

Water Crisis Solutions In The Qur'an And Science

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Abstract

Water is an essential need for human life and all living things. The community's high demand for water cannot be met because the water crisis is still happening today. A water crisis can be in terms of quantity and quality. This research aims to find the solutions in the Qur'anic and scientific perspective to solve the problem of water quantity and quality crisis in the Qur'anic perspective. This research uses thematic interpretation method (maudhū'i) with scientific interpretation approach. This research concludes water crisis solutions in terms of quantity and quality. The water quantity crisis solutions are divided into two major points. First, optimization of water management (Q.S. al-Ra'd/13: 17) which can be done through saving water (Q.S. al-Isrā'/17: 26-27, Q.S. al-A'rāf/7: 31) and making waterways or drainage (Q.S. Hūd/11: 44). Second, even water distribution (Q.S. al-Qamar/54: 28, Q.S. al-Baqarah/2: 60, Q.S. al-A'rāf/7: 160) through the creation of water distribution reservoirs (Q.S. al-Zumar/39: 21) and prohibition of water privatization (Q.S. al-Hijr/15: 22). Meanwhile, the water quality crisis solutions are implied in the Qur'an and supported by scientific theory in five respects. First, reforestation (Q.S. al-An'ām/6: 99 and 141, Q.S. al-Ra'd/13: 4, and Q.S. al-Nahl/16: 10-11). Second, watersheds conservation (Q.S. Hūd/11: 61). Third, controlling water pollution (Q.S. al-Ghāsyiyah/88: 12). Fourth, making biopore infiltration holes (Q.S. al-Rūm/30: 41, Q.S. Hūd/11: 37). Fifth, making rainwater harvesting (Q.S. al-Mu'minūn/23: 18).

Keywords: Scientific Perspective; Solution; Qur'anic Perspective; Water Crisis

Abstrak

Air adalah kebutuhan bagi manusia dan seluruh makhluk hidup. Kebutuhan masyarakat yang tinggi terhadap air tidak bisa dipenuhi karena krisis air masih terjadi hingga sekarang. Krisis air bisa dapat tataran kuantitas dan kualitas. Penelitian ini bertujuan untuk menemukan solusi krisis air dalam tataran kuantitas dan kualitas yang terdapat dalam Al-Qur'an. Penelitian ini menggunakan metode tafsir tematik (maudhū'i) dengan pendekatan sains. Kesimpulan dari penelitian ini yaitu solusi krisis air pada tataran kuantitas dan kualitas. Solusi krisis air pada tataran kuantitas terbagi menjadi dua bagian besar. Pertama, optimalisasi manajemen air (Q.S. al-Ra'd/13: 17) yang bisa dilakukan melalui penghematan air (Q.S. al-Isrā'/17: 26-27, Q.S. al-A'rāf/7: 31) dan pembuatan saluran air (Q.S. Hūd/11: 44). Kedua, distribusi air yang merata (Q.S. al-Qamar/54: 28, Q.S. al-Baqarah/2: 60, Q.S. al-A'rāf/7: 160) melalui reservoir distribusi air (Q.S. al-Zumar/39: 21) dan larangan privatisasi air (Q.S. al-Hijr/15: 22). Solusi krisis air pada tataran kualitas sebagaimana yang diisyaratkan dalam Al-Qur'an dan didukung oleh teori sains terbagi menjadi lima aspek. Pertama, reboisasi (Q.S. al-An'ām/6: 99, 141, Q.S. al-Ra'd/13: 4, Q.S. al-Nahl/16: 10-11). Kedua, konservasi daerah aliran sungai (Q.S. Hūd/11: 61). Ketiga, pengendalian pencemaran air (Q.S. al-Ghāsyiyah/88: 12). Keempat, lubang resapan biopori (Q.S. al-Rūm/30: 41, Q.S. Hūd/11: 37). Kelima, pemanenan air hujan (Q.S. al-Mu'minūn/23: 18).

Kata Kunci: Krisis Air; Perspektif Al-Qur'an; Perspektif Sains; Solusi

Introduction

Water is essential for human life, even for all living things. Humans, animals, and plants cannot survive without water. Allah often mentions some great benefits of water through the Qur'anic verses, such as fertilizing the soil and growing plants, which could lead to the fulfillment of food for the needs of human life.

The water crisis still occurs today, not in line with the high water demand. In 2020, The World Economic Forum (WEF) noted in its annual report that the water crisis ranked fifth among the top global risks based on its impact on society.¹ In 2010, 1.2 billion people, or nearly one-fifth of the world's population, lived where water was scarce (physical water scarcity). Furthermore, by 2025, it is estimated that 800 million people will live in countries or regions with absolute water scarcity, and two-thirds of the world's population will be under severe water scarcity conditions.²

¹Team of Writer, *The Global Risks Report 2020*, 15th ed. (World Economic Forum, 2020), 2.

²Team of Writer, "Water Scarcity: Key Emerging Trends and Challenges," *OCHA Occasional Policy Briefing Series*, no. 4 (2010): 4.

The water crisis is not always about quantity but can also be water quality. Based on a report from the United Nations University, 112 million people were affected by floods from 2005 to 2015, while 1.8 billion people used drinking water sources contaminated with feces.³ The availability of clean water is an urgent need for every human being, especially for city dwellers who face the threat of clean water scarcity due to development imbalances.⁴

The water crisis issue needs to be taken seriously, both through individual awareness and government policies. There have been many attempts to solve this problem, but very few studies have looked at it from a religious point of view. In this case, Islam as a religion that *rahmatan li al-'ālamîn* has a significant influence on humanity. Through the Islamic teachings in general or the Qur'anic verses in particular, humankind is commanded to preserve nature so that humans can live comfortably and peacefully in it. However, understanding of Muslims and all humans tend to regard religion as only a normative ritual and worship. The Qur'an came down as a way of life for humankind.

Throughout history, the Qur'an has been interpreted with various methods and styles, one of which is through the thematic approach (*tafsîr maudhû'î*). Comparing to other interpretation methods, the advantages of thematic interpretation are providing a complete understanding of a particular topic, making interpretation dynamic, and responding to the challenges of the times.⁵ Thematic interpretation is also easier to understand by people who do not study the Qur'anic studies specifically. It makes the author interested to use the thematic method (*maudhû'î*) in this research.

Interpreting the Qur'an through contextual understanding beyond the literal meaning of the verse is necessary in modern times because the development of civilization develops more diverse and complex problems. In the Qur'an, one of the verses hints at the importance of water management and distribution that could be used as a solution in dealing with the water crisis is Q.S. al-Mu'minûn/23:18.⁶

This research has two problem statements: (1) How are the solutions in the Qur'anic and scientific perspective to solve the problem of water quantity crisis?; and (2) How are the solutions in the Qur'anic and scientific perspective to solve the problem of water quality crisis? This research aims to find the solutions in the Qur'anic and scientific perspective to solve the problem of water quantity and quality crisis in Qur'anic perspective.

Water Verses in the Qur'an

Water in the Qur'an is mentioned by several terms, namely *mâ'un* (ماء/water), *bahr* (بحر/sea), *nahr* (نهر/river), and *'ain* (عين/spring). The details of the terms that mean water are as follows.

a. Term *Mâ'un* (ماء) with all its Derivations

Term *mâ'un* (ماء) with all its derivations are repeated 62 times in the Qur'an in 41 surah.⁷ Term *mâ'un* mentioned in the Qur'an is entirely in singular form (*mufrad*) and none in plural form (*jama'*). In addition to the basic term *mâ'un*, there is also *mâ'un* with the addition of pronoun (*ism dhamîr*), which there are only four in the Qur'an, namely *mâ'aki* (ماءك), *mâ'ahâ* (مائها), *mâ'ukum*

³Team of Writer, *Global Water Crisis: The Facts* (Canada: UNU-INWEH, 2017), 2.

⁴Rohani Budi Prihatin, "Problem Air Bersih di Perkotaan," *Jurnal Info Singkat* V, no. 7 (2013): 11.

⁵Sja'roni, "Studi Tafsir Tematik," *Jurnal Study Islam Panca Wabana* 12 (2014): 10–12.

وَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً بِقَدَرٍ فَأَسْكَنَتْهُ فِي الْأَرْضِ وَإِنَّا عَلَى ذَهَابٍ بِهِ لَقَدِيرُونَ

"And We send down water from the sky according to (due) measure, and We cause it to soak in the soil; And We certainly are able to drain it off (with ease)."

⁷Muhammad Fu'âd 'Abd al-Bâqî, *Al-Mu'jam al-Mufabras Li Alfâzih al-Qur'ân al-Karîm* (Kairo: Dâr al-Kutub al-Mishriyyah, 1945), 684.

(ماؤكم), and *mâ`uhâ* (ماؤها).

b. Term *Nahr* (نهر) with all its Derivations

Term *nahr* (نهر) with all its derivations in the Qur'an are repeated 54 times in 32 surah.⁸ There are 47 times of term *al-anbâr* (الأنهار) as a proper noun (*ma'rifah*), while seven times of term *nahr* (نهر) as a common noun (*nakirah*).

c. Term *Bahr* (بحر) with all its Derivations

Term *bahr* (بحر) with all its derivations in the Qur'an are mentioned 41 times in 25 surah.⁹ In the Qur'an, there are singular form (*mufrad*) *bahr* (بحر) which is mentioned 33 times, a dual form (*tatsniyah*) *bahrain* (البحرَيْن) mentioned five times, and in plural form (*jama'*), which is divided into *abhur* (أبحر) and *bihâr* (بخار) mentioned one and two times respectively.

d. Term '*Ain* (عَيْن) with all its Derivations

Term '*ain* (عَيْن) with all its derivations are repeated 65 times in the Qur'an,¹⁰ but the term that means "water" is only mentioned 23 times in 17 surah.

The Function of Water According to the Qur'an and Science

The water's role in life is essential. Most of Earth is water, and most of the human body structure is also water.¹¹ The function of water include water as origin of life, Earth's temperature stabilizer, means of transportation, and economic driver.

a. Water as Origin of Life

In the field of living things, water is identical to life itself. The bodies of animals and humans are mostly made up of water, although the water content in each tissue is different. Overall, the human body contains 60-85% water.¹² In the Qur'an, water is mentioned as the origin of life, as in Q.S. al-Anbiyâ`/21: 30.

أَو لَمْ يَرِ الَّذِينَ كَفَرُوا أَنَّ السَّمَوَاتِ وَالْأَرْضَ كَانَتَا رَتْقًا فَفَتَقْنَاهُمَا وَجَعَلْنَا مِنَ الْمَاءِ كُلَّ شَيْءٍ حَيٍّ أَفَلَا يُؤْمِنُونَ

"Do not the unbelievers see that the heavens and the earth were joined together (as one unit of creation), before We clove them asunder? We made from water every living thing. Will they not then believe?"¹³

The verses above state that Allah created life from water. It can also be interpreted that all creatures originate from water. Life can only run in the presence of water in humans, plants, animals, and microorganisms.¹⁴ More specifically, Allah mentions the vital role of rainwater in life, especially for plants and animals, in several verses in the Qur'an, such as Q.S. al-Rûm/30: 24.

وَمِنْ آيَاتِهِ يُرِيكُمُ الْبَرْقَ خَوْفًا وَطَمَعًا وَيُنزِلُ مِنَ السَّمَاءِ مَاءً فَيُحْيِي بِهِ الْأَرْضَ بَعْدَ مَوْتِهَا إِنَّ فِي ذَلِكَ لَآيَاتٍ لِّقَوْمٍ يَعْقِلُونَ

"And among His signs, He shows you the lightning, by way both of fear and of hope, and He sends down rain from the sky and with it gives life to the earth after it is dead: Verily in that are signs for those who are wise."¹⁵

b. Earth's Temperature Stabilizer

Earth has a distance from the sun that causes Earth's surface to have a certain temperature that allows water and life to take place. Without water, Earth would be too hot for living things

⁸Abd al-Bâqî, 719–20.

⁹Abd al-Bâqî, 114.

¹⁰Abd al-Bâqî, 495–96.

¹¹M. Quraish Shihab, *Dia Di Mana-Mana* (Jakarta: Lentera Hati, 2004), 80.

¹²Susana, "Air sebagai Sumber Kehidupan," 21.

¹³Abdullah Yûsuf 'Alî, *The Holy Qur'an* (King Fahd Holy Qur'an Printing Complex, n.d.), 923–24.

¹⁴Team of Writer, *Air dalam Perspektif Al-Qur'an dan Sains (Tafsir Ilmi)*, 65.

¹⁵Yûsuf 'Alî, *The Holy Qur'an*, 1183–84.

to live.¹⁶ Water in oceans and lakes will absorb or release large amounts of heat with only slight changes in temperature, which means it also maintains atmospheric temperature. If there is no water, then during the day, living things on Earth will be hot from the sting of solar radiation, and at night will be cold because Earth radiates very little heat. Allah created water with measurable and beneficial properties for Earth and life on it, as in Q.S. al-Mu'minûn/23: 18.¹⁷

وَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً بِقَدَرٍ فَأَسْكَنَتْهُ فِي الْأَرْضِ وَإِنَّا عَلَىٰ ذَهَابٍ بِهَا لَقَادِرُونَ

"And We send down water from the sky according to (due) measure, and We cause it to soak in the soil; And We certainly are able to drain it off (with ease)."¹⁸

1. Water as a Means of Transportation

Water also plays an essential role as a means of transportation, especially for ships and other water transportations. Allah clearly explains the benefits of the sea and rivers for water transportation infrastructures that can be used to move or carry what is useful for humans from one place to another, as in the following Q.S. Ibrâhîm/14: 32.

اللَّهُ الَّذِي خَلَقَ السَّمَوَاتِ وَالْأَرْضَ وَأَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَخْرَجَ بِهِ مِنَ الثَّمَرَاتِ رِزْقًا لَكُمْ وَسَخَّرَ لَكُمْ الْفَلَكَ لِتَجْرِيَ فِي الْبَحْرِ بِأَمْرِهِ وَسَخَّرَ لَكُمْ الْأَنْهَارَ

"It is Allah Who hath created the heavens and the earth and sendeth down rain from the skies, and with it bringeth our fruits wherewith to feed you; it is He Who hath made the ships subject to you, that they may sail through the sea by His Command; And the rivers (also) hath He made subject to you."¹⁹

2. Water as an Economic Driver

Water's role in the economic sector is as an energy generator, a medium in the transportation sector, and the fields of fisheries and tourism.²⁰ Water's role in fisheries and transportation is stated explicitly in Q.S. al-Nahl/16: 14.

وَهُوَ الَّذِي سَخَّرَ الْبَحْرَ لِتَأْكُلُوا مِنْهُ لَحْمًا طَرِيًّا وَتَسْتَخْرِجُوا مِنْهُ حِلْيَةً تَلْبَسُونَهَا وَتَرَى الْفَلَكَ مَوَاجِرَ فِيهِ وَلِتَبْتَغُوا مِنْ فَضْلِهِ وَلِعَلَّكُمْ تَشْكُرُونَ

"It is He Who has made The sea subject, that ye May eat thereof flesh That is fresh and tender, And that ye may extract Therefrom ornaments to wear; And thou seest the ships Therein that plough the waves, That ye may seek (thus) Of the bounty of Allah And that ye may be grateful."²¹

Water Quantity Crisis Solutions

A water crisis at the quantity level, often called water scarcity, is a condition of limited access to water caused by an institution or state's failure to ensure the water supply or caused by a lack of adequate infrastructure. Water scarcity has occurred on every continent. The increasing of water use is more than doubled population growth in the last century, and more areas have exceeded the limits of their distributable water supply, especially in dry areas.²²

a. Optimization of Water Management

The quantity of water in nature does not increase or decrease. The amount of water is permanently fixed, but the use and management of water sources will determine the adequacy or

¹⁶Team of Writer, *Air dalam Perspektif Al-Qur'an dan Sains (Tafsir Ilmi)*, 62.

¹⁷Team of Writer, 64.

¹⁸Yûsuf 'Alî, *The Holy Qur'an*, 980.

¹⁹Yûsuf 'Alî, 701–2.

²⁰Susana, "Air sebagai Sumber Kehidupan," 21.

²¹Yûsuf 'Alî, *The Holy Qur'an*, 735.

²²Team of Writer, "Water Scarcity" (UN Water, n.d.), 2.

shortage of water in an area.²³ This is as indicated in the following Q.S. al-Ra'd/13: 17.

أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَسَالَتْ أَوْدِيَهُ بِقَدَرِهَا فَاحْتَمَلَ السَّبِيلُ زَبَدًا رَابِيًا وَمِمَّا يُوقِدُونَ عَلَيْهِ فِي النَّارِ ابْتِغَاءَ حُلِيِّهِ أَوْ مَتَعٍ زَبَدٌ مِثْلُهُ كَذَلِكَ يَضْرِبُ اللَّهُ الْحَقَّ وَالْبُاطِلَ فَأَمَّا الزَّبَدُ فَيَذْهَبُ جُفَاءً وَأَمَّا مَا يَنْفَعُ النَّاسَ فَيَمْكُثُ فِي الْأَرْضِ كَذَلِكَ يَضْرِبُ اللَّهُ الْأَمْثَالَ

"He sends down water from the skies, and the channels flow, each according to its measure: But the torrent bears away the foam that mounts up to the surface. Even so, from that (ore) which they heat in the fire, to make ornaments or utensils therewith, there is a scum likewise. Thus doth Allah (by parables) show forth truth and falsehood. For the scum disappears like froth cast out; While that which is for the good of mankind remains on the earth. Thus doth Allah set forth parables."²⁴

The word *audiyatun* in the verse is the plural form of the *mufrad* form *wâdin* which means the valleys.²⁵ The use of the form of *nakirah* (indefinite) for this word aims to describe various valleys in terms of size, length, width, and narrowness.²⁶ The places where the water flows have been adjusted to how much or less water flows in it.²⁷ According to linguists, *wâdî* is the singular form of *audiyah*, a lowland in the mountains and hills with fast-flowing water. Meanwhile, Al-Suhrawardi said that a place is called *wadî*, if there is a water flow in it.

As for the word *biqadaribâ*, it means the amount of something that can be accommodated, as defined by al-Wahidi based on the habit of using these words in everyday life. The fragment of the verse *fasâlat audiyyah biqadaribâ* can be interpreted as "the water flows in the valleys according to its size." Small valleys can only hold a little water, while large valleys can hold more water, according to the size of the valley.²⁸

According to Zuhailî The word *biqadaribâ* can be interpreted into two kinds, namely in the form of quality or quantity. In the form of quality, it means that flowing water is useful water, while in the form of quantity, it means that the flow of water is a lot or a little.²⁹ The water Allah sends down is according to the valley's capacity. If the valley is small and narrow, there is little water flowing, while if the valley is wide, then the water flowing is a lot.³⁰

The verse above implies that Allah has sent down rain with appropriate and fixed rules, so humans are tasked with managing the water that has been sent down in a fixed amount so that it can be used for the common good. Things that can be done to optimize water management in daily life include water saving and making drainage.

1).Water Saving

The simplest water management that can be done by everyone is to use water wisely. This is generally stated in Q.S. al-Isrâ`/17: 26-27.

وَأَتِ دَا الْقُرْبَىٰ حَقَّهُ وَالْمِسْكِينَ وَابْنَ السَّبِيلِ وَلَا تَبْذُرْ تَبْذِيرًا إِنَّ الْمُبْذِرِينَ كَانُوا إِخْوَانَ

²³Ainiyatul Latifah, "Optimalisasi Manajemen Air dalam Al-Qur'an (Studi Surat Al-Ra'd Ayat 17)," *Jurnal Prosiding Konferensi Integrasi Interkoneksi Islam dan Sains* 2 (2020): 49–50.

²⁴Abdullah Yûsuf 'Alî, *The Holy Qur'an* (King Fahd Holy Qur'an Printing Complex, n.d.), 678–79.

²⁵Wahbah al-Zuhailî, *Tafsîr Al-Munîr*, vol. 7 (Damaskus: Dâr al-Fikr, 2009), 157. Also look at Muḥammad al-Thâhir Ibnu 'Âsyûr, *Tafsîr Al-Tahrîr a al-Tamwîr*, vol. 13 (Dâr al-Tunisiyyah, 1884), 118.

²⁶M. Quraish Shihab, *Tafsîr Al-Mishbah: Pesan, Kesan, dan Keserasian al-Qur'an*, vol. 6 (Jakarta: Lentera Hati, 2002), 252.

²⁷Muhammad Hasbi ash-Shiddieqy, *Tafsîr Al-Qur'anul Majid an-Nuur*, vol. 3 (Semarang: Pustaka Rizki Putra, 2000), 2082.

²⁸Muhammad al-Râzî, *Mafâtîḥ Al-Ghaib*, vol. 10 (Beirut: Dâr al-Fikr, 1995), 41–43.

²⁹al-Zuhailî, *Tafsîr Al-Munîr*, 2009, 7:157.

³⁰Latifah, "Optimalisasi Manajemen Air dalam Al-Qur'an (Studi Surat Al-Ra'd Ayat 17)," 51.

الشَّيْطَانِ وَكَانَ الشَّيْطَانُ لِرَبِّهِ كَفُورًا

“And render to the kindred their due rights, as (also) to those in want, and to the wayfarer: But squander not (your wealth) in the manner of spendthrift. Verily spendthrifts are brothers of the Satans. And the Satan is to his Lord (Himself) ungrateful.”³¹

Tabdzîr (waste) is not just synonymous with wasting something in terms of quantity. Waste assessment standards are also related to the quality of giving, seen in the object of the charity (*infaq*). This assessment refers to the interpretation of Ibn Mas'ud and Ibn' Abbas, as quoted by Sayyid Quthb, that those who waste are not those who spend all their wealth for the truth, but those who spend their wealth not for the truth, even if only one *mud*. The nature of *tabdzîr* is closely related to the devil's disbelief to Allah (*wa kâna al-syaithânu lirabbihî kafîrâ*) which mentioned at the end of the verse. The disbelief addressed to the devil, in line with the nature of the wasteful person who disbelieves in the blessings of Allah.³² The same provision is also mentioned in Q.S. al-An'âm/6: 141.

وَهُوَ الَّذِي أَنْشَأَ جَنَّاتٍ مَّعْرُوشَاتٍ وَغَيْرَ مَعْرُوشَاتٍ وَالنَّخْلَ وَالزَّرْعَ مُخْتَلِفًا أَكْلُهُ وَالزَّيْتُونَ وَالرُّمَّانَ مُتَشَابِهًا وَغَيْرَ مُتَشَابِهٍ كُلُوا مِنْ ثَمَرِهِ إِذَا أَثْمَرَ وَءَاتُوا حَقَّهُ يَوْمَ حَصَادِهِ وَلَا تُسْرِفُوا إِنَّهُ لَا يُحِبُّ الْمُسْرِفِينَ

"It is He who produceth Gardens, with trellises and without, and dates, and tilth with produce of all kinds, and olives and pomegranates, Similar (in kind) and different (in variety): Eat of their fruit in their season, but render the dues that are proper on the day that harvest is gathered. But waste not by excess: for Allah loveth not the wasters."³³

The background of the verse is narrated by Ibn Jarîr from Abu al-'Âliyah, he said, "In ancient times, apart from zakat, people also donated something, then they overdo it. Then, this verse came down." There is another narration from Ibn Juraij that this verse was revealed about Tsâbit bin Qais bin Syammâs who fed the people until the afternoon at the time of the date palm harvest. Thus, he did not get a single date for himself.³⁴

The verse above states about the companions of the Prophet who gave something excessively. Although charity is a noble act, Allah commands us not to be excessive in everything, including giving charity. In this case, excessive in bad things is more reprehensible in the sight of Allah.

In its implementation with water, water wastage not only concerns the issue of excessive use but also covers the realm of inaccuracies in water use. Although a little, if the water used is not for what is needed, it is included in the waste category. In addition, the command not to be extravagant in eating and drinking is also found in the following Q.S. al-A'râf/7: 31.

يٰۤاَيُّهَا بَنِي آدَمَ خُذُوا زِينَتَكُمْ عِنْدَ كُلِّ مَسْجِدٍ وَكُلُوا وَشَرِبُوا وَلَا تُسْرِفُوا إِنَّهُ لَا يُحِبُّ الْمُسْرِفِينَ
 "O Children of Adam! Wear your beautiful apparel at every time and place of prayer: eat and drink: But waste not by excess, for Allah loveth not the wasters."³⁵

The term *tusrifû* is *fi'il mudhâri* form from *asrafa* which is a form of *tsulâtsi mazîd fi'l* from the word *sarafa*. It consists of three basic letters, namely *sin*, *ra*, and *fa*, and the meaning is to go beyond

³¹Yûsuf 'Alî, *The Holy Qur'an*, 783.

³²Sayyid Quthb, *Fî Zhilâl Al-Qur'ân*, vol. 4 (Kairo: Dâr al-Syurûq, 2003), 2222.

³³Yûsuf 'Alî, *The Holy Qur'an*, 385.

³⁴Jalâl al-Dîn al-Suyûthî, *Lubâb al-Nuqûl fî Ashbâb al-Nuzûl* (Beirut: Mu'assasah al-Kutub al-Tsaqâfiyyah, 2002),

the limits of something and ignore it.³⁶

The word *tusrifū* tends to be interpreted as an act relating to quantity. Wahbah al-Zuhailī defined it as an act of exceeding the limits in all matters (*tajāwuz al-haddi*). At the same time, al-Sa'dī interpreted it as an act of exceeding the limitations that have been considered sufficient (*al-ziyādah 'ala al-qadr al-kāfi*).³⁷

The Prophet Muḥammad in one of his remarks on the prohibition of excessive ablution, also uses the same adjective, namely *lā tusrif*, as an appeal for water conservation. Prophet Muḥammad has shown his friends to always be frugal in water, even for worship matters such as ablution. This is as written in the following two hadiths.

حدثنا أبو نعيم قال: حدثنا مسعر قال: حدثني ابن جبر قال: سمعت أنسًا يقول: كان النبي صَلَّى اللهُ عليه وسلم يغسل - أو كان يغتسلُ - بالصاع إلى خمسة أمداد، ويتوضأ بالماء.³⁸

"Abū Nu'aim told us, he said, Mis'ar told us, he said, Ibnu Jabr told me, he said, I heard Anas said: 'The Prophet used to take a bath with one sha' up to five mudds of water and used to perform ablution with one mudd of water.'" (H.R. Bukhârî no. 201)

حدثنا محمد بن المصنف الحمصي، ثنا بقرية، عن محمد بن الفضل، عن أبيه، عن سالم، عن ابن عمر قال: رأى رسول الله صَلَّى اللهُ عليه وسلم رجلاً يتوضأ فقال " لا تسرف، لا تسرف".³⁹

"Muḥammad bin al-Mushaffā al-Himshī told us, from Muḥammad bin al-Fadhī, from his father, from Sālim, from Ibnu 'Umar, he said: 'The Prophet shallallahu 'alaihi wa sallam saw a man performing ablution, then he said: do not overdo it, do not overdo it.'" (H.R. Ibnu Mājah no. 424)

2). Making Waterways (Drainage)

Drainage means the removal of water masses, either natural or artificial, from the surface or subsurface of a place. Based on the manufacture, drainage is divided into natural and artificial drainage. Natural drainage occurs by itself without human intervention. This can happen if the ground slopes enough so the rainwater will flow by itself, enter the ditch, and eventually into the river. In addition, natural drainage can also occur in porous soil, which has a large number of pores, so the ability to absorb water is high. Artificial drainage is designed and constructed for a specific purpose adapted to water management.⁴⁰

In the Qur'an, the command to make this drainage is implied in Q.S. Hūd/11: 44 about the story of God's punishment to the people of Prophet Nūḥ who disobeyed Him.

وَقِيلَ يَا أَرْضُ أَبْلِعِي مَاءَكَ وَيَسْمَأُ أَقْلِعِي وَغِيضَ الْمَاءِ وَقُضِيَ الْأَمْرُ وَأَسْتَوَتْ عَلَى الْجُودِيِّ وَقِيلَ بُعْدًا لِلْقَوْمِ الظَّالِمِينَ

"Then the word went forth: 'O earth! Swallow up thy water, and O sky! Withhold (thy rain)! And the water abated, And the matter was ended. The Ark rested on Mount Judi, and the word went forth: 'Away with those who do wrong!'"⁴¹

In verse above, Allah ordered the earth to swallow water, then continued with the command to the sky to stop the rain. Rain in this verse is interpreted as a water source, while the

³⁶ Ahmad Ibn Fāris, *Mu'jam Maqāyis al-Lughab*, vol. 3 (Dār al-Fikr, 1979), 153.

³⁷ Abd al-Rahmān al-Sa'dī, *Taisir al-Karim al-Rahmān* (Riyadh: Dār al-Salām, 2002), 322.

³⁸ Muḥammad bin Ismā'il al-Bukhārī, *Shahih Al-Bukhārī* (Damaskus: Dār Ibn Katsir, 2002), 62.

³⁹ Muḥammad bin Yazid al-Qazwīnī, *Sunan Ibnu Mājah* (Dār Ihyā' al-Kutub al-'Arabiyah, n.d.), 147.

⁴⁰ Achmad Syarifudin, *Drainase Perkotaan Berwawasan Lingkungan* (Palembang: Andi, 2017), 3–4.

⁴¹ Yūsuf 'Alī, *The Holy Qur'an*, 594–95.

earth is a place to store water. Based on the two commands that go hand in hand, the verse above suggests that humans should look for or make waterways before looking for water sources so that the water that comes from the water source does not flood.⁴²

Developing a drainage system in an area aims to provide a channel system that functions to drain surface water due to rain to the nearest receiving water body, such as a river. In its application, the presence of water channels is vital in preventing flooding when there is heavy rain. Along with the population growth in urban areas, the development of various urban infrastructure and facilities is also increasing.⁴³ Thus, developing a drainage system is significant for the community, especially in densely populated urban areas.

b. Even Water Distribution

The term distribution means (1) the way something is spread or exists over a particular area or among a particular group of people, and (2) the act of giving or sharing something among a number of people.⁴⁴ In the Qur'an, the concept of water distribution fairly and evenly is contained in several verses, such as in Q.S. al-Qamar/54: 28.

وَنَبِّئَهُمْ أَنَّ الْمَاءَ قِسْمَةٌ بَيْنَهُمْ كُلُّ شِرْبٍ مُحْتَضَرٌ

“And tell them that the water is to be divided between them: Each one's right to drink being brought forward (by suitable turns).”⁴⁵

Ibn Katsîr interprets the fragment of the verse *wa nabbi`hum anna al-mâ`a qismatun bainahum*. At that time, well water was distributed to two parties, the Tsamûd and the female camel belonging to the Prophet Shâlih.⁴⁶ Allah ordered the Prophet Shâlih to inform his people regarding the distribution of well water between them and the camel, namely a day for the camel and a day for them. Each came in turn to fetch the water from the well.⁴⁷ This division is based on the camel's habit of drinking every one-day interval. If the camel has drunk water in one day, she does not drink the next day. On the day when the camel did not drink, the Tsamûd used that to prepare water supplies for the next day.⁴⁸ This distribution system is done because other animals are reluctant to go to the well if there is the Prophet Shâlih's camel there.⁴⁹

The meaning of the verse *kullu syirbin muhtadhar* is to be attended by people who have a turn. That is, the camel is present on the day of her turn and is not present on the turn of the Tsamûd, and vice versa.⁵⁰ The distribution rule made by the Prophet Shâlih at that time was to limit access to water sources only to those who had their turn. No other party was allowed to attend except the party concerned.⁵¹

This verse can be used as an ideal description of water distribution. Water distribution must take into account the different needs of each party. Parties with small numbers do not always need little water, and vice versa. As in the case of Prophet Shâlih's camel above, one camel is

⁴²Muhammad Mutawallî al-Sya'râwî, *Tafsîr al-Sya'râwî*, vol. 11 (Kairo: Dâr Ikhbâr al-Yaum, 1991), 12300–301.

⁴³Annida Unnatiq Ulya, Endro Sutrisno, and Irawan Wisnu Wardhana, “Perencanaan Sistem Drainase Berwawasan Lingkungan (Ekodrainase) di Kelurahan Sekaran Kecamatan Gunungpati Kota Semarang,” *Jurnal Teknik Lingkungan* 4, no. 1 (2015): 1.

⁴⁴“Distribution,” in *Oxford Advanced Learner's Dictionary*, July 7, 2022, <https://www.oxfordlearnersdictionaries.com/definition/english/distribution?q=distribution>.

⁴⁵Yûsuf 'Alî, *The Holy Qur'an*, 1653.

⁴⁶Ismâ'îl bin 'Umar al-Dimasyqî, *Tafsîr al-Qur`ân al-'Azhîm* (Beirut: Dâr Ibn Hazm, 2000), 1791.

⁴⁷Team of Writer, *Al-Qur`an dan Tafsirnya*, vol. 9 (Jakarta: Departemen Agama RI, 2004), 577.

⁴⁸Muhammad bin Jarîr al-Thabarî, *Jâmi' al-Bayân fî Ta'wîl al-Qur`an*, vol. 11 (Beirut: Dâr al-Kutub al-'Ilmiyyah, 2009), 560.

⁴⁹Muhammad al-Râzî, *Mafâtîh al-Ghaib*, vol. 15 (Beirut: Dâr al-Fikr, 1995), 55.

⁵⁰Muhammad bin Ahmad al-Qurthubî, *Tafsîr Al-Qurthubî*, vol. 9 (Beirut: Dâr al-Kutub al-'Ilmiyyah, 2010), 92.

⁵¹M. Quraish Shihab, *Tafsîr Al-Mishbah: Pesan, Kesan, dan Keserasian al-Qur`an*, vol. 13 (Jakarta: Lentera Hati, 2002), 249.

given a special day to drink water, while the Tsamûd are also given one day to use the water. If it is calculated in quantity, the number of Tsamûd is bigger than the camel, but they are given the same amount of water consumption as one camel.

In addition to the verse, Allah also mentions the fair distribution of water in Q.S. al-Baqarah/2: 60 and Q.S. al-A'râf/7: 160 about the following story of the Prophet Mûsâ.

وَإِذِ اسْتَسْقَىٰ مُوسَىٰ لِقَوْمِهِ فَقُلْنَا اضْرِبْ بِعَصَاكَ الْحَجَرَ فَانْفَجَرَتْ مِنْهُ اثْنَتَا عَشْرَةَ عَيْنًا قَدْ عَلِمَ كُلُّ أُنَاسٍ مَّشْرَبَهُمْ كُلُوا وَاشْرَبُوا مِنْ رِزْقِ اللَّهِ وَلَا تَعْتُوا فِي الْأَرْضِ مُفْسِدِينَ

“And remember Moses prayed for water for his people; We said: ‘Strike the rock with thy staff.’ Then gushed forth therefrom twelve springs. Each group knew its own place for water. So eat and drink of the sustenance provided by Allah, and do no evil nor mischief on the (face of the) earth.”⁵²

وَقَطَّعْنَاهُمْ اثْنَتَيْ عَشْرَةَ أَسْبَاطًا أُمَمًا وَأَوْحَيْنَا إِلَىٰ مُوسَىٰ إِذِ اسْتَسْقَاهُ قَوْمُهُ أَنْ اضْرِبْ بِعَصَاكَ الْحَجَرَ فَانْبَجَسَتْ مِنْهُ اثْنَتَا عَشْرَةَ عَيْنًا قَدْ عَلِمَ كُلُّ أُنَاسٍ مَّشْرَبَهُمْ وَظَلَّلْنَا عَلَيْهِمُ الْغَمَمَ وَأَنْزَلْنَا عَلَيْهِمُ الْمَنَّاءَ وَالسَّلْوَىٰ كُلُوا مِنْ طَيِّبَاتِ مَا رَزَقْنَاكُمْ وَمَا ظَلَمُونَا وَلَكِنْ كَانُوا أَنْفُسَهُمْ يَظْلِمُونَ

“We divided them into twelve tribes or nations. We directed Moses by inspiration, when his (thirsty) people asked him for water: ‘Strike the rock with thy staff’: out of it there gushed forth twelve springs. Each group knew its own place for water. We gave them the shade of clouds, and sent down to them manna and quails (Saying): ‘Eat of the good things We have provided for you’: (But they rebelled); to Us they did no harm, but they harmed their own souls.”⁵³

The snippet of the *fanfajarat minbutsnatâ 'asyrata 'ainâ* verse in Q.S. al-Baqarah/2: 60 describes the event of gushing water. The same event is also described in Q.S. al-A'râf/7: 160 with a different word. Twelve springs gushing corresponds to the twelve tribes or groups of Banî Isrâ'îl who lived separately at that time. Therefore, the following sentence of the verse is *qad 'alima kullu unâsin masyrabahum* meaning “Indeed, every tribe has known their respective drinking places.” With the existence of springs available for each tribe, they do not need to fight over the springs, so the unity and integrity of fellow tribes can be maintained.⁵⁴ The fragments *qad 'alima kullu unâsin masyrabahum* in the two verses above show justice and equity regarding water distribution to the twelve tribes of the Prophet Mûsâ.

According to Muhammad Hasbi Ash-Shiddieqy, the purpose of determining the drinking place of each tribe is to maintain order and prevent commotion and quarrels due to jostling for water.⁵⁵ The twelve springs also symbolize equality because each spring emits the same water. None emits more water than the other, thus preventing greed from occurring.⁵⁶

Water distribution is vulnerable to conflict over water resources. One of the solutions is to increase the number of water sources and distribute it evenly as the Prophet Mûsâ did in Q.S. al-Baqarah/2: 60 and Q.S. al-A'râf/7: 160 above. If this is not possible due to the limited number of water sources, then what was ordered by the Prophet Shâlih as a distributor, as narrated in

⁵²Yûsuf 'Alî, *The Holy Qur'an*, 24.

⁵³Yûsuf 'Alî, 452–452.

⁵⁴M. Quraish Shihab, *Tafsir Al-Mishbah: Pesan, Kesan, dan Keserasian al-Qur'an*, vol. 3 (Jakarta: Lentera Hati, 2012), 252. Also look at Muhammad Hasbi ash-Shiddieqy, *Tafsir Al-Qur'anul Majid an-Nuur*, vol. 1 (Semarang: Pustaka Rizki Putra, 2000), 117.

⁵⁵Muhammad Hasbi ash-Shiddieqy, *Tafsir al-Qur'anul Majid an-Nuur*, vol. 2 (Semarang: Pustaka Rizki Putra, 2000), 1495.

⁵⁶Muhammad Mutawallî al-Sya'râwî, *Tafsir al-Sya'râwî*, vol. 7 (Kairo: Dâr Ikhbâr al-Yaum, 1991), 4397.

Q.S. al-Qamar/54: 28, can be used as an alternative solution.

This equitable water distribution system is not only related to public behavior in general but must also be supported by government programs. The author divides this water distribution system into two parts, namely the water distribution reservoir and the prohibition of water privatization (remunicipalisation).

1) Water Distribution Reservoir

A reservoir is a building to store clean water before distribution to the community, which can be placed underground or above ground in the form of a tower.⁵⁷ The water distribution reservoir is made because the demand at peak hours exceeds the available water supply. This distribution reservoir is functioned to accommodate water when the water usage is less than the supply and to cover the water shortage when the water usage exceeds the supply.⁵⁸

The concept of a distribution reservoir by storing water and distributing it during peak hours of water use has been implicitly mentioned in Q.S. al-Zumar/39: 21.

أَلَمْ تَرَ أَنَّ اللَّهَ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَسَلَكَهُ يَنْبِيعَ فِي الْأَرْضِ ثُمَّ يُخْرِجُ بِهِ زَرْعًا مُخْتَلِفًا
أَلْوَانُهُ ثُمَّ يَهَيِّجُ فَتَرَاهُ مُصْفَرًّا ثُمَّ يَجْعَلُهُ حُطْمًا إِنَّ فِي ذَلِكَ لَذِكْرًا لِأُولِي الْأَلْبَابِ

“Seest thou not that Allah Sends down rain from the sky, and leads it through springs in the earth? Then He causes to grow, therewith, produce of various colours: then it withers; Thou wilt see it grow yellow; Then He makes it dry up and crumble away. Truly, in this, of remembrance to Men of understanding.”⁵⁹

Al-Râzî begins interpreting this verse by quoting an opinion that all water on earth comes from the sky. In the process, Allah sends down rainwater and then regulates the distribution of the water by flowing it into springs in the earth's bowels.⁶⁰

In *Tafsîr Haadâ'iq al-Rauh wa al-Raihân*, it is stated that rainwater that falls is then put into the soil, then the water settles in the ground and becomes groundwater. The groundwater then becomes a spring.⁶¹ The water source can be a river that flows on the earth's surface or water that flows under the earth's layer due to water infiltration from the ground surface.⁶²

Mutawallî al-Sya'râwî, when interpreting the sentence *yanâbî'a fi al-ardhi*, states that rain only falls in certain places. Therefore, Allah sends water to places where it does not rain.⁶³ The sentence *fasalakabû yanâbî'a fi al-ardhi* implies a fair distribution of water. The interpretation of the paragraph above is in line with the concept of a distribution reservoir that emphasizes water supply, namely by storing rainwater in anticipation of a lack of water supply, especially during peak hours of water use.

2) Prohibition of Water Privatization (Remunicipalisation)

Privatization in water resources management means exploiting water resources by involving the private sector or individuals to obtain capital, technology, and efficiency in water services or utilization of potential water resources. Privatization in the water resources management is limited to the use of water resources to meet business needs, among others as raw materials such as those

⁵⁷Novriyan Masombe, Fuad Halim, and Alex Binilang, “Perencanaan Sistem Pelayanan Air Bersih di Kelurahan Bonkawir Kabupaten Raja Ampat Provinsi Papua Barat,” *Jurnal Sipil Statik* 3, no. 11 (2015): 777.

⁵⁸Intan Agustin Nirmala Sari Abdul Karim, Cindy J. Supit, and Liany A. Hendratta, “Perencanaan Sistem Penyediaan Air Bersih di Desa Motongkad Utara Kecamatan Nuangan Kabupaten Bolaang Mongondow Timur,” *Jurnal Sipil Statik* 4, no. 1 (2016): 711.

⁵⁹Yûsuf 'Alî, *The Holy Qur'an*, 1401.

⁶⁰Muhammad al-Râzî, *Mafâtîh Al-Ghaib*, vol. 13 (Beirut: Dâr al-Fikr, 1995), 265.

⁶¹Muhammad Amin al-Harârî, *Tafsîr Hadâ'iq al-Rauh Wa al-Raihân*, vol. 24 (Beirut: Dâr Thauq al-Najâh, 2001), 529–30.

⁶²Sayyid Quthb, *Fi Zhilâl Al-Qur'an*, vol. 5 (Kairo: Dâr al-Syurûq, 2003), 3047.

⁶³Muhammad Mutawallî al-Sya'râwî, *Tafsîr Al-Sya'râwî*, vol. 21 (Kairo: Dâr Ikhbâr al-Yaum, 1991), 13092–93.

cultivated by drinking water companies and bottled water companies, as a medium or main element such as those cultivated by hydroelectric companies, water tourism, water sports, and also as an auxiliary material for the production process.⁶⁴

The utilization of water resources managed by entrepreneurs can cause problems for local communities, such as reduced irrigation channels and water for household needs. This is undoubtedly very detrimental considering the function of water is very important in life. The prohibition relating to the privatization of water sources is implicitly contained in Q.S. al-Hijr/15: 22.

وَأَرْسَلْنَا الرِّيحَ لَوَاحٍ لَّوَّاحٍ فَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً فَأَسْقَيْنَاكُمُوهُ وَمَا أَنْتُمْ لَهُ بِخَازِنِينَ

“And We send the fecundating then cause the rain to descend from the sky, therewith providing you with water (in abundance), through ye are not the guardians of its stores.”⁶⁵

The passage from the verse *wa mâ antum labû bikhâzinîn* emphasizes that humans have absolutely no power in managing rainwater, including the creation of rainwater, the process of its descent, and the water level turn from the sky.⁶⁶ Therefore, it can be understood that Allah is the one who stores water and has the power to send it down and hold it.⁶⁷

From a theological point of view, humans have no power to regulate the falling of rain and the amount of water that is lowered. The right to manage water from the sky to the earth is the right of Allah alone. When the water falls to the earth, there is no more water privatization.

Water is essentially a human right and is regulated in the constitution. The community will have to pay to get water if water is privatized. This violates the concept of human rights itself because people will find it difficult to get water. The state as a service provider needs to have non-governmental organizations or institutions that monitor their performance. These institutions must be critical, and every decision related to water management is carried out transparently and responsibly. In addition, non-governmental institutions or organizations, civil society organizations, and even local communities should be empowered to make decisions so that good water management can be implemented.⁶⁸

The water right is public ownership, as in one of the words of the Prophet Muhammad.

حدثنا علي بن الجعد اللؤلؤي: حدثنا حريز بن عثمان عن حبان بن زيد الشرعبي، عن رجل من قرن؛ ح: وحدثنا مسدد: حدثنا عيسى بن يونس: حدثنا حريز بن عثمان: حدثنا أبو خدّاش وهذا لفظ علي: عن رجل من المهاجرين من أصحاب النبي صلى الله عليه وسلم قال: غزوت مع النبي صلى الله عليه وسلم ثلاثا أسمعه يقول: المسلمون شركاء في ثلاث في الكلا والماء والنار.⁶⁹

“‘Alî bin al-Ja’dî al-Lu’lu’î told us: *Harîẓ bin ‘Utmân*, from *Hibbân bin Zaid al-Syar’abî*, from a man in a time, Musaddad told us, ‘*Isâ bin Yûnus*, *Harîẓ bin ‘Utmân* told us, *Abû Khidâsy* told us, and this is ‘Alî’s narration: from a man of *Muhâjirîn*, the Prophet’s companion, he said: I was in a war with the Prophet, three things I heard he said: ‘Muslims are partners in three things: grass, water, and fire.’” (H.R. Abu Dâwûd no. 3477)

In water privatization, private companies often place water as an economic commodity,

⁶⁴Erina Pane, “Hak Guna Air dalam Hubungannya dengan Privatisasi Pengelolaan Sumber Daya Air,” *Pranata Hukum* 3, no. 1 (2008): 16.

⁶⁵Yûsuf ‘Alî, *The Holy Qur’an*, 715.

⁶⁶Shihab, *Tafsîr Al-Mishbah: Pesan, Kesan, dan Keserasian al-Qur’an*, 2002, 6:444.

⁶⁷Muhammad bin Ahmad al-Qurthûbî, *Tafsîr Al-Qurthûbî*, vol. 5 (Beirut: Dâr al-Kutub al-‘Ilmiyyah, 2010), 14.

⁶⁸Pane, “Hak Guna Air dalam Hubungannya dengan Privatisasi Pengelolaan Sumber Daya Air,” 28.

⁶⁹Sulaimân bin al-Asy’ats al-Sijistânî, *Sunan Abî Dawud* (Riyadh: Dâr al-Salâm, 1999), 502.

causing losses to the community, especially the poor. The problems that occur in water privatization are very diverse, such as corruption, manipulation of tariff formulas, renegotiation of systematically raising prices, delays in revising investment commitments, and overestimating the required investment. Global developments have shown that water privatization has failed to distribute water evenly to the community. Therefore, remunicipalisation or full return of private assets into the hands of the government or the public is considered a logical mechanism to end the water crisis.⁷⁰

Water Quality Crisis Solutions

a. Reforestation

Reforestation is planting new trees in an area where there used to be a forest.⁷¹ According to Yûsuf Qardhâwî, one of the ways to protect the environment proposed by Islam is by planting trees and reforestation. This is known from the many verses that mention reforestation through planting and farming activities, such as in Q.S. al-Nahl/16: 10-11.⁷²

هُوَ الَّذِي أَنْزَلَ مِنَ السَّمَاءِ مَاءً لَكُمْ مِنْهُ شَرَابٌ وَمِنْهُ شَجَرٌ فِيهِ تُسِيمُونَ يُنْبِتُ لَكُمْ بِهِ
الزَّرْعَ وَالزَّيْتُونَ وَالنَّخِيلَ وَالْأَعْنَابَ وَمِنْ كُلِّ الثَّمَرَاتِ إِنَّ فِي ذَلِكَ لَآيَةً لِقَوْمٍ يَتَفَكَّرُونَ

*"It is He who sends down rain from the sky from it ye drink, and out of it (grows) the vegetation on which ye feed your cattle. With it He produces for you corn, olives, date-palms, grapes, and every kind of fruit: Verily in this is a sign for those who give thought."*⁷³

There is no verse that specifically and directly orders reforestation. However, according to Wardani, several texts implicitly mention planting trees, fruits, and vegetables. This can be indirectly related to the recommendation to use vacant land (*ihya` al-manâ`at*) in the form of greening (*takbhdhîr*) and reforestation (*tasyjîr*). Effort to use this vacant land is one of the efforts to prevent the occurrence of water crisis disasters in the form of floods and landslides.⁷⁴

b. Watersheds Conservation

Watersheds are land areas that are an integral part of its tributaries, which accommodate, store, and drain water from rainfall to lakes or sea naturally. The upstream watershed is often the focus of planning in watershed management because of its essential function as a water catchment area.⁷⁵

The problems found around watersheds can be summarized into four problems as follows:⁷⁶

- a. Protected areas are converted into residential, agricultural, livestock and industrial areas.
- b. The increasing number of critical land areas due to poor planning and supervision.
- c. Rivers' pollution by domestic waste originates from settlements, agriculture, livestock, and industry.
- d. The level of groundwater abstraction is out of control which causes land subsidence and

⁷⁰Emanuele Lobina and David Hall, "Water Privatisation and Remunicipalisation: International Lessons for Jakarta," *Public Services International Research Unit*, 2013, 4.

⁷¹"Reforestation," in *Oxford Advanced Learner's Dictionary*, August 8, 2022, <https://www.oxfordlearnersdictionaries.com/definition/english/reforestation?q=Reforestation>.

⁷²Yûsuf al-Qardhâwî, *Ri'âyah al-Bî'ah fî Syar'ah al-Islâm* (Kairo: Dâr al-Syurûq, 2001), 58–59.

⁷³Yûsuf 'Alî, 733–34.

⁷⁴Wardani, *Islam Ramah Lingkungan* (Banjarmasin: IAIN Antasari Press, 2015), 158.

⁷⁵Fajar Dwi Hastono, Bambang Sudarsono, and Bandi Sasmito, "Identifikasi Daerah Resapan Air dengan Sistem Informasi Geografis (Studi Kasus: Sub DAS Keduang)," *Jurnal Geodesi UNDIP* 1, no. 1 (2012): 1.

⁷⁶Muhammad Fadhil Imansyah, "Studi Umum Permasalahan dan Solusi DAS Citarum serta Analisis Kebijakan Pemerintah," *Jurnal Siosioteknologi* 11, no. 25 (2012): 20.

increases the potential for flood-prone areas.

Regarding the problems around watersheds, the Qur'an mentions the earth's prosperity in Q.S. Hûd/11: 61.

وَإِلَىٰ نَمُودَٰ أَخَاهُمْ صَالِحًا قَالَ يٰقَوْمِ اعْبُدُوا اللَّهَ مَا لَكُم مِّنْ إِلَٰهٍ غَيْرُهُ هُوَ أَنشَأَكُم مِّنَ الْأَرْضِ
وَاسْتَعْمَرَكُمْ فِيهَا فَاسْتَغْفِرُوا لَهُ ثُمَّ تُوْبُوا إِلَيْهِ إِنَّ رَبِّي قَرِيبٌ مُّجِيبٌ

“To the Thamûd People (We sent) Shalib, one of their own brethren. He said: ‘O my People! Worship Allah: ye have no other God but Him. It is He Who hath produced you from the earth and settled you therein: then ask forgiveness of Him, and turn to Him (in repentance): for my Lord is (always) near, ready to answer.’⁷⁷

Al-Râzî interpreted the word *wasta'marakum (isti'mara)* to two meanings. First, it means to inhabit. This meaning is closely related to the management aspect. In one hadith, it is stated that the kings of Persia were given a long excess of life, and they used it to dig rivers and plant trees. Allah calls them *a'mar*, the basic form of the word *wasta'mara* in verse above. The second meaning is the aspect of time. The meaning of the expression *wasta'marakum* is to prolong life.⁷⁸

Thanthâwî Jauharî interpreted the phrase *wasta'marakum* as Allah's request to His servants to prosper the earth by inhabiting and maintaining it. This verse fragment can also be interpreted as the giving of power by God to humans in the form of the ability to regulate and manage the earth. Looking at the two interpretations presented by Thanthâwî Jauharî, the concept of prospering the earth mentioned by Allah is not just managing the earth to meet human needs alone. There is also an element of maintenance in the concept of earth's prosperity.⁷⁹

The prosperity of the earth mentioned by Allah through the story of the Tsamûd is not only interpreted as land management projects so that it can be used by humans, but must consider the impact generated by the project on the environment. There must be harmony between creating the earth's prosperity and doing God's commands, one of which is by considering the balance of the natural ecosystem so that it is not damaged.⁸⁰ This is in line with the guidance of the Qur'an in Q.S. al-Baqarah/2: 11 regarding the prohibition of doing damage on earth.

In the context of overcoming the water quality crisis, the actualization of the word *ista'mara* as an effort to prosper the earth in the sense of the verse can be done by preserving watersheds and water catchment areas. The development of residential areas (boards), industry (clothing), agriculture and livestock (food) as part of efforts to meet basic human needs is indeed not prohibited as long as the balance of natural ecosystems is considered, such as river pollution by domestic waste from various business sectors.

c. Water Pollution Control

Water pollution control aims to maintain and restore the quality of water that enters and resides in water sources by preventing the entry of water pollution into water sources and water source infrastructure. Water pollutant sources consist of various types of waste that occur due to natural processes or human activities, which include:⁸¹

a. Domestic waste includes sanitary wastewater, toilets, kitchens, restaurants, hotels, hospitals, and laundry, disposed of in drainage channels or rivers.

b. Industrial waste containing chemicals such as acids, alkalis, oil, phenol, and mercury that

⁷⁷Yûsuf 'Alî, *The Holy Qur'an*, 600–601.

⁷⁸Muhammad al-Râzî, *Mafâtîh al-Ghaib*, vol. 9 (Beirut: Dâr al-Fikr, 1995), 18.

⁷⁹Thanthâwî Jauharî al-Mashrî, *Al-Jawâbir fî Tafsîr al-Qur`ân al-Karîm*, vol. 3 (Beirut: Dâr al-Kutub al-'Ilmiyyah, 2016), 203.

⁸⁰Wardani, *Islam Ramah Lingkungan*, 73–75.

⁸¹Team of Writer, *Modul Konservasi Sumber Daya Air* (Bandung: Pusat Pendidikan dan Pelatihan Sumber Daya Air dan Konstruksi, 2017), 14.

can enter or be absorbed into the food chain of aquatic plants and animals and enter the human body.

c. Agricultural waste is due to the excessive use of fertilizers, pesticides, and herbicides.

d. Due to soil erosion carried away by surface runoff into a canal or river systems, sediment or silt can cause water turbidity, reducing the sunlight's penetration into the water.

Concerning water pollution, the Qur'an describes the ideal springs like the heaven's springs, one of which is in Q.S. al-Ghâsiyah/88: 12.

فِيهَا عَيْنٌ جَارِيَةٌ

“Therein will be a bubbling spring.”⁸²

In the Qur'an, the teû جرى (*jarâ*) with all its derivations mentioned 64 times with the division of the foû جرين (*jaraina*) mentioned once, form تجرى (*tajrî*) mentioned 51 times, form تجريان (*tajriyân*) mentioned once, form يجرى (*yajrî*) mentioned four times, form جارية (*jâriyah*) mentioned three times, form الجوار (*al-jawâr*) mentioned three times and form مجراها (*majrâhâ*) mentioned once.⁸³

Allah mentions the image of heaven in many places in the Qur'an. This description of paradise is often followed by the expression *jannâtîn tajrî min tahtihâ al-anbâr* meaning “heavens under which rivers flow” which is mentioned 38 times in the Qur'an.⁸⁴ Water is said to flow from these verses, meaning it has dynamic properties. This is an ideal picture of water in life because flowing water is cleaner than water that only stays in a place. The statement of al-Thabarî reinforces this that one of the descriptions mentioned in the Qur'an about the rivers in heaven is about flowing water.⁸⁵

Flowing water is not only a solution to water pollution but also a source of peace. Muḥammad Mutawallî al-Sya'râwî when explaining the content of Q.S. al-Ghâsiyah verse 12 stated that for Arab people, springs symbolize something big and majestic. To meet water needs, wells are sufficient for Arab people who live in the middle of a hot desert. Therefore, according to Mutawallî al-Sya'râwî, the mention of "flowing springs" as one of the descriptions of heaven shows that heaven is not only a matter of satisfying needs alone, but through flowing springs that can provide tranquility through its splash, movement, and flow.⁸⁶ Likewise in life in the world, besides being used as a means of tourism and recreation, springs that flow clear water are very urgent to meet the needs of housing, clothing, and food.

d. Biopore Infiltration Holes

Massive population growth and the ongoing development of life requires changes in land use that continue to expand. Expanding land for residential settlements causes a reduction in green open land which initially served to absorb rainwater. The effort to infiltrate rainwater into the ground aims to maintain soil moisture under the building. Another goal is to increase groundwater reserves needed to meet water needs for life and various purposes.⁸⁷

Utilization of rainwater aims to increase the amount of groundwater infiltration and save

⁸²Yûsuf 'Alî, *The Holy Qur'an*, 1944.

⁸³Muḥammad Fu'âd 'Abd al-Bâqî, *Al-Mu'jam al-Mufabrus li Alfâzih al-Qur`ân al-Karîm* (Kairo: Dâr al-Kutub al-Mishriyyah, 1945), 167–68.

⁸⁴'Abd al-Bâqî, 167–68.

⁸⁵Muḥammad bin Jarîr al-Thabarî, *Jâmi' al-Bayân fi Ta`wîl al-Qur`ân*, vol. 1 (Beirut: Dâr al-Kutub al-'Ilmiyyah, 2009), 143.

⁸⁶Muḥammad Mutawallî al-Sya'râwî, *Tafsîr Juz 'Ammâ* (Dâr al-Râyah, 2008), 337.

⁸⁷Basuki Setiyo Budi, “Model Peresapan Air Hujan dengan Menggunakan Metode Lubang Resapan Biopori (LBR) dalam Upaya Pencegahan Banjir,” *Wabana Teknik Sipil* 18, no. 1 (2013): 1–2.

groundwater use. One way to use rainwater is to make biopore infiltration holes.⁸⁸ Biopore infiltration holes have enormous benefits, including increasing water absorption, preventing flooding, improving groundwater quality, landfilling organic waste, converting organic waste into compost, utilizing soil fauna and plant roots activities, overcoming problems caused by waterlogging, and helping to prevent global warming.⁸⁹

Making biopore infiltration holes is an environmentally friendly technological solution to overcome groundwater availability by utilizing organic waste through small holes in the soil. Garbage is often a source of environmental pollution, even though waste has the potential to save the environment if used wisely.⁹⁰

Disposal of waste by irresponsible humans is certainly one of the factors polluting the environment, including water and soil pollution. The impact of natural damage due to human actions is also mentioned in Q.S. al-Rûm/30: 41.

ظَهَرَ الْفَسَادُ فِي الْبَرِّ وَالْبَحْرِ بِمَا كَسَبَتْ أَيْدِي النَّاسِ لِيُذِيقَهُمْ بَعْضَ الَّذِي عَمِلُوا لَعَلَّهُمْ
يَرْجِعُونَ

“*Mischief has appeared on land and sea because of (the deed) that the hands of men have earned, That (Allah) may give them a taste of some of their deeds: so that they may turn back (from evil)*”⁹¹

The word *al-fasâd* means something is broken or out of balance, either a little or a lot. In a narrow sense, *al-fasâd* means damage such as polytheism or murder. Meanwhile, contemporary scholars understand it broadly, namely damage on land and sea, such as the earth's temperature getting hotter, the dry season getting longer, sea water pollution, and ecosystem imbalances.⁹² It is customary for Arabs to use the term *buhâr* to refer to a building or a city built on water.⁹³ In general, *fasâd fi al-bahr* (damage at sea) can also be interpreted as a water crisis. As caliphs, humans must obey all God's laws, including not doing damage to existing natural resources. They must also be responsible for the sustainability of life on earth.⁹⁴

Biopore infiltration holes is a new method introduced to overcome the water quality crisis. The Qur'an does not explicitly explain a certain way in dealing with the water crisis, but the Qur'an implies that humans try to find solutions when a disaster occurs. This also includes the form of human moral responsibility as creatures who are given reason to think. This innovation has been carried out by the Prophet Nûh in Q.S. Hûd/11: 37.

وَأَصْنَعِ الْفُلْكَ بِأَعْيُنِنَا وَلَا تُخْطِبْنِي فِي الَّذِينَ ظَلَمُوا إِنَّهُمْ مُغْرَقُونَ

“*But construct an Ark under Our eyes and Our inspiration, and address Me no (further) on behalf of those who are in sin: for they are about to be overwhelmed (in the flood).*”⁹⁵

According to Ibn 'Abbâs, the ship's length was one thousand two hundred cubits. Allah

⁸⁸Firlawanti Lestari Baguna, Fadila Tamnge, and Mahdi Tamrin, “Pembuatan Lubang Resapan Biopori (LBR) sebagai Upaya Edukasi Lingkungan,” *Kumanula: Jurnal Pengabdian Kepada Masyarakat* 4, no. 1 (2021): 132.

⁸⁹Nurhenu Karuniastuti, “Teknologi Biopori untuk Mengurangi Banjir dan Tumpukan Sampah Organik,” *Swara Patra: Majalah Ilmiah PPDSM Migas* 4, no. 2 (n.d.): 66–67.

⁹⁰Corry Yohana, Dientje Griandini, and Said Muzambeq, “Penerapan Pembuatan Teknik Lubang Biopori Resapan sebagai Upaya Pengendali Banjir,” *Jurnal Pemberdayaan Masyarakat Madani (JPMM)* 1, no. 2 (2017): 298.

⁹¹Yûsuf 'Alî, *The Holy Qur'an*, 1190–91.

⁹²Team of Writer, *Al-Qur'an dan Tafsirnya*, vol. 7 (Jakarta: Departemen Agama RI, 2004), 514.

⁹³al-Râzî, *Mafâtîh Al-Ghaib*, 1995, 13:128–29.

⁹⁴Team of Writer, *Al-Qur'an dan Tafsirnya*, 2004, 7:516.

⁹⁵Yûsuf 'Alî, *The Holy Qur'an*, 592.

commands the Prophet Nûh to build a ship that would be used to save Prophet Nûh and his followers from the flood, while the disbelievers would drown to the earth's surface.⁹⁶ In the case of the flood in the time of the Prophet Nûh, he innovated to make a boat to be used for self-rescue when the flood hit, while there had never been and known the buiding method before. The actualization of this verse can be applied in today's life by finding new solutions for disaster management, one of which is by making biopore infiltration holes as an alternative solution to the water quality crisis.

e. Rainwater Harvesting

Rainwater harvesting system (RWH) is a technology for collecting and storing rainwater for human use.⁹⁷ According to Ontario Guidelines for Residential Rainwater Harvesting Systems Handbook, rainwater harvesting is the conventional practice of collecting rainwater and storing it for later use. The rainwater harvesting system consists of a roof catchment, transport network, rainwater storage tanks, pumps, and equipment where rainwater is utilized. Most systems also incorporate technologies to improve rainwater quality before or after storage, and include provisions for water supply periods and overflow times.⁹⁸

The way rainwater harvesting works is that rainwater caught on the roof of the house is channeled through gutters or pipes to the building, divided into several partitions containing various media to filter rainwater from various impurities. The objects that can be used as partitions in the filter media are fibers, sand, gravel, charcoal, red coal, and gravel mixed with limestone and sand. After passing through the last partition, the water will be accommodated in the reservoir. Then the water will flow into the water collection tank. This tub has holes for air circulation so water can be pumped out of the tub.⁹⁹

The concept of rainwater harvesting is in line with the storage of water in Q.S. al-Mu`minûn/23: 18.

وَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً بِقَدَرٍ فَأَسْكَنَتْهُ فِي الْأَرْضِ وَإِنَّا عَلَىٰ ذَهَابٍ بِهَا لَقَادِرُونَ

“And We send down water from the sky according to (due) measure, and We cause it to soak in the soil; And We certainly are able to drain it off (with ease).”¹⁰⁰

The keyword related to the discussion of harvesting water is *fa askannâhu*, which means “We make the water stable and settled in the earth.”¹⁰¹ In connection with the verse passage, M. Quraish Shihab as quoting from *Tafsîr al-Muntakhab*, described some of the wisdom contained in the verse, one of which is the will of Allah demands the storage of a certain amount of water in the oceans and seas that can ensure the balance of temperature on Earth and other planets so that there is no long-distance link between summer and winter temperatures that do not match life.¹⁰²

⁹⁶Team of Writer, *Al-Qur'an dan Tafsirnya*, vol. 4 (Jakarta: Departemen Agama RI, 2004), 416.

⁹⁷Swati Ogale, “Rainwater Harvesting System” (Britannica, July 6, 2022), <https://www.britannica.com/technology/rainwater-harvesting-system>.

⁹⁸Veronika Joan, “Arsitektur Tropis: Kajian Penerapan Rainwater Harvesting pada Perumahan di Bandung,” *Linkedin* (blog), July 8, 2022, <https://id.linkedin.com/pulse/arsitektur-tropis-kajian-penerapan-rainwater-harvesting-veronika-joan>.

⁹⁹Team of Writer, “Pemanenan Air Hujan,” July 8, 2022, <http://ditjenppi.menlhk.go.id/kcpi/index.php/inovasi/197-pemanenan-air-hujan>.

¹⁰⁰Yûsuf 'Alî, *The Holy Qur'an*, 980.

¹⁰¹Ahmad Mushthafâ al-Marâghî, *Tafsîr al-Marâghî*, vol. 6 (Beirut: Dâr al-Kutub al-Ilmiyyah, 2006), 275.

¹⁰²M. Quraish Shihab, *Tafsîr Al-Mishbah: Pesan, Kesan, dan Keserasian al-Qur'an*, vol. 8 (Jakarta: Lentera Hati, 2012), 346.

Allah sends down rain from the sky at the required rate, not too heavy or too little, so it is enough to irrigate the gardens that need it. Water can be stored as rivers, lakes, and even partially stored in the earth as deep groundwater. Some of the water was made by Allah to settle on the earth to fill wells and ditches that function in the field of irrigation, some others serve to fertilize the earth that grows a variety of fruits.¹⁰³

The above verse states that the water falling from the sky always follows Allah's provisions called natural laws (*sunnatullah*). While the earth functions as a water reservoir by storing water evenly in the earth's bowels or on the earth's surface such as mountains, rivers, lakes, and seas. The water conservation created by Allah in the water cycle is impeccable. In the rainy season, the abundant water is stored in a water reservoir so that it does not pose a threat of flooding to humans. Meanwhile, in the dry season, the debit of water stored in the water reservoir is a provider of water reserves so that it does not experience drought.¹⁰⁴ In addition, water reservoirs can also be created by humans, one of which is by rainwater harvesting through the roofs of houses so that rainwater does not fall directly to the bottom and cause puddles to flood. In addition, water reservoirs can provide an adequate water supply during drought periods with low rainfall.

Conclusion

The water crisis solution in terms of quantity as implied in the Qur'an and supported by scientific theory is divided into two major points. First, optimizing water management (Q.S. al-Ra'd/13: 17) which can be done through water saving (Q.S. al-Isrâ'/17: 26-27, Q.S. al-A'râf/7: 31) and making waterways or drainage (Q.S. Hûd/11: 44). Second, even water distribution (Q.S. al-Qamar/54: 28, Q.S. al-Baqarah/2: 60. Q.S. al-A'râf/7: 160) through the creation of water distribution reservoirs (Q.S. al-Zumar/39: 21) and prohibition of water privatization (Q.S. al-Hijr/15: 22). The water crisis solution in terms of quality is hinted in the Qur'an and supported by scientific theory in five respects. First, reforestation (Q.S. al-An'âm/6: 99 and 141, Q.S. al-Ra'd/13: 4, Q.S. al-Nahl/16: 10-11). Second, watersheds conservation (Q.S. Hûd/11: 61). Third, water pollution control (Q.S. al-Ghâsyiah/88: 12). Fourth, biopore infiltration holes (Q.S. al-Rûm/30: 41, Q.S. Hûd/11: 37). Fifth, rainwater harvesting (Q.S. al-Mu'minûn/23: 18). The author hopes the next researchers can expand the study through other aspects and patterns of interpretation studies. Finally, the author hopes that this research will be useful for the author and the general academic world.

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¹⁰³Team of Writer, *Al-Qur'an dan Tafsirnya*, vol. 6 (Jakarta: Departemen Agama RI, 2004), 482-483

¹⁰⁴Munawarah, Taufik Warman Mahfuzh, and Rofi'i, "Tafsir Ekologis Al-Qur'an Surah Al-Mu'minun Ayat 18," *Syams: Jurnal Studi Keislaman* 1, no. 2 (2020): 71.

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