

Chapter 6

Muslim Peoples and the Challenges of Water Security: A Socio-Anthropological Analysis



Abdel-Samad M. Ali and Chedli B. Chatti

Abstract The philosophy of Islam related to water is based on two main principles: public and collective ownership of water and its rational use. Humans can use Islam as a guide and a code of conduct when it comes to resource management. From the Islamic perspective, people are considered as trustees, with the task of ensuring that all resources, including water, are used in a reasonable, equitable, and sustainable manner. Refraining from monopolizing, wasting, or contaminating water in Islam is more than just a matter of being wise, civilized, or acting responsibly as a citizen – it is an act of devotion. This complies with all of the Dublin Statement’s principles in spirit. Freshwater supplies are sensitive and crucial for all areas of existence, according to Islamic thinking. At all levels, participatory approaches to water management should be improved. Women play an important role in water conservation and awareness, and their role in water education should be reinforced through both formal and informal channels. It is necessary to conduct research on the reform of the sphere of women’s position in society. Women’s participation in water users associations and other NGOs must be encouraged.

Keywords Climate change · Integrated water management · Islamic culture · Water security

6.1 Introduction

Religion is the source of many value systems. Recognizing the importance of religion can help us better understand how individuals and groups make decisions, regardless of our own beliefs or attitudes toward religion in general or a specific religion (Rokeach, 1969; Roccas, 2005). Understanding Islam’s real or potential role in water resource management is crucial because it is the religion of nearly one-fifth

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of the world's population and the official faith of several countries, many of which have water as a key scarce component for development.

Influenced by (a) the sounded alarm of the United Nations regarding the water crisis that the world may encounter in the foreseeable future, (b) the urgent need for effective programs to improve the efficiency of water use, and (c) the search for alternatives with authentic cultural roots, this chapter tracks the water knowledge and practices of Muslim-majority countries. Through an anthropological extrapolation accompanied by a sociological analysis of those knowledge and practices currently prevailing as well as the experiences lived by these peoples, this piece of research attempts to add to the global stock of knowledge lessons that can be employed for the efficient management of water, especially in light of climate change that the planet is witnessing.

The Muslim-majority areas suffer the most from water deprivations now and are expected to suffer more in the future than others do (Faruqui et al., 2001; Châtel, 2007; Klarsfeld et al., 2021). Many studies indicate that this problem may be attributed to environmental causes (water scarcity) or anthropogenic ones (water management practices). There is almost unanimity on the existence of a clear contradiction between Muslims' practices and behaviors related to water on one hand and the value system defined by Islamic culture on the other hand. "We produced every living creature from water," says the Qur'an (21:30). This striking verse from the Qur'an encapsulates the significance of water in Islam. Nevertheless, the way water is currently managed in Muslim societies remains in question. While a variety of social, cultural, economic, and political variables influence the practices and policies of water management, not all of which are related to religious value systems, the similarities between Islamic ideals and those presently emphasized, such as the Dublin principles, are worth mentioning. However, this chapter sheds some light on the following research objectives:

- Getting acquainted with the Islamic value system relevant to water.
- Determining the current reality of water use in Muslim-majority countries.
- Determining the gap between Islamic concept and international statements in the management of water resources.
- Presenting practical proposals to confront the expected water crisis based on authentic practices as well as a value system rooted in the Islamic culture around water.

6.2 Methodology and Conceptual Framework

Employed is the traditional narration approach through searching several databases and search engines during time series for what is documented in Arabic, English, and French. Adopted in this chapter is the theory of deep ecology by Arne Naess (1973), which argues that the solution to environmental problems, including the water problem, mainly passes through the promotion of resource-conserving values to avoid behaviors that are harmful to them (Næss, 2005).

6.3 Results and Discussions

6.3.1 *Water-Centered Life in Islam: A Very Brief Reading*

Summing up the importance of water in Islam is the concise statement in the Qur'an "We made every living thing from water" (The Qur'an, 21:30). The Qur'an distinguishes between two types of water when discussing one of the world's most valuable resources, freshwater and seawater, stating that "one is palatable and sweet, the other is salty and bitter" (The Qur'an, 35:12). The word "water" appears in the Qur'an over 60 times, "rivers" over 50, and "the sea" over 40, while "fountains," "springs," "rain," "hail," "clouds," and "winds" appear less frequently (Haleem & Haleem, 2010).

Humans are completely reliant on God's gift. Water-related sentences typically begin with "It is God...It is He Who. . .," reminding mankind that God, not humans, is the source of freshwater (Oestigaard, 2005). However, since the Qur'an is not a scholarly work, when it comes to the subject of "water," it doesn't present it as a separate chapter, but rather weaves it into the fabric of beliefs, practices, and advice, giving it depth and presenting it as part of God's power, grace, and direction.

6.3.2 *Outlines for the Rational Use of Water in Islam*

6.3.2.1 *Islam's Perception of the Absence or Scarcity of Water*

Water is regarded not only as a necessary and beneficial element but also as one of great significance, having far-reaching implications in the lives of individual Muslims as well as in Islamic society and civilization. When humans combine the water world of daily life into society and religion, the lack of water is often more essential than the presence of water. The Qur'an originated in a dry, desert environment (Fig. 6.1). As a result, the ecology of Islam's high religion is adapted to deserts and the lack of water.

The Qur'an teaches humanity how to use water in practical ways. Because God "created everything alive from water" and because He "brought down freshwater from the sky out of His kindness and mercy and gave it lodging in the land," this crucial resource should not be monopolized by the powerful and privileged and kept out of the hands of the poor.

In general, Muslim jurists acknowledge man's essential need for water. According to legend, the second Caliph Umar Ibn Al-Khattab forced some water owners to pay the *diya* (blood money) for a man who died of thirst after they ignored his plea for water. Aside from the prohibition on water monopolies, there is also a prohibition on excessive and inefficient water use. The Qur'an serves as a reminder to readers that water resources are finite:



Fig. 6.1 The emergence of Islam in a dry desert environment

We sent down water from the sky in due measure and lodged it in the earth. (The Qur'an, 23: 18)

The Qur'an's references to water distribution among human beings, such as "Tell them that water is to be divided amongst them" (The Quran, 54:28), constitute the foundation for legal reasoning in Islamic law. "People are co-owners in three things: water, fire, and pasture," the Prophet declared, and "God does not look with favor upon three sorts of people." One of them is "a man who has surplus water near a trail and refuses to let a wayfarer use it." "Excessive water usage is forbidden, even if the user has the resources of a whole river at his disposal," the Prophet said in an attempt to teach his people how to use water responsibly. It is strongly recommended that such valuable resources not be wasted: "Do not squander [your wealth] wastefully: those who squander are Satan's siblings."

6.3.2.2 How Does Islam Deal with Water Pollution?

The effects of a desert environment on cognition and imagination are distinctive. The less water there is, the more reliant on reliable and clean water sources one becomes. As a result, water control in desert water worlds plays a structural role in all aspects of social life. Polluting rivers and oceans is corruption since it contradicts the Qur'an's declared tasks and objectives for them: "Corruption has appeared on land and sea as a result of people's actions" (The Quran, 30:41).

Pollution of water is prohibited. Out of His grace, God sent it down from the sky "pure," "for you," "to cleanse you with it" (The Quran, 25:47; 8:11), to give drink to animals and humans in great numbers (25:49). Thus, in Islamic law, it is forbidden to contaminate water. Pollution that harms plant, animal, or marine life throws off the balance equation and is a long way from "giving appreciation" for the gift of water. Figure 6.2 shows the garbage dumped in the Nile River in Egypt. Refraining from



Fig. 6.2 Garbage dumped in Nile River in Egypt

this kind of wasting or contaminating water in Islam is more than just a matter of being wise, civilized, or acting responsibly as a citizen – it is an act of devotion in and of itself.

6.3.2.3 Women’s Roles in Islamic Water Management (IWM)

Both men and women play an important part in making the world a habitable place in an Islamic community. They serve as God’s earthly representatives. Women in Islam have significant roles as water providers and consumers. Women’s roles as care-takers of the living environment are thoroughly documented in Islam (Saniotis, 2012; Haq et al., 2020; Islam et al., 2022). Women were traditionally responsible for bringing water from springs and wells.

An excellent example of the role of women in Islam in water development that demonstrates how women can show leadership and take social responsibility is Ain Zubaydah. The historical Ain Zubaydah is the most important and oldest water network in Makkah Al-Mukarramah for centuries (Fig. 6.3). It has provided pilgrims, visitors, and the people of Makkah with water for more than 1200 years. The historical fact says that Ain Zubaydah was commissioned by Zubaydah, the wife of the Abbasid Caliph Harun al-Rashid. Ain Zubaydah is a canal of water that was cut in 808 AD, from Wadi Numan, east of Mecca, to Mount Arafat, to water the pilgrims, and residents, after Zubaydah touched the fatigue and effort faced by pilgrims at that time, as a result of water scarcity. The length of the channel is 26 km, and it includes two parts, the first of which is visible (under the surface of the earth) with a length of 16.35 km, and the other is visible above the surface of the earth with a length of 9.47 km.



Fig. 6.3 Ain Zubaydah: an unprecedented project to transfer and distribute water in Makkah Al-Mukarramah

6.3.3 The Demographic Composition of Muslims

Islam's adherents make up the world's second largest religious community. Islam has 1.98 billion members, or roughly 24.9% of the world's population, according to the Pew Research Center (Klarsfeld et al., 2021). In various sub-regions, including Central Asia, West Asia, North Africa, the Sahel, and the Middle East, Islam is the majority religion. The Asia Pacific region has the world's largest Muslim population, substantially outnumbering the Middle East and North Africa combined. Figure 6.4 demonstrates the distribution of Muslim population by country.

By the middle of the twenty-first century, if current demographic trends continue, Islam will have nearly caught up. Between 2010 and 2050, the global population is predicted to expand by 35% to 9.3 billion people (Fig. 6.5). Muslims, a relatively young community with high birth rates, are expected to grow by 73% within the same time span. The number of Christians is expected to grow at a similar rate (35%) as the global population. As a result, according to Pew Research forecasts, by 2050, Muslims (2.8 billion or 30% of the population) and Christians (2.9 billion or 31%) will be nearly equal in number, possibly for the first time in history.

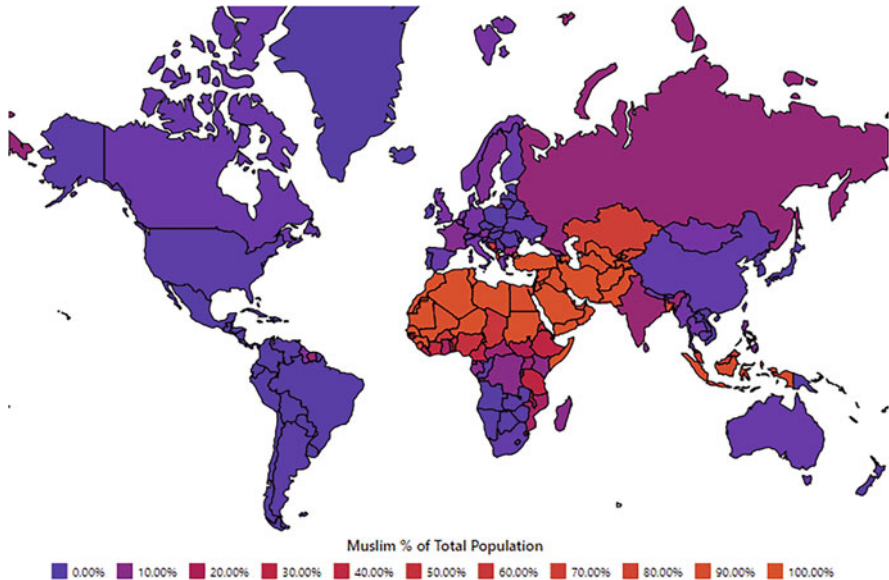


Fig. 6.4 Muslim population by country 2022. Source: Religious Composition by Country, 2010–2050 – Pew Research Center

The countries of the Middle East and North Africa (MENA) are among the poorest in the world in terms of water resources. For such countries, water security is as much about its use as it is about its availability. Especially in recent years, managing risks in these regions such as starvation, disease epidemics, migration, inequalities within and between countries, political instability, and natural calamities relies heavily on water.

Based on the abovementioned population statistics and projections, it is clear the importance of achieving sustainable management of water resources for these large numbers of people. It is important to point out the fact that the vast majority of the world's water resources are shared by two or more territories. As a result, water resource development and management have an impact across trans-boundary basins, necessitating cooperation.

6.3.4 Water Management between Islamic Concepts and Dublin Principles

The emerging international consensus on water management was outlined at the 1992 UNEP Water Conference held in Dublin, Ireland (Secretariat, 1992). Agreed upon at the conference are the following frequently referenced principles: (1) water is a social good; (2) water is an economic good; (3) water management should be

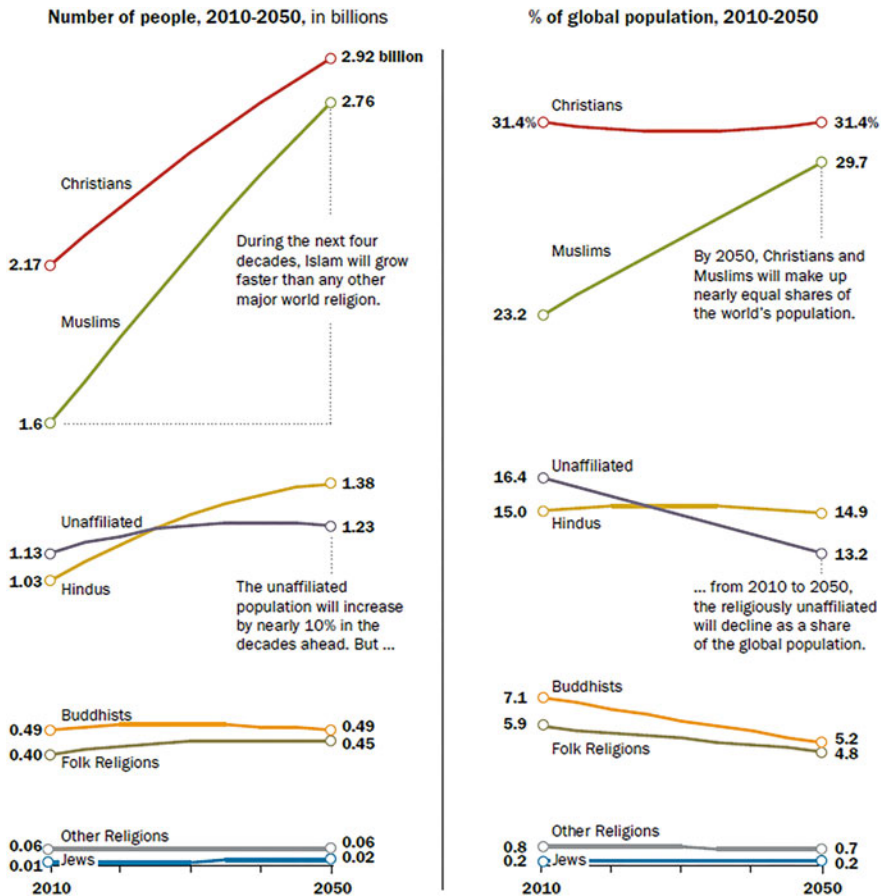


Fig. 6.5 The future of world religions: population growth projections, 2010–2050. Source: Pew Research Center

participatory and integrated; and (4) women play a central role in water management. Several practices and policies may help achieve these principles including water conservation, raising tariffs, wastewater reuse, privatization, water markets, and community-based water management. With a few caveats, policymakers generally agree that these approaches are valuable and will help improve equity. However, some Muslims have stated, both before and after the Dublin Conference, that Islam forbids the sale of water or the reuse of wastewater. Therefore, it is important to look at the Islamic viewpoint on these proposed behaviors. Table 6.1 compares Islamic water management principles to those enunciated by the Dublin Statement. It proves that a number of shared bases exist and that a mutual approach can be developed. The primary characteristics that overlap are reasonable shares, equity, public interest, consulting, and safeguarding the public interest and the ecology.

Table 6.1 A comparison between Islamic principles and the Dublin Statement in water management

A principle/ rationale	Dublin statement	Islamic concept	Consistency
Rationale	All ecosystems, food security, human health, and economic development will be at risk, unless water and land resources are managed well	Excessive and inefficient water usage is prohibited. Water supplies are finite, according to the Qur'an: "We sent down water from the sky in due measure and lodged it in the earth" (the Qur'an, 23:18)	In line with each other
Principle 1: Water is a social good	Freshwater is a finite and vulnerable resource, essential to sustain life, development, and the environment	Many passages in the Qur'an depict the importance of water, its formation, and its vulnerability: "We made every living thing from water" (the Qur'an, 21:30) "Say: If your stream be some morning lost (in the underground earth), who then can supply you with clear-flowing water?" (the Qur'an, 67:30)	In line with each other
Principle 2: Water is an economic good	Water has an economic value in all its competing uses and should be recognized as an economic good	According to Islam, there are two types of water: public and private. Water that is available to the public, such as rivers and lakes, belongs to the entire community (Caponera & Nanni, 2019). It should not be sold, and access to it should be considered a human right. Private water, such as wells and reservoirs, or any water for which a fee is paid for its extraction, treatment, or transportation, is private property, and users must pay for the costs of running, treating, and maintaining it. Taking into account the poor and vulnerable members of society, they must be subsidized to obtain their water needs	In line with each other in terms of private water, but differ for public water

(continued)

Table 6.1 (continued)

A principle/ rationale	Dublin statement	Islamic concept	Consistency
Principle 3: Water management ought to be participatory and integrated	Water development and management should be based on a participatory approach, involving users, planners, and policymakers at all levels	Islam emphasizes the importance of group consultation and consensus in decision-making (<i>shura</i>). Believers are described in the Qur'an as "those who hearken to their Lord, and establish regular prayer; who conduct their affairs by mutual consultation" (Qur'an, 42:38)	In line with each other
Principle 4: Women play a central role in water management	Women play a central part in the provision, management, and safeguarding of water	In Islam, the responsibility for resource management is not separated by gender. Both men and women are regarded as resource stewards at Islamic water management	In line with each other

6.3.5 *The Status of Water-Related Sustainable Development Goal (SDG6) in Muslim Countries*

To characterize and monitor contemporary changes in water availability and management in Muslim-majority countries, Goal 6 of the post-2015 Sustainable Development Agenda was adopted as the best framework for monitoring progress in achieving the goals at the global level. This goal assumes that to ensure availability and sustainable management of water for all is pivotal to health care and human well-being (Robert et al., 2005). In addition, advancement toward the targets of SDG6 has catalytic consequences across the entire 2030 Agenda as a goal concerning the life of society and the planet.

As reported by UN-Water, 2021, the world in general is not on track to achieve SDG6. Many millions of people around the world still lack access to safe drinking water. To achieve the worldwide goal of universal access by 2030, present rates of progress must quadruple. If this is the case at the global level, the situation is worsening in many Muslim-majority countries in the SDG regions of North Africa and Western Asia, as well as Central and Southern Asia. Many Muslim-majority countries have to spend more efforts to further increase national-level capacity for SDG6 monitoring by developing technical and institutional capacity and infrastructure. However, this chapter has focused on the targets of water stress, water use efficiency, and water management among several targets of SDG6.

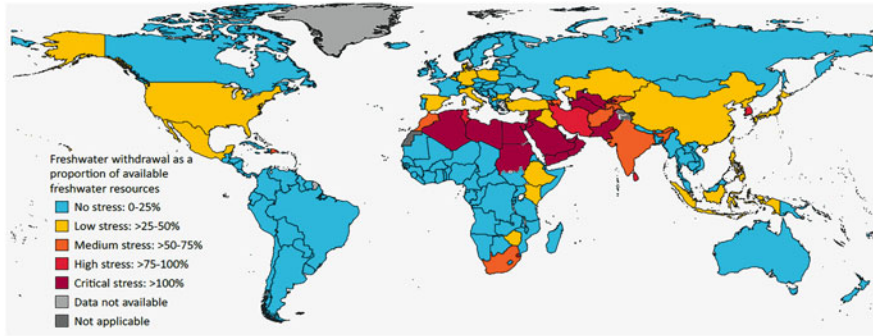


Fig. 6.6 Level of water stress by countries: freshwater withdrawal as a proportion of available freshwater resources in 2018 (%). Source: FAO IMI-SDG6 adapted from FAO (2021)

6.3.5.1 The Level of Water Stress

Data of UN-Water states that there are about 25 countries in the world in 2018 with more than 733 million people or about 9–10% of the global population suffer from water stress more (Needs & Indicator, 2021). The most majority or about 89% of those people live in high and critically water-stressed Muslim countries. These countries, however, are divided into two categories, one of which suffers from critical water stress (16 countries) and the other is experiencing high water stress (9 countries). The 16 countries all belong to the Organization of Islamic Cooperation, meaning that the vast majority of their population are Muslims. As shown in the map of freshwater withdrawal as a proportion of available freshwater resources, these countries are located in North Africa and Western Asia (Fig. 6.6). They are withdrawing all their renewable water resources (100%) and, even more, reaching more than 1000% annually in some countries (3851% in Kuwait, 1667% in the United Arab Emirates), forcing them to rely on non-renewable resources, some of which will eventually dry up as groundwater drawn from limited aquifers. For the rest nine countries with a high level of water stress, significant efforts and resources should be spent toward improving water management in these countries.

Population growth and rural-urban migrations are among the most important human factors in the countries of interest driving increased demand for water. Such factors represent a challenge to current water stress levels as they lead to a decrease in production yields and thus make livelihoods unsustainable and thus could be a driver of temporary or permanent rural-urban migration.

6.3.5.2 Water Use Efficiency

Achieving Goal 6 of the Sustainable Development Agenda requires increasing the efficiency of water use, which is measured by calculating the ratio of value added in dollars to the volume of water used. There is an urgent need to increase it efficiently

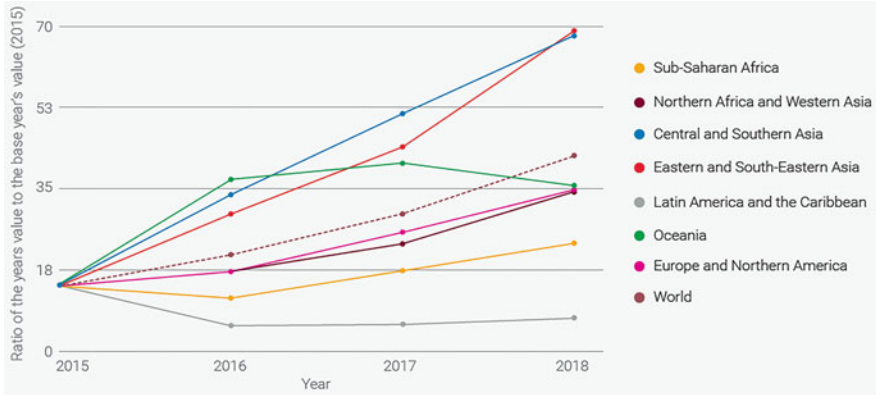


Fig. 6.7 Trend in water use efficiency in the different regions and globally during 2015–2018 for 166 countries. Source: FAO IMI-SDG6 elaboration based on FAO (2021)

in the three sectors, agriculture, industry, and services, in order to ensure sustainable withdrawals and supplies of freshwater to address water scarcity and significantly reduce the number of people suffering from water shortage. Regarding the analysis of the current situation, it is clear that there is an increase at the global level in the efficiency of water use between 2015 and 2018, as shown by the data of the 2021 report (Needs & Indicator, 2021). Although Muslim-majority countries have also increased water use efficiency during the mentioned period, this increase was less than the global average increase for North African and West Asian countries (Fig. 6.7). The most ironic fact is that with the exception of a few Gulf countries such as Kuwait and Qatar, the water use efficiency recorded in Muslim countries in 2018 is much lower than its counterpart at the global level. All of this calls for decisive actions to improve water efficiency through effective approaches, for example, by fixing leaky water distribution systems, using thirst-tolerant crops, and investing in new technology, leading to more sustainable food and industrial production systems. Agriculture, which is the most water-intensive economic sector, requires increased efforts there.

6.3.5.3 The Participation of Local Communities in Improving Water Management

Changes in water availability are frequently witnessed as a result of climate change, with rising water shortages in some areas. In addition to the impact of climate change on the availability of water, human factors come to play an important role in maintaining the amount of available water and maximizing its use or, on the contrary, pushing it toward an accelerated waste. This is precisely what is referred to as water resource management.

Integrated water resource management implies the perception of water as an integral part of an ecosystem, a natural resource, and a social and economic good (Halisçelik & Soytaş, 2019). To ensure the availability and sustainable management of water for all by 2030, integrated water resource management (IWRM) must be implemented at all levels as a strategy for balancing competing water demands across society and the economy without jeopardizing the long-term viability of vital ecosystems. Regrettably, the world is not on track to meet this SDG goal (Paul et al., 2018). For Muslim countries especially in the SDG regions of North Africa and Western Asia, as well as Central and Southern Asia with low levels of IWRM implementation, where development constraints are common and capacity is often lacking, the rate of implementation must more than double. As presented in Fig. 6.8, a lot of such countries are marked with limited progress of IWRM implementation through 2017–2020. However, during the same duration, there is definite evidence of moderate progress in some of the countries of focus, although this must be accelerated. Indonesia, Malaysia, and Libya have achieved substantial progress and significant gains. Morocco, Oman, the United Arab Emirates, Qatar, and Kuwait are among the 44 nations in the globe that are close to meeting the target, but they must maintain their efforts because achieving and sustaining the goals of sustainable water resource management is a continuous process. They prove that Muslim countries may make real and rapid improvement of IWRM implementation.

The literature and empirical studies indicate that the participation of local communities can significantly improve water management in any country (McCartney & Brunner, 2021; Bezerra et al., 2022). A lack of public participation in water resource management may lead to a fragmentation of policy and institutions between levels, actors, and sectors. Accordingly, decisions made in one sector (e.g., agriculture, energy, health, or the environment) often do not consider the effects on water availability and quality in other sectors. This principle should be of particular importance in Muslim societies, which require cooperation as a general command of God that must be implemented “And cooperate in righteousness and piety, but do not cooperate in sin and aggression” (Al-Qur’an, 05:02). However, investigating the existence of participation approaches in legislation or policy coupled with determining the actual amount of involvement in water management helps track the participation of local communities in water management within a country.

To encourage inclusive partners’ participation in the management and use of water for equity and sustainability in the Muslim-majority countries of concern, the most effective approaches are context-specific. However, there is a consensus that meaningful participation of stakeholders in policy formulation and planning processes leads to better outcomes. However, the value added of this strategy is that it allows for greater participation of vulnerable groups of the population as well as gender mainstreaming in many countries. However, although considerations of participation are included in the laws of some of the countries referred to, practical channels to put participation into practice are not well provided and need to allocate a lot of financial and human resources.

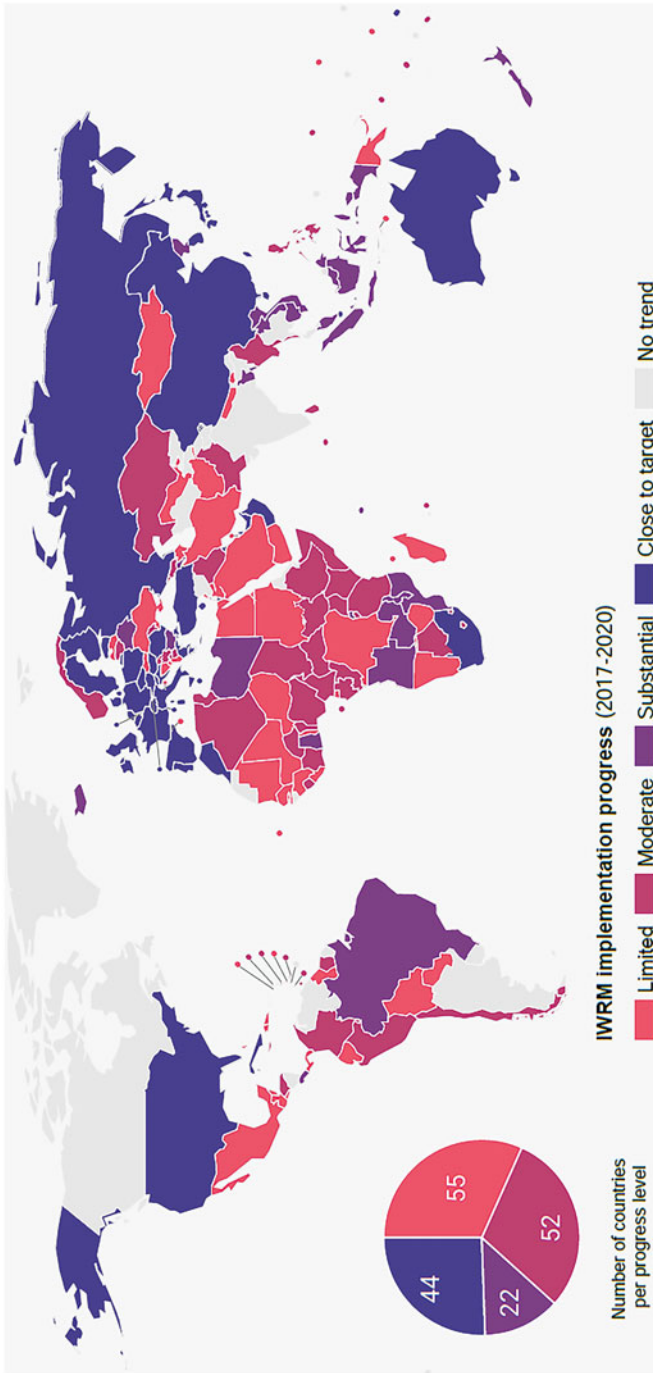


Fig. 6.8 Country progress toward IWRM implementation (2017–2020). Source: Environment (2018)

6.4 Concluding Remarks and the Way Forward

A closer look at the different areas in the water stress map shows that many Muslim-majority countries fall within the high or critical water stress range. To make Islamic countries more resilient in resisting the current and expected water shortages, integrated programs and policies should be developed that revolve around the following proposals. Such suggestions are based on the analysis of the current water situation within the framework of the sixth goal of Sustainable Development Goals, as well as guided by some successful experiences and practices achieved by some countries of the world.

Even though some Islamic countries with water problems have incorporated people's participation in water resource management into their laws and regulations, their implementation is still slow. More efforts are needed to develop regular channels for public participation, as well as financial resources to support local activities, in order to accelerate progress. The current study suggests the following initiatives that may help countries of interest manage water in a sustainable manner:

- Focal points: Analysis of the current situation of Muslim countries places urgent calls for the involvement of all stakeholders and institutions related to water management. Countries should designate a lead institution as focal points to coordinate these stakeholders.
- A framework for data collection: Urgently needed are reliable and timely water data to enable evidence-based policy, legislation, planning, and investments at the national and subnational levels, ensuring the most efficient use of resources in critically water-stressed areas.
- Capacity building: National and regional on-site and online training courses have to be organized on sustainable water use SDG targets.
- Regulatory frameworks: It is important for the countries under study to establish or amend laws to reflect progressive, integrated water resource management practices and maintain policy consistency between current and emerging water-related legislation.
- Financial resources: To enhance the participation of users and local communities in water services in Islamic countries, especially in rural areas, it is necessary to allocate sufficient financial resources.
- Water council: Institutions are too important to operationalize principles of integrated water management at both international and national levels. It is necessary to develop an effective consultative council to achieve sustainable water management. Members of the suggested council may involve scholars in both science and religion in addition to relevant governmental bodies to ensure interdisciplinary learning and help to promote innovation. To develop multilevel Islamic water policy is a main expected outcome of this council.
- Water user associations: The participatory approach entails educating policymakers and the broader public about the importance of water. It means that decisions are made at the lowest appropriate level, with full public consultation and user participation in water project development and implementation.

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