveness of early detection of potential floods. For example, research conducted on SPEND (Flood Early Warning System Using Water Level Sensor with Arduino UNO) shows that the use of water level sensors can provide early warning when water discharge increases. This system provides notifications via LEDs and buzzers when the water level exceeds a predetermined threshold, allowing the community to react immediately. Furthermore, the application of Internet of Things (IoT) technology in early warning systems is also relevant. Research shows that IoT-based EWS systems can send data in real time to users through applications or social media, so that information about river conditions and potential flooding can be quickly accessed by the community. This creates an effective communication network between the government and the community in disaster management. In addition, the sociological approach to disaster management underlines the importance of community involvement in the disaster management process. By involving the community in monitoring and using the EWS system, they not only become recipients of information but also play an active role in disaster risk mitigation. This is in line with the theory of community participation in disaster management which states that active community involvement can increase the

effectiveness of disaster response.³¹

In Islam, preparation before a disaster occurs is highly recommended. The principle *tawakal* (surrendering to Allah after trying) requires people to take preventive measures. The establishment of *destana* and early warning systems reflect proactive efforts in line with Islamic teachings to protect society from disaster risks. This shows social responsibility (*takaful ijtima'i*) to protect lives and property.³²

Emergency response, The joint team from BPBD, the Indonesian National Police (Polri), and the Indonesian National Army (TNI) and other agencies immediately evacuated trapped residents using rubber boats and provided shelters and public kitchens. Mrs. Fitri, Head of Prevention and Preparedness for BPBD Bangkalan Regency, explained that this rapid response was part of an effort to minimize the impact of the disaster and protect public safety. This rapid response reflects the importance of inter-agency coordination in disaster management. In this context, disaster management theory is very relevant to understanding the steps taken in dealing with emergency situations. The theory of disaster management by William Nick Carter emphasizes the importance of three main stages: prevention, preparedness, and emergency response.³³

In the case of the Arosbaya flood, the emergency response stage was clearly

³⁰ Hariyani, Alvia Nova et al, "Analysis of Logistics Warehouse Governance Policy and Disaster Equipment at BPBD East Java Province", SARR, 2022

³¹ Atika Putri Yana et al, "Effectiveness of Implementing Early Warning System in Efforts to Reduce Flood Disaster Risk in Kampung Melayu Village", *Geography: Journal of Educational Studies, Research and Development*, 2024

³² Sufriadi Ishak, et al, "Implementation of Understanding Environmental Fiqh (Flood Prevention Through Public Awareness in Protecting Rivers)" *Khadem: Journal of Community Service*, 2024

³³ Tiara, Andri, "Local Government Coordination in Residential Drainage Management as an Effort to Reduce the Risk of Flood Disasters in Padang City", 2014

visible through the rapid evacuation carried out by the joint team. In addition, community preparedness is also a major focus. According to LIPI-UNESCO research, preparedness includes community knowledge of disaster risks, early warning systems, emergency response plans, and resource mobilization. By involving various agencies such as BPBD and the Social Service in the evacuation process and providing shelters and public kitchens, the Bangkalan Regency Government demonstrated collaborative efforts that can increase the effectiveness of disaster response. In this case, the collaboration between BPBD, Polri, and TNI in handling the flood in Arosbaya is a real example of this theory. In addition, a sociological approach to disasters is also relevant in this situation. Research shows that community participation in the disaster management process is very important to accelerate the response and increase the effectiveness of the actions taken. In this case, community involvement in establishing shelters and public kitchens can strengthen social solidarity and accelerate post-disaster recovery.³⁴

Islam teaches the importance of helping others in difficult situations. The concept of social care and mutual assistance is strongly emphasized. Evacuation efforts and providing shelter for disaster victims are noble acts that reflect the humanitarian values in Islam. The government acts quickly to protect the threatened community, in accordance with the principle of *adl* (justice) in Islam.³⁵ Providing public kitchens to provide food and aid to those in need is part

of charity *jariyah* (charity that continues to flow with rewards). Opening public kitchens to provide food for disaster victims reflects the values of compassion and solidarity in Islam. It also shows the government's responsibility to meet the basic needs of the community when they are facing difficulties.³⁶

Post disaster, Flooding in Arosbaya District was caused by a combination of natural factors such as high rainfall and topography, and non-natural factors related to human behavior that is less concerned about the environment. To overcome this problem, collective awareness from the community is needed as well as real action in managing the environment and natural resources. Mitigation efforts such as reforestation, improving drainage infrastructure, and educating the community about the importance of protecting the environment must be carried out continuously to prevent similar disasters from happening in the future. After the flood in Arosbaya District, the Bangkalan Regency BPBD took strategic steps to carry out mitigation and rehabilitation. In an interview with

Mrs. Kasi from BPBD Bangkalan Regency, explained that her party together with related agencies have conducted a comprehensive assessment to formulate the right policy in handling the impact of this disaster. According to her, post-flood disaster management does not only cover infrastructure aspects, but also involves socio-economic rehabilitation and psychological recovery of the affected community.

One of the main focuses of BPBD and related agencies is the rehabilitation of infrastructure damaged by flooding in

³⁴ Dityana, Muchammad Apri Fitryanto, "Study of Community Participation in Flood Management in Kemijen Village, East Semarang District", 2014

³⁵ Shofura, Adinda. The Responsibility of Bireuen City Government in Flood Management on the Juli District Route in the Perspective of Milk Al-Daulah. Diss. Ar-Raniry State Islamic University, 2023

³⁶ Zamroni, M. Imam. "Islam and local wisdom in disaster management in Java." *Journal of Disaster Management Dialogue* 2.1: 1-10, 2011

Arosbaya District. According to the disaster management theory by Quarantelli, infrastructure recovery is a crucial step in the post-disaster rehabilitation process, because good infrastructure will support the recovery of economic and social activities of the community.³⁷ Acting Regent of Bangkalan Muhni, revealed that after the flood, his party had conducted a survey at a number of river locations in Arosbaya District. From his monitoring, it is believed that the floods that often hit Arosbaya were due to the narrowing and shallowing of the river. According to him, normalization of the river in the Arosbaya area cannot be carried out by the local Regional Government (Pemda). This is because it is not the authority of the region, but rather the province's domain. His party admitted that they had proposed to the provincial government to carry out normalization and the provincial irrigation department had conducted a survey but the results were not yet known. Even so, dredging with the regional initiative was still being attempted because if we wait for the province, it will take a long time and require a long process.³⁸

The Public Works and Public Housing Agency (PUPR) and other related agencies such as the Forkopimda coordinated with each other and agreed to rent heavy equipment to dredge shallow river points in flood-prone areas of Arosbaya District, the funds for which were obtained from unexpected expenditures (BTT) to normalize the river, the implementation of which will be carried out in 2023.³⁹ Revealed by one of

the fishermen of Tengket Village, Arosbaya District, Bilal Kurniawan explained that there were five points of narrowing of the Arosbaya River that occurred in the main river and in several tributaries. Based on Bila's testimony when the local government carried out normalization, normalization was only at one point in the main river, namely in the Ngantemoran area. While the five tributaries that also experienced narrowing at that time were left alone, there was no certainty about the handling of normalization. After dredging was carried out on their own initiative using BTT funds and only normalizing one point on the main river, then in 2024, residents in Arosbaya District felt that they received special attention from the East Java Provincial Government in the form of implementing a normalization program. The Head of the East Java PU SDA Service has held a normalization activity for Arfur Spades which is about 1 kilometer long. 1,787 meters from the Main River, Tambengan River, to Makam Agung Village. Crossing three villages, namely Arosbaya Village, Pelakaran, and Makam Agung, the Arosbaya area which has been haunted by waterlogging or even flooding during the rainy season, has now taken anticipatory steps to minimize the negative impacts caused by waterlogging until it is turned into a blessing for local farmers.⁴⁰

In addition to infrastructure, BPBD also prioritizes the socio-economic rehabilitation of affected communities. Many residents lost their livelihoods due to the flood, so an economic recovery program is needed.

³⁷ Asdak, Chay, *Hydrology and Watershed Management*, Yogyakarta: Gadjah Mada University Press, 2024.

³⁸ Muhar Junef, "Law Enforcement in the Framework of Spatial Planning to Realize Sustainable Development", *Facsimile* 17, no. 4: 7–8, 2021, www.publikasi.unitri.ac.id

³⁹ Dinda Hayati et al, "Resource Support Strategy of

the Tebing Tinggi City Regional Disaster Management Agency in Flood Management in Tebing Tinggi City District," *Journal of Public Administration* 19, No. 2: 323–39, 2023, <https://doi.org/10.52316/jap.v19i2.185>

⁴⁰ Kodoatie, Robert J et al, *Integrated Water Resources Management*, Yogyakarta: Andi, 2005

According to the theory of sustainable development by Jeffrey Sachs, post-disaster economic recovery must involve community participation in designing programs that suit their needs. BPBD Bangkalan Regency collaborates with the Social Service to provide social assistance and skills training to the community so that they can become economically independent again, both coastal and non-coastal communities, which previously had skills training in Sepuluh District, Bangkalan Regency, which was also affected by the flood.

Another important aspect is trauma healing or psychological recovery for residents who experience trauma due to disasters. Floods not only damage the physical but also have an impact on people's mental health. According to the post-disaster mental health theory by Norris, psychological support is very important in helping individuals overcome trauma.⁴¹BPBD together with the Health Office held a counseling and psychological support session to help residents overcome post-disaster fear and anxiety, which was implemented at the Arosbaya District Village Hall. The flood management policy in Arosbaya District involves an integrated approach between the local government and the community. In a coordination meeting held by BPBD, the Acting Regent of Bangkalan emphasized the importance of collaboration between various parties in handling this hydrometeorological disaster. He stated that disaster risk management must be carried out in a planned and sustainable manner, in accordance with the principles of disaster risk reduction (DRR) regulated in the Bangkalan Regency Regional Regulation. BPBD also submitted Ready Funds (DSP) to BNPB to support

these disaster rehabilitation and management activities. According to Law No. 24 of 2007 concerning Disaster Management, disaster management must involve all elements of society and utilize local resources to increase community resilience to disasters.⁴²

Community Involvement in Flood Disaster Mitigation Program in Arosbaya District

To support flood mitigation efforts, the Arosbaya District community can participate in the following ways: 1) participate in the construction and activation of the Destana. The process of forming Destana at the village level is being carried out by the Arosbaya District community. In addition, Destana members attend meetings, discussions, and training held by the government to increase awareness and preparedness for disasters. Many people feel they have a responsibility to protect the environment and take preventive measures to reduce the risk of flooding by being involved in the construction and activation of the Destana. 2) Environmental management and monitoring. Most people, especially farmers, voluntarily report and monitor rivers, waterways, and the surrounding environment to prevent blockages or damage that can increase the risk of flooding. This action prevents the accumulation of garbage that can cause flooding and helps the water flow more smoothly. 3) Participate in the early warning system. Communities help each other know about possible flooding through the early warning system created by the government. Some people also actively provide information to authorities if they see signs

⁴¹ Marchira, Carla R, "Raw Health and Psychosocial Support", 2016

⁴² Marlina, Lilis, Luthfi Luthfi, and Hilma Erliana. "Disaster Management Socialization from an Islamic Perspective in Increasing Student Awareness of the Environment." *Journal of Agro and Marine Industry Service* 4.1 (2024): 8-14

of an impending flood. Habits like this reduce the risk of loss of life and property by making people more alert and ready to evacuate if necessary. 4) Cooperate in mitigation activities. To clean the water channels, the community collaborates. This activity not only reduces the possibility of flooding but also increases the sense of brotherhood and solidarity of the residents. 5.) Tech-savvy communities use social media to communicate about flood situations, collect aid, and report important events to authorities. Social media has become a useful tool for disseminating information quickly and helping the government and community collaborate in handling floods. 6) The Arosbaya District community, especially farmers, took part in public consultations or discussion forums held by the government to provide feedback on flood management policies. By obtaining more accurate and relevant information from the field, policies made by the government are more in line with the needs and situations of the local community. Through these various activities, the people of Arosbaya District have shown that they strongly support the efforts of the Bangkalan Regency Government to reduce flooding. To make this environment safer, more resilient and sustainable, communities must actively participate.

Integration of Local Wisdom in Disaster Mitigation Policy

Local wisdom in Arosbaya District, Bangkalan Regency, is an important asset that can be used to improve the effectiveness and sustainability of government programs. It can be incorporated into disaster mitigation policies. Because the knowledge and practices have been tested by time, this integration allows for more responsive, involved, and sustainable policies. The government must first collect information

about local wisdom through discussions or interviews with community leaders and field research before it can incorporate local wisdom into government policies. Local wisdom in Arosbaya District includes traditional early warning systems, such as kentongan or mosque loudspeakers, and the sound of frogs to find out the weather. Combining conventional methods with modern early warning systems is the first step towards developing an adaptive early warning system. Combining natural signs and local communication networks Utilizing natural signs known to the community to provide additional early warnings in addition to technology-based early warning systems and disseminating early warning information through traditional communication networks such as kentongan or mosque loudspeakers. Local governments should provide training to communities on how to read natural signs and activate local communication networks when disasters occur to integrate local wisdom into government policies to provide a flexible early warning system.⁴³

Factors Inhibiting the Effectiveness of Flood Mitigation in Arosbaya District

Table 2. Factors Inhibiting the Effectiveness of Flood Mitigation

Pre Disaster	Emergency	Response	Post Disaster
Limited resources such as facilities and budget	The evacuation process was less than optimal due to a lack of resources and facilities such as rubber boats.	The response of the East Java Provincial Government in responding to the BPBD evaluation report regarding the need for river normalization in Arosbaya District.	slow

⁴³ Suparmini, Suparmini, Sriadi Setyawati, and Dyah Respati Suryo Sumunar, Disaster mitigation based on local wisdom of the Baduy community, *Journal of Humanities Research* 19.1 (2014).

Difficulties in the process of building and maintaining early warning systems and the lack of public understanding in managing them	Shelter space is limited	Social and economic rehabilitation, as well as psychological recovery, are hampered by the lack of available funds
	Food distribution tends to be uneven due to a lack of facilities such as rubber boats to reach the homes of residents trapped in the flood.	

Regional Regulation Number 4 of 2018 regulates disaster management from pre-disaster to emergency response and post-disaster. The Bangkalan Regency Government has taken several strategic steps to reduce flooding in Arosbaya District, but there are several obstacles that hinder the implementation of the policy. The following are some of the obstacles found. Establishing a destana and implementing an early warning system are important actions when a disaster occurs. Limited resources are the first destana obstacle. Limited financial resources and facilities are the main problems. Training, counseling, and disaster mitigation infrastructure are needed for the destana program. The program will be hampered if there is not enough support. This is in line with research showing that disaster mitigation programs at the village level can fail due to budget constraints. Second, lack of community participation. Although the destana program involves community representatives, the next problem is ensuring that the community as a whole actively participates. Studies show that the success of community-based programs is highly dependent on the level of community participation at every step of the

process, from planning to implementation. This program will be less effective if the community is not involved or has an interest in it. Third, the level of education and public awareness of disaster risks is low. Many people do not yet understand the importance of disaster preparation. Studies show that increasing public knowledge through socialization and training is essential to building community capacity to deal with disasters. Without adequate education, many people in the community are not prepared to take the necessary actions when a disaster occurs. People from the four different socio-cultural backgrounds have different ways of viewing disaster risks and reducing them. Internalization of disaster knowledge among immigrant populations and vulnerable groups is challenging due to diversity. In addition, there are difficulties in building early warning systems both before and after. There was no adequate early warning system, according to the Bangkalan Regency BPBD, before the EWS was established. Without timely information about potential flooding, communities were often trapped in dangerous conditions. In addition, limited human resources and equipment were major obstacles for the BPBD in monitoring and handling disasters. This hindered necessary preventive measures. There was no good coordination between the BPBD and other institutions such as the Meteorology, Climatology, and Geophysics Agency (BMKG). Often, the information needed for disaster management was not well integrated, making mitigation efforts less effective. Communities were not prepared to face the threat of flooding that often hit their areas in such conditions because they felt vulnerable. The hope for increased community preparedness emerged after the installation of the EWS in the Tambengan River.

However, BPBD soon discovered that new problems had emerged. The maintenance and operation of the EWS itself was a major obstacle. In order for the EWS to operate properly and provide accurate information to the public, it is essential that a budget is available for the maintenance of the system. The challenge of public education and awareness remains even after the EWS has been installed. Many residents do not understand how to use the early warning system. Some of them do not immediately take action because of this, even though they have received warnings of possible flooding. In addition, there are problems with how to respond to EWS warnings. Some residents do not care about the information provided, increasing the possibility of disaster. In addition, technological failures in terms of data accuracy and speed of information delivery can reduce system performance. The warning will not be significant for the community if the data received is inaccurate or sent late. After the installation of EWS, BPBD must also ensure that coordination with various parties is maintained. Cooperation with local governments, BMKG, and other related institutions is very important to maximize the performance of this early warning system.

In emergency situations, evacuation, provision of shelters, and opening of public kitchens are strategic actions taken. One of the problems that hinders its implementation is that the evacuation process has not been running well due to lack of resources and facilities, such as rubber boats. The Bangkalan Regency Bpbd only has two rubber boats, but the flood in Arosbaya District coincided with floods in other areas, so the rubber boats had to be divided into two because the areas that most often experience flooding are Arosbaya and Blega Districts. Many people

were forced to carry out independent evacuation by breaking through the flood because of this limitation, which put them in danger. There are several relevant disaster management theories that can be used to study the problems that hinder this evacuation.

William Nick Carter's Disaster Management Theory first emphasizes the importance of preparedness and emergency response. Insufficient resources and facilities indicate that the preparedness stage has not been fully met in this context. The emergency response process becomes less effective if there is no sufficient preparation, such as providing rubber boats and other evacuation equipment. Second, the theory of community preparedness applies here as well. Studies show that communities that are aware of disaster risks and how to deal with them tend to be better prepared to deal with emergencies. However, inadequate facilities for evacuation in such situations can lead to confusion and depend on community self-help efforts, which may not always be safe. In addition, there are problems with the availability of shelters and public kitchens.

First, limited shelter facilities and public kitchens are a major obstacle. When floods hit, the number of people displaced often exceeds the capacity of the shelters. This makes conditions in shelters uncomfortable and can lead to health problems. According to research, evacuation and community recovery after a disaster can be hampered by the lack of adequate facilities. Second, Limited Accessibility: During floods, high water levels often block access to public kitchens and shelters. This makes it difficult to deliver logistical assistance, including equipment and food, to the required locations. After the disaster, the government took several strategic steps, including infrastructure rehabilitation and

socio-economic rehabilitation. One of the factors that hampered the effectiveness of the policy in infrastructure rehabilitation was the slowness of the East Java provincial government in responding to the BPBD evaluation report regarding the need to normalize one main river and five tributaries in Arosbaya District. As a result, the Bangkalan Regency government was hesitant to carry out infrastructure rehabilitation. Local communities responded to these actions in various ways. Some people believe that the government is ignoring hamlets adjacent to the five tributaries because normalization is only in Ngantemoran hamlet, the main river. They also believe that the normalization budget was misused, so that six rivers should have been normalized but only one was carried out. Lack of knowledge is one of the causes of various public reactions. There are many factors that influence the decision to normalize the Arosbaya river which is only carried out in one place on the main river. First, limited resources and budget. Lack of knowledge is one of the causes of various public reactions. There are many factors that influence the decision to normalize the Arosbaya River which is only carried out in one place on the main river. First, limited resources and budget. In his book "Hydrology and Watershed Management", a hydrologist from Gadjah Mada University Chay Asdak stated that the amount of funds available for infrastructure projects is often a barrier to water resource management. This means that local governments must prioritize locations that are considered most important for early intervention, as seen in normalization projects in many places, such as Jakarta. Second, land availability is an important part of the decision about normalization. According to hydrologist Rachmad Jayadi from Gadjah Mada University, normalization often requires

sufficient space to widen and deepen the river channel.⁴⁴ The focus will be directed to the most feasible area to work on if the land around the riverbank has been used for settlements or other economic activities. In the case of the Arosbaya River, if only one location is normalized, that location may be the most suitable for the project without having to displace residents or disrupt existing land uses. Third, this decision also depends on how important the risk management is. According to flood control theory, management should be based on risk analysis. According to Idraus Ali, a hydrologist, river normalization helps control flooding and should be focused on the most vulnerable areas..⁴⁵

In this situation, if one point in the main river has a history of flooding that is more severe than other tributaries, that point will be given priority to deal with flooding problems. Finally, the difficulty of the normalization process should not be overlooked. In the book "Integrated Water Resources Management", Kodoatie and Sjarief state that the normalization process requires many engineering methods and considers environmental impacts and the needs of the surrounding community.

One of the main factors hindering social and economic rehabilitation in Arosbaya District is the lack of funds. The Bangkalan Regency BPBD relies heavily on the APBD budget and external assistance; however, this budget is not always sufficient to meet

⁴⁴KumparanNEWS, "UGM Experts Overcome Jakarta Floods with Normalization, Not Naturalization". (<https://kumparan.com/kumparannews/pakar-ugm-atasi-banjir-jakarta-dengan-normalization-bukan-naturalisasi-1safkk37u9C>). Accessed on December 22, 2024).

⁴⁵Tempo, "Jakarta Flood Hydrology Experts Mention the Difference Between River Normalization and Naturalization". (<https://www.tempo.co/arsip/banjir-jakarta-ahli-hidrologi-buat-difference-normalization-sungai-naturalisasi-572122>). Accessed on December 23, 2024).

all recovery needs. In addition, the process of submitting and disbursing funds is often slow, which causes the rehabilitation program to be delayed. BPBD still has poor quality and quantity of workers. It is difficult to implement disaster management and rehabilitation programs because many employees are untrained.⁴⁶

This causes the field to not work well together and implementation is not optimal. Due to lack of budget, programs that do not involve the community tend not to meet local needs and are less effective. The community must be involved in the planning and implementation of the program so that they feel ownership and responsibility for it. However, BPBD did not involve the entire community due to lack of budget. This policy was not successful because of the community response, in addition to the lack of budget. Although BPBD hopes that the community involved in the socio-economic rehabilitation program can share the knowledge they have gained during the training program with the community who are not involved, not all communities transfer this knowledge. In addition, the communities who are not involved do not try to be proactive by asking questions. According to the community, programs that only involve some communities do not apply to all communities. In addition, trauma treatment programs are also hampered by lack of funds, even though these programs are very important for the community.

Integration of Islamic Values in Disaster Mitigation in Arosbaya District

The main principle of Islamic law, *Hifz al-Nafs*, which means protecting the soul, is to protect the safety of the soul. One of the goals of *hifz al-nafs* is to protect the community from flooding by forming *Destana* and providing disaster mitigation training. Furthermore, the word "*Al-Ta'awun Ala al-Birr wa al-Taqwa*", which means cooperating in goodness and piety, is used to involve others in *Destana*. This is a way of cooperation to achieve goodness and piety to Allah SWT, as stated in the Qur'an in Surah Al-Maidah verse 2. One way to fulfill the obligation to seek knowledge is by providing education and training on disaster mitigation. The community can take appropriate action when a flood occurs if they have sufficient knowledge.⁴⁷ Not all communities understand the early warning system, although this is a good step. Expanding socialization and accessibility of training is needed. 2) Emergency response, evacuation of affected residents, providing shelters, and opening public kitchens are examples of *ihsan* to fellow human beings, especially those who are facing difficulties. Furthermore, *Al-Takaful al-Ijtima'i*, also known as social solidarity, providing emergency assistance is one of the forms of social solidarity that is very important in Islam. Muslims are asked to help each other and lighten the burden of others.⁴⁸

Then comes *Dharurat Tubih al-Mahdzurat*, which means emergency permits the forbidden. In this emergency

⁴⁶Deputy for Systems and Strategy, Directorate of Disaster Risk Mapping and Evaluation 2021, "National Disaster Risk Study of East Java Province 2022-2026". (<https://files.bpbdd.jatimprov.go.id/DOKUMEN/DOKUMEN%20KRB%20NASIONAL%20JAWA%20TIMUR%202022-2026.pdf>. Accessed on December 24, 2024).

⁴⁷ Sufriadi Ishak, et al, "Implementation of Understanding Environmental Fiqh (Flood Prevention Through Public Awareness in Protecting Rivers)" Khadem: Journal of Community Service, 2024

⁴⁸ Fuedsi, Fajar Wahyushi, et al, The Effectiveness of Augmented Reality-Based Disaster Mitigation Education on Flood Disaster Preparedness for Students at SD Islam Hasanuddin 04 Semarang, *Geo-Image Journal* 13.2 (2024): 82-90.

situation, Islamic law provides leeway to do things that might be forbidden in normal circumstances, such as collecting funds from various sources to help disaster victims. Inadequate resources, such as rubber boats, and inadequate shelter capacity, indicate imperfections in implementation. In addition, uneven distribution of food is a problem. Better planning and more proportional allocation of resources are needed. 3) After a disaster, river normalization, food aid, skills training, and trauma recovery programs are all things related to Islamic law, including *Islah* (reparation). River normalization is an effort to repair the environment damaged by flooding.

Then there is *l'anutul Mahlif*, which helps people who have lost their livelihoods due to flooding by providing basic food assistance and skills training. With the trauma healing program, *Serra Al-Tazkiyah al-Nafs* seeks to help people who have experienced disasters restore their mental and emotional health. This is in line with the Islamic principle of *tazkiyah al-nafs*. There are limitations in the scope of the program as indicated by the river normalization which only involves one main river. In addition, the budget shortfall indicates that greater investment is needed in the emotional and psychological part of the disaster-affected community. The trauma recovery program has shown poor performance. To understand the concept of social justice (*adl*) in the context of providing post-disaster relief and rehabilitation, especially in terms of flood management in Arosbaya District, a deep understanding and careful application of Islamic teachings are required. The following is a more detailed explanation: 1) Vulnerable groups are prioritized; Islam places great emphasis on protecting and assisting those who are most vulnerable and in need. This includes other disaster victims

who do not have the ability to recover independently physically, economically, or socially, such as the poor, widows, orphans, the elderly, and the disabled. The Qur'an and Sunnah repeatedly remind Muslims to pay special attention to the less fortunate. To implement this, vulnerable groups in Arosbaya District must be properly identified. This data should be updated regularly and validated by socio-religious institutions, local community leaders, and RT/RW. Resources should be allocated proportionally to meet the specific needs of vulnerable groups. For example, the elderly may need medical assistance and special care, while families with children may need milk and nutritious food. provide direct, measurable and sustainable assistance, such as cash, basic necessities, clothing, blankets, and hygiene kits. Assistance should be tailored to the needs of each individual and family. 2) Transparency and accountability: two main principles of Islam. This means that all processes and decisions must be transparent and accountable to the community in the context of providing assistance.⁴⁹ This prevents corruption, injustice and abuse of power. To implement this, information about the source of funds, the amount of assistance available, the requirements for recipients, and the distribution procedures must be openly published. Bulletin boards, government websites, social media, and community forums are some of the ways that can be used to disseminate this information. Create a complaint channel that is easily accessible to the public. Every complaint must be handled quickly and clearly. Independent audit of the aid distribution process to ensure that all procedures have been followed correctly and there are no

⁴⁹ Izza, Muh, Mitigation of ROB Floods from a Muslim Ecopreneur Perspective, *Al-Buhuts* 15.1 (2019): 89-107.

irregularities. The results of the audit must be made public. 3) Community participation: Islam encourages communities to actively participate in decision-making and the implementation of programs that impact their lives. This is in accordance with the principle of shura. A practical example is to form a disaster committee at the village or sub-district level consisting of individuals, scholars, representatives of vulnerable groups, and volunteers. Conducting a survey to determine the real needs of the disaster-affected community. Including vulnerable groups, this survey must involve all levels of society. Programs that have been implemented must be evaluated in a participatory manner. Opportunities are given to the community to provide feedback and suggest improvements. 4) Sustainable rehabilitation, Islam emphasizes the importance of providing sustainable assistance and providing opportunities for the community to develop independently. This is better than just providing temporary assistance that does not solve the underlying problem. For example, it would be better to provide skills training related to local economic potential, such as sewing, livestock, handicrafts, or farming. 5) Islam recognizes the importance of mental and spiritual health in treating trauma. To help individuals recover holistically, trauma recovery includes psychological and spiritual aspects. Prayer, dhikr, and other religious activities can help people calm down and get closer to Allah SWT. It can also help people who have experienced psychological trauma get counseling and therapy. take part in recreational and social activities that can help people forget their sadness and strengthen their social relationships. By implementing these principles, the Bangkalan Regency Government can ensure that post-disaster assistance and rehabilitation in Arosbaya District is carried

out fairly, transparently, participatory, and sustainably, in accordance with Islamic values. This will not only speed up recovery after a disaster, but will also strengthen community solidarity and their trust in the government.

Critical Analysis of Weaknesses of Regional Regulation No. 4 of 2018 in Disaster Management

Here are some problems in the implementation of Regional Regulation Number 4 of 2018 concerning Disaster Management, especially those related to flood control in Arosbaya District. 1) The Regional Regulation does not provide sufficient details on the implementation strategy for disaster management, including floods. At the implementation level, this ambiguity causes confusion because the parties concerned do not have clear instructions on what they should do in certain situations. 2) Inadequate resource allocation: The Regional Regulation does not include clear provisions on how resources for disaster management such as floods are distributed appropriately, both in terms of funds, staff, and equipment. Flood mitigation programs will be hampered and ineffective if there is no sufficient resource support. For example, the lack of rubber boats or heavy equipment needed for river normalization can hinder rapid action during floods. 3) Local wisdom is ignored: The regulation does not include local wisdom in flood management strategies and does not recognize it. If it cannot utilize conventional knowledge that has been tested by time in dealing with disasters, mitigation efforts can be less effective. 4) Irregular evaluation and supervision. The regulation does not establish a clear evaluation and supervision system to assess how effectively flood management policies are implemented. Regular evaluation makes it difficult to know

which programs are working well and which need to be fixed or improved. As happened in the Arosbaya River, many have experienced narrowing and shallowing, and normalization was only touched in 2023 and 2024, while in previous years, it had never been touched by normalization.

Conclusion

In Regional Regulation Number 4 of 2018 of Bangkalan Regency, disaster management policies, especially those related to flood reduction in Arosbaya District, show the local government's commitment to protecting the community from the threat of disaster. Pre-disaster, emergency response, and post-disaster are part of the disaster management framework created by the government. Strategic steps taken include building destana and early warning systems during pre-disaster, conducting evacuation, providing shelters, and building public kitchens during emergency response situations, and carrying out infrastructure rehabilitation such as river normalization, socio-economic rehabilitation such as basic food assistance and skills training, and post-disaster trauma rehabilitation. In its implementation, there are many obstacles that hinder the recovery process. Due to the lack of understanding and awareness of the importance of disaster preparedness, community participation is low. Due to the lack of maintenance and community understanding, the early warning system does not function properly. There is no rapid coordination between agencies, especially the provincial response. Lack of detail in the implementation strategy is also a major problem. The regulation does not provide clear instructions on what to do in certain situations, so its implementation is confusing. Since the relevant parties do not have adequate references for action, this can hamper the performance of mitigation

programs.

Local wisdom must also be considered. Mitigation policies often ignore local wisdom in dealing with disasters. This reduces the effectiveness of mitigation efforts because traditional community knowledge can significantly help disaster management. For example, improving early warning systems by combining modern technology with traditional methods, such as using mosque loudspeakers or kentongan, can improve community preparedness. In addition, the absence of a clear evaluation and monitoring system makes it difficult to evaluate how good or bad the program is and find areas that need improvement. Although the Arosbaya District community is very committed to supporting mitigation efforts, their involvement is often hampered by a lack of knowledge and inability to obtain information. Many residents do not fully understand the impact of disasters and how to mitigate them. Therefore, more comprehensive socialization and education about disaster hazards are essential to increase community awareness and preparedness.

In this situation, Islamic values must be incorporated into disaster mitigation policies. The main principle is Hifz al-Nafs, which means that every mitigation effort should be aimed at preserving the safety of people's lives. As a preventive measure, this objective includes the establishment of Destana and disaster mitigation training. In addition, Al-Ta'awun 'Ala al-Birr wa al-Taqwa, which means cooperating in goodness and piety, can be applied by involving the community in every stage of planning and implementing mitigation initiatives, thus creating a sense of ownership and shared responsibility. The principle of Al-Ihsan (doing good) is very relevant when facing emergency situations. Evacuation, provision

of shelters, and public kitchens are examples of mutual assistance among fellow human beings, especially in difficult times. In this situation, Al-Takaful al-Ijtima'i encourages the community to support each other and alleviate each other's suffering. In addition, in emergency situations, the principle of Dharurat Tubih al-Mahdzurat, which means that emergency conditions permit the forbidden, can be applied. This means that in normal circumstances, actions that may be prohibited can be taken to save lives and property. For the rehabilitation of infrastructure and socio-economic conditions after a disaster, it is important to apply the principle of Islah (reparation). Environmental improvement and community recovery include river normalization and basic food aid. By providing assistance that is in accordance with the needs of the affected community, the I'anatul Mahlif program, which means helping people in need, should be prioritized. In addition, the Al-Tazkiyah al-Nafs program, which means purifying the soul through trauma treatment, is essential to help communities recover their mental and emotional health after experiencing trauma caused by the disaster. The principle of social justice (adl) in Islam must be applied when providing assistance and rehabilitation after a disaster. This includes giving priority to vulnerable groups, demonstrating transparency and accountability when providing assistance, and encouraging communities to participate in the decision-making process. To ensure justice in disaster management, it is necessary to correctly identify vulnerable groups and provide proportional assistance according to their needs.

To improve the efficiency of flood mitigation, adequate resource allocation, implementation of a clear system for assessing and monitoring, and wider socialization of disaster risks are

recommended. Community empowerment through training and discussion forums are also important to increase active involvement in mitigation programs. By taking these actions, it is hoped that the Bangkalan Regency can create a safer and stronger environment and build strong social solidarity among its citizens to face future disaster challenges. Overall, although there are good intentions and positive initial steps in implementing disaster management policies in Bangkalan Regency, much still needs to be done to ensure that these policies can be implemented properly and sustainably. In future disaster mitigation efforts, community involvement, integration of local wisdom, and strengthening existing systems must be the main focus. To reduce the impact of disasters and increase community resilience to existing threats, a comprehensive and participatory approach is needed.

Credit Authorship Contribution

Siti Maysaroh: Conceptualization, Legal Framework, Fieldwork Coordination, Writing – Original Draft.

Abdul Rokhim: Literature Review, Data Interpretation, Review & Editing.

Diyan Isnaeni: Methodology Design, Islamic Jurisprudential Analysis, Final Validation & Supervision.

Declaration of Competing Interest

The authors declare no competing interests related to this study. There are no financial or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

The authors express their sincere gratitude to the Faculty of Islamic Studies, Islamic University of Malang, for providing academic support and facilitating this

research. Special thanks are also extended to the Regional Disaster Management Agency (BPBD) of Bangkalan Regency and the Public Works and Spatial Planning Office (PUPR) for their valuable insights and access to relevant field data. The authors are also grateful to the communities of Arosbaya Sub-district for their participation and openness during interviews and observations. Finally, appreciation is given to the anonymous reviewers whose constructive feedback greatly enhanced the quality of this manuscript.

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