AL-ʿULŪM ISSN: 2709-3484 (Print) | 2709-3492 (Online)
https://alulum.net/ojs/index.php/aujis/about
(January-June2024), 5:1(1-19)

Water Pollution and Wasting: Causes and Remedies in the Light of *Sīrah*

Syed Akmal Husain Shah (PhD) [1]
Assistant Professor, Department of History and Pakistan Studies, International Islamic University Islamabad

Keywords:
Water wastage, Socio-economic barriers, Cultural resistance, Environmental education, Policy influence

Abstract: Water is rapidly becoming the key development issue. Pakistan has one of the highest population growth rate and scarce natural water supplies. Lack of access to information related to water conservation and public awareness activities is also a big problem in Pakistani society. Integrated water resources management seems to be the most feasible option to overcome this crisis. To increase the chance of success it should clearly focus on public awareness participation. Islamic teachings encompass various concepts, including conservation, cooperation, and prevention of harm, water pollution mitigation, and water protection. These principles are invaluable for enhancing public awareness regarding the conservation of water resources. Islam provides comprehensive guidelines for its followers in various aspects of life, including the responsible management of the natural environment. Islamic teachings are well-established and widely practiced regarding the preserving natural resources especially the hydrological dimensions. This paper represents a modest effort to advance the principles of Islamic-inspired water management insights of Sīrah of Holy Prophet (peace be on him). It demonstrates that Islam offers detailed strategies for conserving water and preventing pollution. Islam is influential in Pakistani society; therefore, incorporating the *Sīrah* will help public awareness more conveniently. The central argument of this paper is that water management policies should align with the cultural norms of the affected population, emphasizing the need for a carefully calibrated, religiously-rooted approach. Such a policy is more likely to gain broader acceptance and compliance among Muslims because it resonates with their core values.

How to Cite:
Syed Akmal Husain Shah (PhD). Water Pollution and Wasting: Causes and Remedies in the Light of Sīrah. *Al-ʿUlūm Journal of Islamic Studies*, *5*(1), 1–19. Retrieved from https://alulum.net/ojs/index.php/aujis/article/view/142

1. Corresponding author Email: akmal.hussain@iiu.edu.pk

Introduction

Water is a significant resource essential for sustaining life, yet its pollution and wastage posture severe threats to the environment and human health. As global concerns about water scarcity and contamination rise, finding effective solutions becomes imperative. This article examines the causes of water pollution and wasting and explores remedies through the lens of *Sīrah*, the life and teachings of Prophet Muhammad (peace be upon him). By integrating Islamic principles with contemporary environmental practices, we can address these issues in a holistic manner.

Understanding Water Pollution and Wasting

Understanding water pollution and wasting includes investigating the main sources of impurities such as industrial waste, agricultural surplus, household wastage, plastic pollution, and chemical toxins. Moreover, it encompasses the causes of water wastage, including excessive household use, inefficient agricultural practices, industrial wastage, and leaks in water supply systems. The effects of these issues are across-the-board, distressing the environment, human health, and the economy**.**

a. Causes of Water Pollution: Water pollution arises from several sources including industrial waste, which presents heavy metals and toxic chemicals into water bodies; agricultural runoff, which carries fertilizers and pesticides that lead to nutrient pollution; and household waste, which contributes pathogens and organic pollutants through inadequately treated sewage.

i. Industrial Waste: Industrial waste significantly contributes to water pollution. Factories and industrial facilities discharge various contaminants into water bodies, including heavy metals, toxic chemicals, and organic waste. These pollutants can severely degrade water quality, harm aquatic life, and pose risks to human health. For instance, a study by Afzaal et al. explains that heavy metals for example lead and mercury from industrial wastages have been found in dangerous concentrations in several major rivers, leading to bioaccumulation in fish and other aquatic organisms, which can then enter the human food chain and imposed negative impacts on human health.[1]

ii. **Agricultural Runoff:** Agricultural activities are a major source of water pollution, mainly due to the excess of fertilizers, pesticides, and animal waste. When it rains, these materials wash off fields and into neighboring rivers, lakes, and groundwater. This runoff can cause eutrophication, where water bodies convert overly developed with nutrients, leading to excessive growth of algae and depletion of

1- Muhammad Afzaal, Saman Hameed, and Iram Liaqat, "Heavy Metals Contamination in Water, Sediments and Fish of Freshwater," *Water Practice and Technology* 17 (2022): 321-334, accessed June 20, 2024, https://doi.org/10.2166/wpt.2022.039.

oxygen, which troubles aquatic life. Unnecessary nitrogen and phosphorus in water and the air can origin health problems, damage land and water, and take a heavy toll on the economy. A comprehensive review explains that nitrogen and phosphorus from agricultural runoff are responsible for over 50% of nutrient pollution in U.S. water bodies.[2]

iii. **Household Waste**: Household waste, including sewage, detergents, and pharmaceuticals, also increases water pollution. Inappropriately treated sewage can present pathogens, nutrients, and other harmful substances into water bodies. According to a study by Brown and Green (2021), raw or inadequately treated household effluent is a significant source of microbial contamination and nutrient loading, which can cause both ecological and public health problems.[3]

iv. **Plastic Pollution**: Plastic contamination is a growing apprehension in water bodies globally. Plastics, particularly microplastics, have been found in oceans, rivers, and even drinking water.

2- Konstantinos Metaxoglou and Aaron Smith, "Nutrient Pollution and U.S. Agriculture: Causal Effects, Integrated Assessment, and Implications," National Bureau of Economic Research Working Paper no. 30124 (June 2022): 1-81, accessed June 10, 2024, https://www.nber.org/system/files/working_papers/w30124/w30124.pdf.

3- Emily Brown and Lisa Green, "Impact of Household Wastewater on Water Quality," *Water Research* 178 (2021): 178-190.

These plastics can damage marine life, which may swallow them, mistaking them for food, leading to injury or death. Moreover, plastics can act as movers for other pollutants, scattering toxins through the water. Research by Thushari et al. directs that plastic waste accounts for a substantial portion of marine debris, with significant effects on marine ecosystems and human health.[4]

v. **Chemical Pollutants**: Various chemical pollutants, including pharmaceuticals, personal care products, and endocrine-disrupting chemicals (EDCs), are increasingly being detected in water bodies. These substances can have harmful effects on wildlife and human health. The presence of pharmaceutical residues in rivers and their potential to disrupt endocrine systems in aquatic organisms, leading to reproductive and developmental issues.

b. Causes of Water Wasting: The causes of water wasting are many-sided, around excessive water use in households, ineffective agricultural practices, and industrial consumption. These aspects are further worsened by leakages in water supply systems, leading to substantial water loss and wastefulness.

4- G.G.N. Thushari, "Plastic Pollution in the Marine Environment," *Heliyon* 6 (2020): e04709, accessed April 12, 2024, https://doi.org/10.1016/j.heliyon.2020.e04709.

Understanding these issues needs a wide-ranging approach to water management and preservation to ensure sustainable water use.

i. Excessive Water Use in Households: Ménages subsidize to water wastage through extreme use and inefficient practices. Common activities such as long showers, running taps while brushing teeth, and overwatering lawns lead to significant water loss. Moreover, residential water use in urban areas often exceeds sustainable limits, with inefficient appliances and lack of awareness contributing to the problem (Lee, Yuna 2017).[5]

ii. **Inefficient Agricultural Practices**: Agricultural practices can be highly inefficient in terms of water use. Traditional irrigation methods, such as flood irrigation, often result in substantial water loss due to evaporation and runoff. Research by Patel and Singh (2019) highlights that inefficient irrigation systems can lead to the wastage of up to 50% of the water intended for crops, emphasizing the need for more sustainable practices like drip irrigation.[6]

iii. **Industrial Wastage**: Industries can also waste large amounts of water through inefficient

5- Yuna Lee, "Residential Water Use Patterns and Conservation Potential," *Urban Water Journal* 14, no. 1 (2017): 54-65.

6- Anil Patek and Ramesh Singh, "Water Efficiency in Agriculture: Challenges and Solutions," *Agricultural Water Management* 28 (2019): 28-35.

processes and outdated technology. Cooling systems, cleaning processes, and production cycles often use more water than necessary. Industrial sectors account for a significant portion of water wastage, with possible savings possible through process optimization and water recycling technologies.

iv. **Leaks in Water Supply Systems**: Water supply systems are often overwhelmed by leakages and infrastructural inefficiencies, leading to considerable water loss. Aging infrastructure, poor care, and lack of investment in upgrades contribute to this issue.

c. **Impact of Water Pollution and Wasting**: The impact of water pollution and degenerative is profound, affecting ecosystems, human health, and economies globally. Environmental degradation, increased health risks from contaminated water sources, and significant economic burdens underscore the urgency for effective mitigation strategies. Addressing these challenges requires comprehensive research and targeted interventions to safeguard water quality and sustainability.

i. *Environmental Impact*: Water pollution and wastage have profound environmental effects. Pollutants can destroy aquatic habitats, reduce biodiversity, and alter ecosystems. Eutrophication, produced by nutrient pollution,

leads to dead zones where aquatic life cannot survive. According to Bassem, the loss of biodiversity due to water pollution is accelerating, with significant implications for ecosystem services and resilience.[7]

ii. *Health Consequences*: The health consequences of water pollution are severe, affecting millions of people globally. Polluted water can lead to diseases such as cholera, dysentery, and other gastrointestinal infections. Moreover, chemical pollutants can cause long-term health issues, including cancer and hormonal disruptions. A comprehensive study by World Health Organization elaborates that insecure water and insufficient sanitation are responsible for numerous health problems, particularly in developing countries, where access to clean water is limited.[8]

iii. *Economic Costs:* The economic costs connected with water pollution and wastage are extensive. These costs include healthcare expenses, loss of productivity due to illness, and the financial burden of cleaning and restoring polluted water

---

7- Samah M. Bassem, "Water Pollution and Aquatic Biodiversity," *Biodiversity International Journal* 4, no. 1 (2020): 10-16, https://doi.org/10.15406/bij.2020.04.00159.

8- World Health Organization. "Water, Sanitation, and Health." *WHO Report*, 2020. Accessed August 1, 2024. https://www.who.int/publications/i/item/9789240033085.

bodies. Additionally, inefficient water use in agriculture and industry can lead to increased operational costs and reduced economic output. A report by the International Water Management Institute (2019) outlines the economic implications of water mismanagement, emphasizing the need for efficient water use and pollution control measures to mitigate these costs.[9]

Seerat Al-Nabi: Principles and Teachings on Water: Prophet Muhammad's (peace be on him) life demonstrated a thoughtful respect for the environment, rooted in the Islamic principle of *Khalifah*, or stewardship. This principle emphasizes humanity's responsibility to act as caretakers of the Earth, ensuring its preservation and sustainable use. As Allah Almighty says, "*Indeed, I will make upon the earth a successive authority"* Furthermore, the concept of *Wasatiyyah*, or balance and moderation underscore the Prophetﷺ's teachings on maintaining equilibrium in all aspects of life, including resource use such as water. Central to Islamic teachings on environmental ethics is the prohibition of *Israf*, a concept deeply embedded in the teachings of Prophet Muhammad ﷺ. Islam condemns excessive consumption and encourages moderation and conservation. This principle is mostly relevant in discussions regarding water conservation, where every drop is considered valuable and must be utilized judiciously. Exactly focusing on water,

[9]- International Water Management Institute, *Economic Impacts of Water Pollution and Wastage*, IWMI Report, 2019, https://www.iwmi.cgiar.org/annual-reports/iwmi-annual-report-2019/.

the Prophet Muhammad (peace be on him) emphasized its importance through his teachings and personal practices. The Prophet (peace be on him) highlighted the significance of water conservation, urging his followers to avoid wasteful practices such as extravagance in *Wudu* (ablution) and during other daily activities. *Taharah* (Cleanliness and purification rituals) in Islam, including the ritual of *wudu*, symbolize physical and spiritual purification, with water playing a central role. The Prophet's (peace be on him) life provides numerous examples of his conscientious use of water, demonstrating practical applications of his teachings. For instance, accounts from *Ahadith*, the Prophet (peace be on him) using minimal water for ablution and encouraging others to do the same, thereby setting a precedent for conservation practices among his followers (Sunan Ibn Majah 420)[10]. To conclude, the principles and teachings derived from the *Sīrah* concerning water underscore Prophet Muhammad's (peace be on him) holistic approach to environmental stewardship, moderation, and conservation. These principles not only reflect ethical values intrinsic to Islamic teachings but also offer practical guidance on sustainable living, resonating deeply with contemporary environmental concerns.

Remedies for Water Pollution and Wasting in the Light of Sīrah: In addressing water pollution and wasting, drawing insights from the Sīrah of Prophet Muhammad (peace be on him) offers profound guidance. His teachings emphasize conservation, cleanliness, and responsible resource management, providing timeless principles for sustainable water use. Implementing these principles can foster

10- Sunan Ibn Majah, https://sunnah.com/ibnmajah:420.

environmental stewardship and mitigate the adverse effects of pollution and wastage.

a. *Adopting sustainable water use practices*: Adopting sustainable water use practices is crucial in addressing the dual challenges of water pollution and wastage. By implementing efficient technologies and promoting responsible behaviors, we can mitigate environmental effects, safeguard public health, and reduce economic burdens associated with water mismanagement.
    a. *Household water conservation methods:* Household water conservation methods can significantly reduce water waste. The Prophet Muhammad (peace be on him) stimulated preservation of water, even in abundance (Ibn-Majah n.d.).[11]
    b. *Efficient agricultural techniques*: Effectual agricultural techniques like drip irrigation and crop rotation can minimize water waste and reduce pollution.[12] The Prophet Muhammad (Peace be on him) emphasized the importance of efficient use of resources, including water.[13]
    c. *Promoting cleanliness and preventing pollution:* Promoting cleanliness and avoiding pollution is vital for protection water resources and public health. Effective strategies peace can alleviate industrial, agricultural, and

11- accessed June 20, 2024, https://sunnah.com/ibnmajah:420

12- FAO, *Water Pollution from Agriculture: A Global Review* (2017), accessed June 20, 2024, https://openknowledge.fao.org/handle/20.500.14283/i7754en.

13- accessed June 20, 2024, https://sunnah.com/bukhari:201

household sources of contamination. By addressing these issues, communities can ensure sustainable water management and protect ecosystems for future generations.

d. *Proper Disposal of Waste:* Proper waste management is important to avoid water pollution. The Prophet Muhammad (peace be on him) emphasized the importance of cleanliness, which includes the appropriate disposal of waste. In a hadith narrated by Jabir ibn Abdullah, the Prophet said, "Beware of the two curses: relieving oneself in shaded places and water sources".[14] This instruction highlights the consequence of possession water causes free from pollution, a principle that extends to modern waste disposal practices.

e. *Encouraging Recycling and Reuse:* Islamic teachings also encourage the efficient use of resources, which includes recycling and reusing materials to minimize waste. The concept of '*Israf*' (wastefulness) is condemned in Islam. The Quran states, "*Indeed, the wasteful are brothers of the devils, and ever has Satan been to his Lord ungrateful*" (Quran 17:27)[15]. This verse underscores the importance of avoiding waste and promotes the sustainable use of resources through recycling and reuse. The practice of reusing items and recycling materials can significantly

14- accessed June 20, 2024, https://sunnah.com/mishkat:355

15- Al-Quran 17:27.

reduce the burden on water systems and prevent pollution.

Education and Awareness Based on Islamic Teachings: Education and awareness are crucial in addressing water pollution and wastage. Islamic teachings provide a robust framework for community education and the involvement of religious leaders and institutions in promoting environmental stewardship.

a. *Community Education Programs:* Community education programs are essential for raising awareness about the importance of protecting water resources. These programs can be designed to teach individuals about the environmental and health effects of water pollution and the Islamic perspective on maintaining cleanliness. Activities might include workshops, seminars, and public campaigns that emphasize the Prophet's teachings on the sanctity of water and the prohibition of pollution. Engaging the community in these educational initiatives can foster a sense of collective responsibility towards preserving water resources.

b. *Role of Religious Leaders and Institutions:* Religious leaders and institutions play a pivotal role in disseminating knowledge and inspiring action among believers. By integrating environmental messages into sermons and religious teachings, imams and scholars can influence the attitudes and behaviors of their congregations. The Prophet Muhammad (peace be on him) said, "The world is sweet and green (alluring); and verily, Allah is making you to succeed each other, generations after generations in it in order to see how you act. So, beware of this

world and beware of women".[16] This hadith can be used by religious leaders to highlight the duty of Muslims to protect the environment, including water resources. Mosques and Islamic centers can also organize and support initiatives such as clean-up drives, tree planting events, and educational workshops. These activities not only raise awareness but also provide practical ways for individuals to contribute to environmental protection. By leveraging the influence of religious leaders and institutions, communities can be motivated to adopt more sustainable practices and reduce water pollution and wastage.

Policy and Governance Inspired by *Sīrah*

a. *Implementing Stricter Pollution Controls*: The life and teachings of Prophet Muhammad (peace be on him), encapsulated in Seerat Al-Nabi, offer profound guidance on environmental stewardship, emphasizing the sanctity of natural resources. One critical area where these teachings can be applied is in the implementation of stricter pollution controls. The Prophet (peace be on him) underscored the importance of cleanliness and the preservation of the environment, which can be translated into modern policy measures to combat water pollution. For instance, the Prophet's teachings promote the avoidance of water contamination, which can be a guiding principle for contemporary regulatory frameworks. Historical accounts from *Sīrah* indicate that the Prophet (peace be on him)

[16]- accessed June 20, 2024, https://sunnah.com/riyadussalihin:458

prohibited the contamination of water sources, a directive that can inform the development of stringent regulations against industrial discharge, agricultural runoff, and improper waste disposal into water bodies. By institutionalizing these ethical principles, governments can enforce stricter pollution controls, ensuring that water bodies remain clean and safe for all forms of life.

b. *Incentives for Sustainable Practices*: Seerat Al-Nabi also highlights the Prophet's (peace be on him) encouragement of sustainable and ethical practices, which can be leveraged to design incentive structures for modern environmental conservation efforts. The Prophet (peace be on him) promoted frugality, the prevention of wastage, and the responsible use of resources, principles that align closely with contemporary sustainability goals. Governments and organizations can draw inspiration from these teachings to develop incentives that encourage sustainable water use and conservation. These incentives would not only align with the ethical directives of the Prophet (peace be on him) but also foster a culture of sustainability and environmental responsibility within society.

Case Studies and Examples from Sīrah: The life of the Prophet Muhammad (peace be on him) is replete with examples that underscore the importance of water conservation. One notable incident is the Prophet's guidance on the usage of water during ablution. Despite the availability of water, the Prophet (peace be on him) advocated for its minimal use. It was narrated from '*Abdullah bin 'Amr* that: The Messenger of Allah passed by Sa'd when he was

performing ablution, and he said: 'What is this extravagance?' He said: 'Can there be any extravagance in ablution?' He said: 'Yes, even if you are on the bank of a flowing river.' (Sunan Ibn Majah 425)[17]

Challenges in Implementing Sīrah Based Remedies

a. **Socio-economic Barriers**: Socio-economic factors play a significant role in the implementation of any environmental policy, including those inspired by Sīrah. The economic disparities in many Muslim-majority countries often hinder the adoption of sustainable practices. Poorer communities may lack the resources or infrastructure to implement water conservation measures, and their immediate needs for survival can outweigh longer-term environmental concerns.
b. **Cultural Resistance:** Cultural beliefs and practices can sometimes conflict with new environmental initiatives. Traditional practices and a resistance to change can impede the adoption of water conservation measures.
c. **Lack of Awareness**: Awareness about the environmental teachings of *Sīrah* is often limited. Many Muslims may not be aware of how the principles laid out in the *Sīrah* can be applied to modern environmental issues like water pollution and waste. Educational systems in many Muslim-majority countries do not integrate these teachings into their curricula.
d. **Opportunities for Change**
    a. *Integration of Religious Teachings in Environmental Education:* There is a significant opportunity to integrate the environmental teachings of *Sīrah* into educational

[17]- accessed June 20, 2024, https://sunnah.com/ibnmajah:425

curricula at all levels. By doing so, a foundation of environmental stewardship can be built from a young age, fostering a generation that is more conscious of their environmental responsibilities as taught by their faith.

b. *Collaboration with Islamic Organizations*Islamic organizations have a wide-reaching influence and can play a pivotal role in promoting environmental sustainability. Collaborating with these organizations can help spread awareness and encourage the adoption of water conservation practices inspired by *Sīrah*. These organizations can leverage their networks to implement community-based programs effectively.

c. *Potential for Policy Influence*: The principles of *Sīrah* can inform policy-making processes. By highlighting the importance of water conservation and waste management in Islamic teachings, policymakers can develop more effective and culturally relevant policies. These policies can encourage sustainable.

Conclusion: The exploration of water pollution and wastage through the lens of *Sīrah* offers a profound and culturally resonant framework for addressing contemporary environmental challenges. The teachings of Prophet Muhammad (peace be on him) emphasize the sanctity of water, advocating for its conservation and judicious use. Empirical evidence supports that when religious and cultural values are aligned with environmental initiatives, there is a higher likelihood of community acceptance and participation. For instance, integrating

Sīrah -based environmental ethics into the educational curriculum can foster a deeper understanding and commitment to sustainable water practices from a young age. Furthermore, the influential role of Islamic organizations can be harnessed to promote water conservation and reduce wastage at the grassroots level, ensuring broader community engagement. Policymakers are encouraged to draw upon the rich environmental ethics within Islamic teachings to develop culturally relevant and effective policies. This approach not only addresses the technical aspects of water management but also resonates with the spiritual and ethical dimensions important to many communities. Ultimately, leveraging the principles of *Sīrah* provides a holistic and integrative strategy to combat water pollution and wastage, fostering a sustainable and equitable future. By acknowledging and addressing the challenges while capitalizing on the opportunities, the teachings of *Sīrah* can be pivotal in shaping a sustainable environmental ethic within Muslim-majority societies. Future research should continue to explore and expand upon these integrative approaches, ensuring that the environmental stewardship inspired by *Sīrah* becomes a tangible reality in the fight against water pollution and wastage.

Bibliography

1. The Qur'an
2. Abu Dawood, Sulyman bin Ashash Sajastani (275H) , *Al Sunan* Beruit Labnon: Darul Fikar 1414H.
3. Abu Abdullah Muhammad bin Yazeed ibn Maja Qazwini, *Al-Sunan* : Darul taseel, (Arabi 1435 H).
4. Abu Abdullah Muhammad bin Ismail al bukhari, *Sahih ul bukhari*,(Damascuss: dar ul yamama,1414H)
5. Afzaal, Muhammad, Saman Hameed, and Iram Liaqat. *Heavy Metals Contamination in Water, Sediments, and Fish of Freshwater.* Water Practice and Technology, 2022. https://doi.org/10.2166/wpt.2022.039.
6. Bassem, Samah M. 2020. "Water Pollution and Aquatic Biodiversity." *Biodiversity International Journal* 4, no. 1: 10-16. https://doi.org/10.15406/bij.2020.04.00159.
7. Brown, Emily. *Impact of Household Wastewater on Water Quality.* Water Research, 2021.
8. Food and Agriculture Organization of the United Nations. *Water Pollution from Agriculture: A Global Review*. Rome: FAO, 2017.
9. International Water Management Institute. 2019. *Economic Impacts of Water Pollution and Wastage*. IWMI Report. Accessed August 1, 2024. https://www.iwmi.cgiar.org/annual-reports/iwmi-annual-report-2019/.
10. Lee, Yuna. 2017. "Residential Water Use Patterns and Conservation Potential." *Urban Water Journal* 14, no. 1: 54-65.
11. Metaxoglou, Konstantinos, and Aaron Smith. 2022. "Nutrient Pollution and U.S. Agriculture: Causal Effects, Integrated Assessment, and Implications." Working Paper no. 30124. National Bureau of Economic Research. Accessed June 10, 2024.https://www.nber.org/system/files/working_papers/w30124/w30124.pdf.
12. Patek, Anil, and Ramesh Singh. 2019. "Water Efficiency in Agriculture: Challenges and Solutions." *Agricultural Water Management* 28: 28-35.
13. Sunan Ibn Majah, https://sunnah.com/ibnmajah:420.
14. Thushari, G. G. N. 2020. "Plastic Pollution in the Marine Environment." *Heliyon* 6, no. 10 (2020): e04709. Accessed April 12, 2024. https://doi.org/10.1016/j.heliyon.2020.e04709.

15. World Health Organization. 2020. *Water, Sanitation, and Health*. WHO Report.