

COMMUNITY PREPAREDNESS FOR DISASTER RISK REDUCTION FROM ISLAMIC PERSPECTIVES IN PROMOTING DAM DISASTER MANAGEMENT

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ABSTRACT

Dams are constructed for many reasons to supply human needs in daily life such as water supply, power generation and etc. However, dams could impose risks to the public and the situation could be disastrous if the dam break occurred, and catastrophic flood is direct impact to downstream area. The impact of dam break is unpredictable, thus requires better understanding and preparedness to avoid fatalities and minimize damages and losses. The purpose of this paper is to discover an effective approaches to encourage public involvement in the reduction process of growing disaster risk in developing countries which inline with Islamic teaching. The relationship between religious beliefs and natural disaster will be the focus discussed in this paper. Content analysis of journals, books, national and international guidelines on disaster risk management are used to discover various opinions, actions and religious relationship that support for a better disaster risk management. The Islamic perspectives highlighted on human believe, culture and behavior, safety and vitality in order to clear existing misunderstandings and it shows that the issues of environment protection, risk management, safety and human life in terms of Islamic religious demonstrate of God's love for mankind.

Keywords: Community awareness and preparedness, Dam failure, Islamic knowledge.

INTRODUCTION

In today's living, dam has been known as a key player in sustaining people's lives. Dams are an important part of this nation's infrastructure, providing flood control, water supply, irrigation, hydropower, navigation, and recreation benefits. Despite their many beneficial uses and value, dams also present risks to property and life due to their potential to fail and cause catastrophic flooding. The dam construction was a critical requirement for meeting the expansion of human needs and activities.

Dam is amongst the biggest hydraulic structure in terms of size and constructed area. Dams hold huge amounts of water called reservoir behind its main structure and often supported by auxiliary structures such as a spillway, diversion tunnel and outlet. Dam is constructed for economic development and their construction involves large investments of money, natural and human resources. Before 1000 AD, dams were being built to store water and most of them were constructed out of local materials (Jia, Lino, Jin, & Zheng, 2016). Over 45,000 large dams have been built worldwide, and almost half of the world's rivers are obstructed by a large dam (Duflo & Pande, 2007)

Physically, Malaysia is safe from severe hazards threat due to the several nature factors such as plate tectonic movements, atmospheric low-pressure systems and volcanic eruptions (Rahsidi et al., 2017). However, for the past ten years, flooding, landslide and storm have become a major concern and brings greater damages, uncontrolled rapid development is one of the major causes (Haliza, 2014). She also highlighted that, as a developing country, it is estimated by the year 2030, there will be an increase of 82% of urban dwellers in Malaysia, which will lead to massive development because of the pressure for provision of housing and related essential infrastructure.

The paper appraised the correlation between the guiding principle of disaster risk reduction and the views of Islam. It explores Islamic teaching and indigenous knowledge of Islam to improve knowledge, awareness and preparedness about the disaster.

DAM AND ISSUE

Dams are monolithic structure created to form artificial lakes. A dam is an artificial barrier or obstruction that impounds, or will impound water. Dam was built for several reasons such as flood control, water supply, irrigation, energy generation, recreation or pollution control. The lake created behind dam known as a reservoir to reserve water for a particular purpose. Lukman et al, (2011) has defined a dam is a hydraulic structure of fairly impervious material built across a river to create a reservoir on its upstream side of impounding water for various purposes, dams are water storage, control or diversion structure that impound water upstream in reservoirs. Construction of dams in the concept of water resource management has always been considered as a basic requirement to harmonize the natural hydrological regime with human needs for water and water related services (Lukman, Otun, Adie, & Ismail, 2011)

Discussion of religion teaching related to dam disaster should look back at the history of conflict between religion and science (Adiyoso & Kanegae, 2013). According to Adiyoso and Kanegae (2013) the relationship between religion and natural disaster connects with the concept of fatalistic view, They refers this concept to the belief that natural disaster is God will and people can do nothing.

DAM FAILURE AND IMPACT

Dam failure can be defined as catastrophic failure characterized by the sudden structural break of dam body, rapid and uncontrolled release of impounded water or the likelihood of such an uncontrolled release (FEMA, 2004). According to Zainab et al. (2015) and Damayanti (2011) dam failure is referred to dam break occurrence with catastrophic flood impact, the consequence of dam failure will cause rapid release of water, inundation of downstream reaches. The impact of dam break is unpredictable, thus requires better understanding and preparedness to avoid fatal and minimize damages and losses.

In 1963, failure of Vajont Dam in Italy caused 2600 deaths, the 1976 failure of the Teton dam in America caused hundred of deaths and economic loss about 1 billion dollars, and the 1993 failure of Gouhou dam in China caused 300 deaths (Luo, Chen, Xu, & Tong, 2012, Muda, Khidzir, Jamal, Samsudin, & Razad, 2018). The authors mentioned that, the statistical analysis shows 534 dam failures from 43 countries before 1974.

According to MyDams (2017), dams could pose potential hazard to communities, the environment and property beyond the vicinity of their locations. Dams are subject to natural hazards such as earthquakes and floods that can affect the safety of dams. Human error in design, construction, and operation of the dams can affect the safety of dams and have potential risk of dam failure.

There are 103 dams in Malaysia, used for various applications such as irrigation, flood control and hydropower, and these dams continued to age (Muda, 2018; Lariyah, 2018), therefore it is important to monitor and maintain the conditions of these dams from the safety aspects, and it is imperative to have an emergency plan in minimizing loss of life and optimizing the resources available, and not to wait until failure occurs which may jeopardize public safety and the environment.

Lack of proper management of environmental issues in dam's upstream areas due to illegal deforestation, over-cultivations, and over development may result in dam failure. Dam owners facing greater threat to operate and manage the dams with sedimentations and flash flood happening at higher frequent events. Sedimentation poses threat to dam safety, energy production, storage, discharge capacity, and flood attenuation capabilities (Razali, Syed Ismail, Awang, Praveena, & Zainal Abidin, 2018).

DISASTER RISK MANAGEMENT (DRM)

Many verses in the Quran describe about disasters and disaster preparedness. They are related to the refusal to obey God and to doubt in the message of the Prophet Muhammad or to describe the judgment day. The verses give detail explanation for the destruction that human beings do to nature which will bring catastrophic impact to human life and also destroys nature and resources. Thus, the link between human and ecosystem shall be better understanding in economic development for supporting human life. The right knowledge and awareness is important to nurture sustainability in our ecosystem.

(Ha, 2015)

In the Quran God said that, believers are always in a state of alert before a disaster occur, as Allah s.w.t said (Ali 'Imran: 200), which mean,

"... believers, be patient and strengthen your patience and be prepared and fear Allah so that you will be lucky".

Disaster risk reduction emphasizes a new global thinking in the management of disasters and disaster risk (Niekerk, 2007). Disaster risk reduction is the systematic development and application of policies, strategies and practices to minimize vulnerabilities and disaster risks throughout a society, to avoid and limit the adverse impact of hazards, within the broad context of sustainable development (Niekerk, 2007). ISDR (2004) defines DRM as a systematic process of using administrative decisions, organization, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impact of natural hazards and related environmental and technological disasters. DRM is the application of disaster risk reduction (DRR).

Furthermore, the Quran advocates for people and government to have standby with proper planning and readiness, and the ability to estimate, reduce impacts, deal effectively and if possible prevent disasters themselves, as mention in the Quran (Al An'aam:131),

"That is because your God does not destroy cities in a persistent manner, while the people are in a state of neglect"

Western, conventional disaster management was derived from past experienced, whereby experiences gained from previous disaster were used as reinforcement of a disaster management system (Saibi & Mokhtar, 2017). Unlike the Islamic disaster management, clear guidelines have been set up, Islamic-based management as mentioned in the al-Quran and al-Sunnah as the primary sources. This two main sources has become important references by scholars to complete management system based on Islam, this situation coincides with the epistemology of Islamic knowledge that makes the al-Quran and al-Sunnah as the primary sources (Ahmad, 2010; Salleh, 2002).

DISASTER RISK MANAGEMENT FROM THE PERSPECTIVES OF ISLAM

In the Quran (Al Anfal: 53) Islam promotes growth and development in economics for the nation. Poverty is prohibited in Islam as it is close to disbelief (*kufir*) (Azila, Alias, & Norimah, 2016). Islam is promoting *zakat* (alms) as a part of six pillar principles, and also *waqaf* (endowment) and for socioeconomic improvement. According to Azila et al., (2016), these economic principles in Islamic are based on sharing and caring in wealth distribution, fair trading or commercial transactions amongst others. The author agreed that all these economic activities take place in a space called city, which is involved land use planning and the built environment.

The religion-natural disaster relationship messages are focused on the stories of natural disaster in the Holy Quran, accepting natural disaster as God's will and the importance to ask (*Doa*) protection to Allah (Adiyoso and Kanegae, 2013).

According to 6 pillars in Islam, believe in the predestination of Allah of all things, both the (seemingly) good and the (seemingly) bad. Conveying messages that disasters are as a test or a warning from Allah, natural disaster as a God will and wrath, and the need to improve beliefs (*taqwa*) on Allah. According to Adiyoso & Kanegae (2013), although most of people believe that disaster is as a God's will, they believe that people should take a preparatory action for the next disaster. The author suggests that the development of risk communication-based intervention should take into account the Islamic teaching to educate people to be more prepared for the next disaster by discussing the interpretation of Holy Quran verses related to the natural disaster.

Muslims are also governed by the five tenets of Islam, believers are urged to do good deeds as Allah is looking at him even he is not able to see Allah physically (Sarkawi & Abdullah, 2015). The authors have agreed that Islamic concept always a better choice in binding individual and societal obligations in resolving many crisis in building environment and enhance the value of life for all mankind. Thus, the concept highlighted by the authors can be adopted in building the dam in order to sustain nature and development.

Gin et al. (2017) emphasis on the importance of increasing awareness of the disaster through traditional channels such as public shelters, clinics and news media. The authors also urged that current technology such as social media and cell phones shall be utilized as resources. It shows that conventional approaches encourage the usage of public institutions and commutation in dissemination and educating the community. In Islam, the mosque has play significant roles in the Islamic community since the period of Prophet Muhammad (SAW), the mosque has been used as a community center for many types of programs and social and educational activities (Tamuri, Ismail, & Jasmi, 2012). The study by Tamuri et al. (2012) show that the mosque can be positioned as a part of institution for sharing and expand knowledge to the community. Nowadays, many of new mosques have been furnished and equipped with relevant facilities such as seminar rooms, classrooms, hall, meeting rooms, computers and LCD projectors. Thus, to support DRM program toward awareness and preparedness, utilizing the mosque as a center for educating the local community shall be encouraged.

According to Islamic viewpoint the creation of structures such as dams, buildings, and bridges must take into account the safety and well-being of the environment. Islam rejects the lingering development concept that only emphasizes physical and material aspects, but at the same time destroys spiritual and environmental aspects. Relationship with nature can be seen in some of Allah's s.w.t verse (Al-Qasas: 77),

..“and seek that which Allah hath bestowed on you from the gift of the hereafter, and do not forget your generosity in the world, and do good as Allah did to you and do not destroy it. Allah does not love the people who did the destruction”.

Profit and money factors sometimes sometime causing certain parties such as engineers, geologists and others to fraud and conceal the truth about the dangers that may occur when designing and constructing the dam. The greediness will set aside the dangers and risks that will be fall. Prophet SAW said in the hadith narrated by Abu Daud,

"Whosoever cuts off the tree (*bidara*) without any benefit or significance, then Allah SWT will throw his head to the hell".

This means that this environment is created by Allah to be utilized by all humans in all generations. If human beings in the present generation have destroyed the environment by over exploitation just for current usages, meaning that future generations will no longer be able to inherit the environment in the future.

Disasters such as floods, typhoon and earthquake is a natural disaster that could come due to wrongdoing by man. Allah s.w.t. says in the Quran (Al-Ankabut:14), which means,

"And verily We sent Noah to his people, and he remained among them for 950 years. In the end they were destroyed by the typhoon, while they were wronged (with disobedience)".

This versus show that the calamity does not overlook negligent individuals or groups but also involves innocent people. Hence, be prepared to face the disaster as recommended by the authorities, make every effort to prevent disaster factors and save life and

property, participating with government agencies and voluntary bodies in training or exercise program, always be prepared to deal with it with patience, self-control from acting out of bounds. In addition, expect God's grace of patience and lastly avoid things that can invoke disaster before and during the disaster and afterwards. Therefore, awareness and preparedness toward disaster in the form of knowledge, skill and understanding must be equipped to the community

Omar (2003) and Saibi (2017) agreed that the paradigm of *Tauhid* as a fundamental part of Islamic disaster management. Furthermore, Khaliq (2009) mentioned that the knowledge in the Qur'an and hadith can be added to other sources in which are compatible with the practices and beliefs in Islam in deriving disaster management concept. Thus, Omar (2003) and Saibi (2017) have set three basic principles in Islamic disaster management, first, trustworthy; second, *shura* and third, justice. Azizan, Mazlin, & Badrulhisam (2014) also outlined Islamic basic principles for Islamic disaster management into three categories; *I'tikadiyyah* (belief), *'Amaliyyah* (worship) and *Akhlakiyyah* (morality). This proves that Islam does not waive the modern management, but also incorporating modern management and Islamic management into society and the environment. These Islamic principles also do not against with Islamic jurisprudence.

Furthermore, Ghafory (2009); Adiyoso et al.,(2013) asserted that Islam teaching knowledge has helped to clear the misconceptions and increase people's understanding about disaster related issues. People believed that any disasters or any kind of phenomenon are as a God's will, warning and test, accepting disaster as a fate from Allah and the need for returning to God's. This believed has been inculcated in community thought.

Ramli, Mokhtar, & Abdul Aziz, (2014) highlighted the importance of embedded Islamic teachings in managing disaster. As a disaster is God's will, it unequivocally natural to ask for guidance and inculcate God's commands in establishing basis or fundamental in disaster risk management program. This is supported by (Mohit & Zahari, 2014) that underline the importance of religion teachings as Islam has contributed through developing social cohesion in times of need. Islam promotes disaster mitigations focus on community basic necessity through feeding victims, provide shelter as well as forming safety networks in order to minimise the psychological impact due to disaster.

DISASTER RISK MANAGEMENT AND CONTRIBUTION TO SOCIETY

Incorporating Islamic teachings in disaster risk management will benefit both the society and the nation. Islam has a clear guiding principle of speaking the truth, spreading lies and falsehood deem as sinful action. During a disaster, irresponsible individuals tend to spread false information to the community. This will create panic and disorder, Allah SWT commanded us to analyze and verify the truthfulness of any news that we received from anyone. The reason is, it is to avoid chaos within the community from happening. Allah SWT explains this in the Quran (Al-Hujurat:6) stating:

“O you who have believed, if there comes to you a disobedient one with information, investigate, lest you harm a people out of ignorance and become, over what you have done, regretful.”

It is critical to manage news and public perception, Alshehri, Rezgui, & Li, (2013) study shows public perception of disaster is highly correlated with religion. The majority agrees that disaster signs of God, God ways for testing faith and even punishment to the wrongdoing or sins. These portray public perception are highly sensitive towards disaster which can induce public commotion if not being managed well.

Enrichment of community interactions and strength can be seen when the Islamic value being applied in disaster risk management. This is agreed by Ramli, Mokhtar, & Abdul Aziz, (2014) where community that applies cooperation (*Ta'awun*) in a strategic manner, especially during disasters such as focusing on neighborhood safety will ultimately prepares the community to respond to any disaster. Community resilience can be enhanced and helps the community to recover both physically and mentally.

CONCLUSION

Islamic teaching has taught the follower to be prepared with any consequences as part of God's test to ensure they built up their trust in God's will and aware of His warning to their negligence. However, this does not mean that they just surrendered to their fate, but they should practice Islamic teaching to always pray for the best for God's and always be prepared to any unexpected consequences that might happen. These, highlighted the very best Islamic teaching and believed related to catastrophic, which the community should always aware and be prepared for disaster and at the same time, they also should believe in fate and understood that disaster is not just a tragedy, but it is God's guidance in preparing a better living environment for demonstrations His loves for mankind.

Islamic teaching encourages people to make efforts to be well prepared in preventing the fatalistic impact of disasters. It is our responsibility as *Khalifah* to ensure that we are aware of the threat that might harm our environment and society. It is our task to ensure that the society is aware and is equipped with sufficient information on the action that need to be taken before, during and after disaster. A proper disaster risk reduction program should be outlined by taking into consideration a better approaches toward community awareness and preparedness for disaster risk reduction.

It is our vital role to contribute to the community for future planning and development that can be exploited as a part of disaster risk reduction strategies. It is important to educate the community on awareness and preparedness in shaping our community to become resilient community. It is highly needed to discover an effective approach to encourage public involvement in the disaster risk reduction program. Public awareness and preparedness are important to create a resilient community. In addition, the study also identified various strategies that can increase involvement in DRR programs. Many versus in Quran and hadith urged believers to be prepared and accomplished with sufficient knowledge in facing unexpected disaster in future.

Apart from preparedness, it is critical for communities to establish a recovery program if disaster were to happen. This recovery program aims for reducing the loss of the victims as well as supporting the victim both financially and morale. It's highlighted in Islam by the concept of ta'awun which means mutual assistance. This assistance will benefit the community as well as reducing the feeling of loss after the disaster event. This concept and program are common practice to the Malay community member facing loss such as death. The community naturally establishes a committee to help and reduce the suffering of the member by preparing food during *tahlil*.

Therefore, it was established that Islam has provided a significant platform for the believers to manage disasters. Various Islamic practices have been discussed throughout this paper such as *ta'awun*, seeking protection with *du'a*, forming a consensus through *shura*, and mercy through *ihsan* these will enable community to be resilient to disaster. Hence, helps dam operator to engage community

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