be addressed from an Islamic perspective. The distinction between public and private water and its implications for water pricing must be explained to the public.

To operationalize IWM principles, a consultative council for sustainable water management and law reform is recommended. This council should be represented by scholars in both science and religion to ensure interdisciplinary learning and help to promote innovation (ijithad). One major task of this council would be to formulate both national and international Islamic water policy. Evaluations of the performance of this council, as well as new rulings (fatwa) as they appear, should be accessible to the public.

Notes

1. 21:30.
2. 67:30.
3. 42:38.

REFERENCES


The purpose of this chapter is to describe the Islamic perspective on natural resource management, with a particular focus on water. Although elements of culture or religion are typically absent from the writings of most academics on natural resource and environmental issues, one culture-aware author states that the word “environment” includes the “biological, physiological, economic and cultural aspects, all linked in the same constantly changing ecological fabric” (de Castro, quoted by Vidart 1978, 471). The cultural values of humans affect the way the natural environment and resources are perceived, used, and managed. Water management principles that heed the local religious context are likely to be more effective than imported, foreign ones. Furthermore, in Muslim countries, developing water management principles that are informed by the teachings of Islam may act as a framework for managing other natural resources. Thus Muslims and non-Muslims need to explore Islam’s perspectives on the natural environment in which water resources are recognized as playing a pivotal role. Islamic teachings contain fertile ground for developing water management principles. If applied, perhaps in conjunction with other water management policies in culturally and demographically heterogeneous areas, these principles could find wider acceptance than non-native ones. Such principles would be encouraged by the “penalty and reward” system that is detailed in the Quran and hadith.
Rights of the environment

The ultimate objective of life for a Muslim is salvation (Ansari 1994, 397). An Arabic dictionary defines “Islam” as “abiding by obligations and (avoiding) the forbidden without repining.” Sulam, the Arabic root of the word “Islam,” means “peace and harmony” (Al Munjid 1994, 347). Ansari (1994, 394), therefore, argues that an “Islamic way of life entails living in peace and harmony” at individual and social as well as ecological levels.

Human-environment interactions exist within dynamic cultural, spatial, and temporal contexts. Given this, it is critical that water management strategies should incorporate elements of local cultures and religions. There are numerous references to water and related phenomena in the Quran. For example, the word “water” (ma’) occurs sixty-three times and “river” or “rivers” fifty-two times (Abdul Baqi 1987). Other words such as “fountains,” “springs,” “rain,” “hail,” “clouds,” and “wind” occur less frequently. Paradise, which, Muslim believe, is the eternal home of believers and those who do righteous deeds, is often depicted in the Quran as having, among other desirable services and objects, running rivers. Furthermore, perhaps the most quoted verse of the Quran is “And We created from water every living thing.” It testifies to the centrality of water to life in the ecosystem as a whole, and as the unifying common medium among all species. Given Islam’s recognition of water’s pivotal importance, a management instrument that broadens traditional (for example, economic) water management approaches to include non-traditional, cultural and spiritual approaches is more likely to succeed in the Muslim world.

In Islam, human-environment interactions are guided by the notion of the person as a khalifa, meaning a viceroy or steward of the earth. The philosopher of religion Ali Shariati (d. 1977) argued that the spiritual as well as the material dimensions of humans are both “directed toward the singular human purpose of khalifa (viceregency)” (Sonn 1995). Khalid (1996, 20) states that although “we (humans) are equal partners with everything else in the natural world we have added responsibilities. We are decidedly not its lords and masters” but its friends and guardians. One interpretation of khalifa is given by Ibn Katheer (1993, 1.75–76). He argues that the khalifa should be an adult Muslim male who is just, religiously learned (mu’tahid), and knowledgeable in warfare. He ought to establish the thresholds of human conduct as mandated by God, as well as justice and peace among the people. He ought to stand by the oppressed and forbid iniquity and despoiling (jawwahili). Some of the skills of a khalifa that were essential fourteen hundred years ago, when Muslims were under constant threat of attack, are less relevant today—such as knowledge of warfare.

It is impermissible in Islam to abuse one’s rights as khalifa, because the notion of acting in “good faith” underpins Islamic law. The planet was inherited by all humankind and “all its posterity from generation to generation... Each generation is only the trustee. No one generation has the right to pollute the planet or consume its natural resources in a manner that leaves for posterity only a polluted planet or one seriously denuded of its resources” (Weeramantry 1988, 61). In other contexts, the concept of khalifa refers to the fact that waves of humanity will continuously succeed each other and inherit planet earth.

The Quran enjoins believers to “Make not mischief on the earth” and declares that “Mischief has appeared on land and sea because of (the meed) that the hands of men have earned, that (God) may give them a taste of some of their deeds: in order that they may turn back (from evil).” When human-produced “mischief” — a rough translation (Yusuf Ali 1977) of the Arabic word fassad — spoils the natural order, God penalizes people with the same type of affliction that they have inflicted on His creation. The other meanings of fassad include taking something unjustifiably and unfairly (Al Munjid 1994) or spoiling or degrading (natural) resources. Tabatabai (1973, 196) views fassad as “Anything that spoils the proper functioning of current (natural) regulations of the terrestrial world regardless of whether it was based on the choice of certain people or not... Fassad creates imbalance in the pleasant living of humans.” The verses that succeed the passage on fassad refer to earth and wind, and to rewards from “God’s bounty” for those “who believe (in God) and work righteous deeds.” The notion of fassad is not associated with any specific time and place, and is thus universal and everlasting in scope. Fassad is mentioned in the context of “land and sea.” It is, however, reasonable to assume that this notion also encompasses all other components of the ecosystem because the Quran states that to God, the creator of everything, belong the heavens and the earth and whatever is between them and what is beneath the ground. Islamic teachings, including the Quran, therefore, command Muslims to avoid and prevent fassad, which encompasses undue exploitation or degradation of environmental resources, including water. This perspective is especially revealing in light of the Islamic belief that the natural world is subservient to the human world. Humans are consequently permitted to use and transform the natural environment, with which they are entrusted, to serve their survival needs. For example, God states that humans may use His (good) resources for their sustenance on the condition that they “commit no excess (la tatghou) therein, lest My wrath should justly descend on you.”
God’s “green light” to use water and other resources is conditional on humans’ wise and sparing use of it. They ought to employ it to sustain their biological needs. Current users of water and other environmental resources must avoid irreversible damage so that the resources can serve humanity’s current and future needs. Muslims are, therefore, permitted to control and manage nature but not to cruelly conquer God’s creation.

Being mindful of the needs of current and future generations is an important aspect of piety in Islam. In the words of the hadith, “Act in your life as though you are living forever and act for the Hereafter as if you are dying tomorrow” (quoted in Ziizl Deen 1990, 194). The hadith asks people, in effect, to work for and think of future generations as if they were alive and using these very resources. Just as one would not undermine one’s own future, a person ought not rob future generations of their needs.

Muslims are enjoined to “Violate not the sanctity of the symbols of God” and to fulfill all of their obligations to Him. In many verses, water and the rest of creation are described as “signs.” Different verses in the Quran state that these signs are for people who think, hear, see, and have sense, and are intended for the people to give thanks to the Giver. Therefore, one should naturally avoid violating or undermining these divine signs.

Although people are entrusted with caring for the natural world, God states in the Quran that many violate the admittedly heavy burden of trust. In light of this, Islamic teachings state that if one generation of people is “cheated” by preceding ones, it must not cheat succeeding generations. The Prophet said: “Pay the deposit to him who deposited it with you, and do not betray him who betrayed you.” A Muslim is instructed to correct environmental failures by abstaining from behaviours that waste or pollute water.

Muslims who engage in fassad are effectively sinners. Their environmentally disrupting conduct amounts to breaking “God’s covenant after it is ratified.” A covenant was “entered into with ‘Father Abraham’ that in return for God’s favours the seed of Abraham would serve God faithfully.” At another level, a “similar covenant is metaphorically entered into by every creature of God: for God’s loving care, we at least owe Him the fullest gratitude and willing obedience” (Yusuf Ali 1977, n. 45). Therefore, by knowingly violating the teachings of God, one is in effect resisting His grace and sustenance for which one is penalized by, among other things, God withholding his bounty from that person.

The Islamic perspective on the natural environment is holistic. Everything is seen as important, and as interdependent on everything else. God has “sent down rain from the heavens; and brought forth therewith fruits for your sustenance.” All environmental media have rights, including a right to water. The Quran, for example, states that “There is not an animal (that lives) on the earth, nor a being that flies on its wings, but (forms part of) communities like you.” It also mentions that “vegetation of all kinds” and of “various colours” are nourished by rainwater that God sends down. Water is made available by God in “order that all life receives its support according to its needs” (Yusuf Ali 1977, n. 3107 – emphasis added), including humans, animals, and plants. This points to, among other things, the rights of non-human species to sufficient water that is of “good” quality because the water has to be suitable for irrigation and drinking.

Rewards and penalties of Islamic water management

God rewards Muslims who help animals and penalizes those who hurt them (Li Ibn Kadamah 1992; Wescoat 1995). Muslims believe that good deeds annul bad ones and that bad deeds annul good ones. The degree of rewards or penalties for deeds depends upon one’s intentions. The Prophet said that “He who amongst you sees something abominable should modify it with the help of his hand; and if he has not strength enough to do it, then he should do it with his tongue; and if he has not strength enough to do it, (even) then he should (abhor it) from his heart.”

Similarly, a key directive to and mission for every Muslim is captured in the following Quranic verse, which is repeated in many prayers of Muslims: God “forbids all shameful deeds, and injustice and rebellion” (fahamsha, munkar, and baghi) against His “law or our own conscience” (Yusuf Ali 1977, n. 2127). “Injustice” can be also understood to include wickedness. Therefore, pollution and wastefulness of natural resources are prohibited because they are unjust in the way they that jeopardize current and future generations’ ability to meet their own needs.

Water resources are promised to Muslims who piously abide by the commandments given to them by the Owner of the heavens and earth. Those who follow the straight path as charted by God’s message will not “fall into misery (shaqa),” nor “shall they grieve.” The Quran defines the absence of “misery” (shaqa) as people having enough provisions “for thee not to go hungry nor to go naked. Nor to suffer from thirst, nor from sun’s heat.” The notion of shaqa refers to penalties in this life (not in the hereafter), which in turn ought to give Muslims a greater incentive to avoid environmental wickedness. It ought to galvanize Muslims to follow the teachings of their faith in terms of use and management of water resources.

God will provide for pious, practising Muslims abundant water to
"test them" in their sustenance and resources (Tabatabai 1974, 20:46). God states that if only humans would have faith and fear Him, "We should indeed have opened out (fattahun) to them all kinds of blessings from heaven and earth." God also reminds Muslims that it is He who is in control of rain and the one who sends it down. In another chapter, God asks the people the following rhetorical question: Who will bring you flowing surface water if your current supplies become scarce (na-thubet)? (Tabatabai 1974, 19:365.) Numerous verses and hadiths remind Muslims that the resources that they consume daily are ultimately controlled by their Creator. This is reflected in the way that most Muslims commonly use phrases such as "God willing." God’s will is a necessary prerequisite for humans and other species to have sufficient water and other resources. Short of this, the "natural" renewability of water is thrown into question. God’s will can be humbly appealed to by applying His teachings and message.

The reward and penalty system is designed to induce far more good deeds than bad ones. For example, a "bad deed" counts as one "against" a person who is rewarded ten times to seven hundred times for each righteous deed. Unbelievers are described as having profitlessly "bartered guidance for error" and thus having "lost the true direction" (huda). Consequently, only by "living" or applying the teachings of Islam, including its environmental ethic, can people expect replenishment of their diminishing water supplies. This perhaps explains why, when struck by a natural (or human-induced) calamity, many Muslims commonly attribute it to impiety at the individual or societal levels.

The notion of sustenance (rizq) occurs frequently in the Quran. It refers to all that is necessary to sustain and develop life in all its phases, spiritual and mental, as well as physical. (Yusuf Ali 1977, n. 2105.) God is believed to be the source of all our sustenance (ibid., n. 5579). Muslims are commanded to reject all rival gods who, according to Yusuf Ali, include idols, poetry, art, science, and pride in wealth (ibid., n. 41). A Muslim should not overvalue the material nor the technological dimensions ("gods") of our modern life because they would distract one from glorifying and worshipping God.

Muslims believe that the faithful who fear God (itaqi) follow His guidance, avoid personal temptations (al-hawa), do righteous deeds, and avoid evil ones will be rewarded by Him. Good deeds must be within the socio-economic and physical capacity of a Muslim to perform and must be performed on a regular basis. Thus, faithful Muslims will not fall into misery or grief, nor fear for their future. They will be sustained from unexpected sources and admitted to gardens with flowing rivers. Muslims who were once misguided or violated the signs and teachings of God may elect to repent in a genuine way by abiding by the divine instructions. Those who are genuine in their religious belief (akhlasu) will be granted rewards of "immense value." In the preceding section, it was shown that, according to Islam, God, the owner of the natural world, is also its supreme manager who entrusted humans with its stewardship. God will unlock water and other resources for those who abide by His revelations to the Prophet Muhammad. Generally speaking, God rewards the faithful in spiritual or physical ways, and the rewards may take place in this life or in the afterlife. In this life, the rewards include a worry-free existence, and a greater level of water and other resources for sustenance.

Islamic water management institutions

Islam’s overall environmental message is one of balance: people should avoid excessive accumulation of material wealth and pride in worldly accomplishments because these sidetrack believers to irreligious temptations, thus disrupting the flow of sustenance. But Islam recognizes the fullibility of humans and their weakness in the face of temptations. It was for this reason that the institution of the hisba, the office of public supervision, was created. Throughout much of Islam’s history, the hisba encompassed both moral issues as well as those touching more widely on everyday life. Today, the moral aspect of the hisba no longer exists, except in a few countries such as Saudi Arabia, Iran, and Sudan.

The ethical underpinning of the hisba is the Quran’s instruction about “enjoining what is right, and forbidding what is wrong,” and the sharia principle of “no injury.” The officer in charge of the hisba is called the muhtasib, and his duty, among other things, is to ensure the proper conduct of people in their public activities, including those involving resources and non-human species. For example, a muhtasib is expected to prevent the abuse of animals, protect and manage public land reserves, and regulate water uses (Hamed 1993, 155). According to the great jurist Ibn Taymiah, the most important qualifications of the muhtasib are expertise in the subject matter, kindness, and patience. Throughout the Muslim world, the hisba should be resurrected and entrusted with the implementation of fair and just water management practices.

Conclusion

The teachings of Islam that advocate wise use of water resources to meet humans’ need to sustain themselves can be summarized in the notion of demand management. People, according to Islam, may control nature
and consume its resources, but may not cruelly conquer it in such a way as to irreversibly degrade God's creation. Given that a water management strategy that incorporates elements of the "cultural landscape is likely to have a strong impact on the interior landscape" (Orr 1996, 228), policy-makers can tap into Muslims' religiosity and desire for salvation to design and implement an Islamically inspired water management strategy. For Muslims, salvation can be achieved only through applying Islam's teachings and sharia, which are clearly water-friendly.

Principles of Islamic water management may be used alone or, as was done in Jordan in the early 1990s, in combination with non-religious slogans on various posters in an effort to induce Jordanians to conserve the kingdom's scarce water resources. Likewise, effective Islamically grounded water policy can be drafted to reflect alternative, non-traditional world views and value systems. Furthermore, sustainable management of water resources in Islamic countries is more likely to be realized if the management instruments incorporate a host of alternative incentives such as religious, spiritual, and resource-based rewards. Culturally sensitive demand management strategies require a deliberate effort of water education about the positive link between Islam and water conservation.

It would be spiritually rewarding at the individual level, and socially and environmentally beneficial at the community or country levels, to educate students in a way that is consistent with their culture and belief system. Hence, Islamic water management principles, when sufficiently developed, should be moved from the academic or religious level to the popular level. The totality of Islamic water management principles, including their educational dimension, ought to change the way Muslims live their lives. God "tests" Muslims by the manner in which they use water (and other) resources. The test is about whether they are "living" their religion by following its principles of conserving water and protecting its quality. Those who do will be rewarded by God with His blessings as well as with increased resources. Disobedient Muslims have opportunities to repent and mend their ways, or will be penalized in this life and the afterlife.

The world cannot be partitioned into "inside" and "outside" spheres, where the natural environment and water resources are the "outside." Humans are embedded in nature and should act as its stewards not its conquerors. Many states in the Muslim world are experiencing serious threats to their water resources: some suffer from drought, and others from floods, poor water quality, and so on. If these threats are not attended to within a culturally meaningful framework, they may spiral into social tensions and, potentially, into violent conflict. The Islamic rules for human-environment relations and the rewards and penalties attached to them are consistent with the very definition of the word "environment,"

which suggests the active encompassing of the natural, human, and cultural spheres, and some level of reciprocity. In other words, as the Quran and hadith teach Muslims, the environment is not a static phenomenon that can be impacted without consequences.

Notes

1. 4:57.
2. For example, 4:73, 5:119, 47:12.
3. 21:30.
4. 2:31.
5. 30:41.
6. 30:42-46.
7. 30:41.
8. 252.
9. 20:6; see also 30:26.
10. 20:81.
11. 53.
12. 51.
13. See, e.g., 16:65, 41:39, for symbols of "the presence and might" of the Creator: 20-27 has a listing of various nature-based signs of God.
15. 2:27.
16. 2:22.
17. 6:38.
18. 6:99 (emphasis added).
19. 35:27.
23. Muslim 79.
24. 16:90.
25. 20:123.
26. 2:38.
27. 2:118-19.
28. 7:96, 72:15.
29. 7:15.
30. 7:96.
31. 50:9.
32. 67:51.
34. 2:16.
36. Al-Bukhari 1.41.
37. 18:46; Al-Bukhari 1.41.
38. 65:3.
39. 2:38, 4:37, 47:12, 65:3.
40. 4:146.
41. 3:104.
Water conservation is a complex interconnecting system with a variety of aspects—from consumer education to advanced technological equipment. All these aspects must be considered in relation to their economic, social, religious, political, legal, and aesthetic contexts (Khan and Abdul Razzaq 1986; Abdul Razzaq and Khan 1990). Water conservation must be seen as a basic component of integrated water resources management, and public awareness and education are basic tools needed to guarantee the participation and involvement of the public in water conservation (WMO 1992; UN 1993a, b). This is of particular importance in the World Health Organization (WHO) Eastern Mediterranean Region (EMR) which comprises twenty-three countries, most of them situated in arid or semi-arid zones with low annual rainfall, and with a combined population of about 436 million, most of them Muslims. Hence, the aim of this chapter is to outline the importance in the EMR of using the Islamic administration, education system, and teachings in water conservation, especially in increasing and improving the participation and awareness of the public in conserving water.

Water conservation from an Islamic perspective

It has been shown over the last 10 years that campaigning for the conservation of the environment within the Islamic faith is productive, and
Water management in Islam

Edited by Nasser I. Faruqui, Asit K. Biswas, and Murad J. Bino

United Nations University Press
TOKYO • NEW YORK • PARIS

International Development Research Centre

Dr. Ralph Daley
Director, UNU/INWEH
Hamilton, Ontario, Canada

Dr. David Seckler
Director-General, International Water Management Institute
Colombo, Sri Lanka

Dr. Ismail Serageeddin
Vice President, Special Programs, The World Bank
Washington, D.C., USA

Dr. Aly M. Shady
Canadian International Development Agency (CIDA)
Hull, Quebec, Canada

Prof. Yutaka Takahasi
Professor Emeritus, Tokyo University
Tokyo, Japan

Dr. Jose Galicia Tundisi
International Institute of Ecology
São Carlos SP, Brazil

International Advisory Board

Dr. Mahmoud A. Abu-Zaid
Minister of Public Works and Water Resources
Giza, Egypt

Dr. Benedetto P. F. Braga
Professor of Civil Engineering, Colorado State University, Fort Collins, USA

The UNU Programme on Integrated Basin Management focuses on water management, approaching the complex problematic from three particular angles: governance, capacity-building, and management tools. The programme is carried out through field-based research encompassing both natural and social sciences. It utilizes extensive networks of scholars and institutions in both developing and industrialized countries. This work is intended to contribute to policy-making by the United Nations and the international community, as well as to capacity-building in developing countries.

The Water Resources Management and Policy series disseminates the results of research carried out under the Programme on Integrated Basin Management and related activities. The series focuses on policy-relevant topics of wide interest to scholars, practitioners, and policy-makers.

Earlier books in this series are:
Hydropolitics Along the Jordan River: Scarce Water and Its Impact on the Arab-Israeli Conflict by Aaron T. Wolf
Managing Water for Peace in the Middle East: Alternative Strategies by Masahiro Murakami
Freshwater Resources in Arid Lands edited by Juha I. Uitto and Jutta Schneider
Central Eurasian Water Crisis: Caspian, Aral, and Dead Seas edited by Iwao Kobori and Michael H. Giants
Latin American River Basins: Amazon, Plate, and São Francisco edited by Asit K. Biswas, Newton V. Cordiero, Benedetto P. F. Braga, and Cecilia Tortajada