

Jurisprudential and Legal Analysis of Groundwater Extraction with Emphasis on Primary and Secondary Rulings

1. Abbas Ali Baziyar[✉]: Ph.D. student, Department of Jurisprudence and Foundations of Islamic Law, Ha.C., Islamic Azad University, Hamedan, Iran

2. Mahnaz Salimi^{*}: Assistant Professor, Department of Theology, Ha.C., Islamic Azad University, Hamedan, Iran

3. Marzieh Pilehvar[✉]: Assistant Professor, Department of Theology, Ha.C., Islamic Azad University, Hamedan, Iran

*Correspondence: salimi.mahnaz1400@gmail.com

Abstract

Groundwater extraction, as one of the most important sources of potable, agricultural, and industrial water, plays a vital role in the economic and social life of arid and semi-arid Iran. However, excessive exploitation in recent decades has resulted in consequences such as declining aquifer levels, land subsidence, and environmental crises. These conditions reveal the necessity of re-examining the related jurisprudential and legal frameworks. The main objective of the present study is to analyze the jurisprudential and legal aspects of groundwater extraction, emphasizing primary rulings such as the principle of *revival of dead land (ihya')* and the *no-harm (la darar)* rule, and secondary rulings under conditions of emergency and social necessity. The research method is descriptive-analytical and is based on library resources and legal documents. The findings indicate that Imami jurisprudence, by emphasizing justice, avoidance of harm, and the protection of public rights, requires sustainable use of water resources and, at the same time, allows the government—through secondary rulings—to impose restrictions on exploitation during critical periods. In addition, statutory laws of Iran, such as the “Fair Distribution of Water Act” and the “Environmental Protection and Enhancement Act,” provide the operational framework for equitable management and safeguarding of resources. The conclusion of the study suggests that the convergence of jurisprudence and law can serve as a solid foundation for effective policymaking in the sustainable management of groundwater. The study recommends revising water-related legislation, utilizing modern technologies, and promoting a culture of optimal water consumption.

Keywords: Islamic jurisprudence, water law, la darar principle, ihya' principle, groundwater, environment.

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1. Introduction

Groundwater resources, as one of the most important pillars of sustainable development and the fulfillment of essential human needs, have always held a special place in the thought of scholars, jurists, and legislators. In Iran, which is classified

among the world's arid and semi-arid regions, these resources play a vital role in providing drinking water, agricultural supply, and industrial development and constitute the foundation of social and economic life. However, the overexploitation of groundwater in recent decades has resulted in declining aquifer levels, the formation of sinkholes, the destruction of ecosystems, and the emergence of environmental and social crises (Agah & Hassani Sa'di, 2014). This situation makes it essential to reconsider the jurisprudential and legal frameworks governing the use of these resources.

Imami jurisprudence, relying on principles such as justice, the *la darar* (no-harm) rule, the prohibition of wastefulness, *anfāl* (public wealth), and general permissibility (*mubāh*), provides a theoretical and religious basis for the fair utilization of natural resources (Jafari Langroudi, 2024). On the other hand, Iranian statutory law has enacted detailed regulations such as the *Law on Fair Distribution of Water* of 1982 and the *Environmental Protection and Enhancement Act* of 1974 to establish an operational framework and legal safeguards for sustainable water resource management (Islamic Republic of Iran, 1982, 1984). The core question is how to create synergy between Islamic jurisprudence and Iranian statutory law in the face of today's water crisis to ensure both social justice and environmental protection.

Water, as the “essence of life,” underpins agricultural, industrial, economic, and even social stability. Historically, with lower population densities and relative abundance of natural resources, jurists permitted the ownership and exploitation of resources such as water through *hayazah* (taking possession) and *ihya'* (revival of dead land) (Katouzian, 2004). However, with population growth and the advancement of deep and semi-deep well drilling technologies, the conditions have changed, and the notion of individual ownership has shifted toward the necessity of collective and national management (Allameh Hilli, 1993; Tusi, 2008).

Thus, the fundamental research question is whether groundwater extraction, in light of the principles of Imami jurisprudence and Iranian statutory law with respect to environmental considerations, is lawful and legitimate, and if so, under what conditions and limitations. The significance of this study can be examined at several levels. Nationally, Iran's water shortage crisis, exacerbated by reduced precipitation and climate change, has become one of the greatest threats to food security and economic development (Minayi Tabrizi, 2020). From a religious and jurisprudential perspective, Islam—by emphasizing justice, the protection of public rights, and avoidance of harm—provides an ethical and legal framework for the proper use of natural resources (Jafari Langroudi, 2024). From a legal standpoint, Iranian regulations seek to prevent monopolistic and inequitable exploitation of water resources by establishing monitoring and control mechanisms (Jamali & Abdollahi, 2019).

Accordingly, the present study aims to integrate jurisprudential and legal perspectives to propose a scientific and practical model for sustainable groundwater management. The main objective is to examine and analyze the jurisprudential and legal dimensions of groundwater extraction, focusing on primary rulings such as *ihya'* and *la darar* and secondary rulings that respond to necessity and social crises, along with Iranian statutory water laws. Secondary objectives include clarifying the role of Islamic teachings in reforming consumption patterns, exploring fair and sustainable extraction models, and offering educational and managerial solutions for water use in households, agriculture, and industry.

The theoretical foundation of this research is based on two essential axes. First are the jurisprudential bases, which classify natural resources, including water, either as *anfāl* belonging to the community under the guardianship of the Imam or as *mubāh* resources that may become private property upon lawful appropriation (Jafari Langroudi, 2024; Subhani, 2011). Second are the legal foundations, which emphasize environmental protection and sustainable resource management and are reflected in constitutional principles, the Civil Code, and special laws such as the *Law on Fair Distribution of Water* (Islamic Republic of Iran, 1982). These foundations demonstrate that the exploitation of natural resources has transcended the individual level and become a matter of national, public, and even international concern (Mace, 2013).

A review of the literature reveals that although several studies have addressed water law, ownership rights, and the groundwater crisis, most have examined only legal or environmental aspects without integrating jurisprudential analysis (Najafi, 2019; Nazari, 2016). In contrast, this study adopts a comprehensive approach by jointly examining the jurisprudential, legal, and environmental dimensions, representing a novel contribution. The research method is descriptive–analytical, based on library resources and documentary evidence, including the Qur'an, hadiths, Imami jurisprudence texts, Iranian legislation,

and academic articles. Data analysis is carried out by comparative study of jurisprudential rulings and Iranian statutory water law to identify fundamental principles and propose practical strategies for sustainable groundwater management.

Ultimately, this study seeks to accurately extract jurisprudential rules and align them with statutory water law to present an efficient model for sustainable groundwater exploitation. The novelty lies in combining theoretical analysis with practical, context-specific solutions to address Iran's current water crisis, potentially improving the legal and religious environmental governance system and offering a model for sustainable water management globally.

2. Jurisprudential and Legal Rulings on Groundwater Extraction

Groundwater resources, as a critical foundation for sustainable development and meeting vital human needs, have consistently attracted the attention of legal systems and Islamic jurisprudence. In Islamic societies, jurisprudence—by relying on principles such as justice, avoidance of harm (*la darar*), and protection of public rights—has established an ethical and legal framework for the utilization of these resources (Najafi, 1981). In Iran, national laws such as the *Law on Fair Distribution of Water* of 1982 and the *Environmental Protection and Enhancement Act* of 1974 provide the necessary mechanisms for sustainable groundwater use (Islamic Republic of Iran, 1982). Given the increasing water shortage and environmental threats, re-evaluating the jurisprudential and legal provisions regarding groundwater extraction is imperative. These rulings aim to conserve water resources, ensure equitable distribution, and prevent environmental harm.

3. Groundwater Extraction from the Perspective of Islamic Jurisprudential Rulings

In Islamic jurisprudence, the rulings related to groundwater extraction are divided into two categories: primary rulings (*ahkam al-awwaliyah*) and secondary rulings (*ahkam al-thaniyyah*). This classification is based on the ordinary versus exceptional conditions that may arise. Primary rulings on groundwater extraction are founded on general jurisprudential principles such as the *ihya'* (revival of land) rule and the *la darar* (no-harm) rule, which clarify both individual and public rights. In contrast, secondary rulings are applied under special and urgent circumstances and can ease or adjust the restrictions of primary rulings when necessary. This flexibility in Islamic law shows its attention to social realities and temporal necessities (Jafari Langroudi, 2024; Subhani, 2011).

3.1. Groundwater Extraction under Primary Rulings

Primary rulings in jurisprudence refer to the set of norms and principles applicable under ordinary conditions without exceptional necessity. These rulings are derived from the general sources of Islamic law and can guide various issues, including the management of natural resources such as groundwater. Their significance is particularly evident in agricultural and industrial societies where providing adequate and safe water for food production and human needs is essential. According to primary Islamic rulings, groundwater extraction is permissible as long as the rights of others are respected and the environment is not harmed. This is especially important in regions with limited water resources (Agah & Hassani Sa'di, 2014).

The principle of *haqq al-taqaddum* (priority right in water use) requires respect for those who have previously used a resource. For example, if a person intends to dig a new well, it must be ensured that this action does not reduce the discharge of neighboring wells or infringe upon the established water rights of others (Naraqi, 2014). Another major concept in primary rulings is the *la darar wa la dirar* principle, which prohibits any action that causes harm to others. In Islamic jurisprudence, any act that could negatively affect the rights of others must be examined. Thus, if a person decides to extract groundwater, it must be ensured that this activity neither harms others' interests nor damages the environment. Specifically, if water withdrawal leads to the drying of other wells or degrades the quality of aquifers, such exploitation would not be legally or religiously permissible (Khoei, 2005).

Additionally, under primary rulings, the use of modern technologies in groundwater extraction and management is considered beneficial for optimizing consumption and preventing waste. For example, advanced irrigation systems and smart water control technologies can reduce water loss and improve agricultural efficiency (Talebzadeh & Hasanzadeh Divkolaie, 2019). This approach not only conserves water but also aligns with the values of justice and fairness in the use of natural

resources. Islamic jurisprudence emphasizes that exploitation of resources should occur within an ethical and social framework to safeguard the rights of future generations (Makarim Shirazi, 2017).

Ultimately, decisions about groundwater extraction under primary rulings should be made carefully with the consultation of experts and jurists. Specialists can analyze local and social conditions and propose the most just and effective solutions for water resource management. Therefore, establishing advisory committees that include Islamic jurists and water resource experts can help prevent harm to others and protect the environment. In summary, Islamic jurisprudence regarding groundwater extraction emphasizes respect for the rights of others, avoidance of harm, and the use of advanced technology. By adhering to these principles, sustainable groundwater utilization is achievable while safeguarding both present and future interests (Jamali & Abdollahi, 2019).

3.1.1. Observing the Principle of Priority Rights

The *ihya'* rule — “al-ard li-man ahyaha” (land belongs to the one who revives it) — clearly indicates the right of ownership and use of land and its underground resources. This principle states: “al-ard li-man ahyaha wa man ahyaha fahuwa ahaquq biha wa bima fiha,” meaning that a person who digs a well and accesses groundwater acquires ownership of that water, provided the exploitation does not harm others’ rights (Najafi, 1981). When discussing ownership and priority rights in natural resource extraction, primary rulings are considered under ordinary circumstances but may require adjustment in emergencies.

In the context of groundwater, *ihya'* signifies that whoever invests effort and resources to revive and access underground water gains the right of ownership and precedence. Ownership of natural resources in Islamic jurisprudence is not merely an exclusive right but is rooted in the principle of encouraging development and lawful utilization. Those who undertake activities such as digging wells contribute to agriculture, industry, and economic growth, yet such activities must not harm others’ entitlements.

The *la darar wa la dirar* principle functions as a mandatory limitation, forbidding harm to others or unfair use of natural resources (Hurr Amili, 1988). Individuals must maintain a balance between private rights and public interest. This is critical regarding finite and sensitive resources like groundwater because unrestrained extraction can have far-reaching social and environmental consequences. As groundwater is essential for drinking and agriculture, respecting priority and fairness is vital to prevent depletion and social conflict.

Thus, while the right to own and exploit groundwater should be preserved, it must be balanced with the rights of others and Islamic principles of justice. In conclusion, Islamic jurisprudence underscores fairness, balance, and respect for public rights, reminding us that natural resource utilization should benefit all and ensure the preservation of these resources for future generations (Mousavi, 2021).

3.1.2. The La Darar (No-Harm) Principle

The rule *la darar wa la dirar* is one of the fundamental principles in Islamic jurisprudence, particularly important for groundwater extraction and natural resource use. This rule states that any action causing harm to others is strictly impermissible. Imam al-Sadiq (peace be upon him) stated: “la darar wa la dirar fi al-Islam,” meaning “there is to be no harm and no reciprocating harm in Islam” (Hurr Amili, 1988). This principle not only lays out ethical and legal norms in Islam but also functions as a foundational guideline in Muslims’ social and economic interactions.

Developed based on the sayings of the Imams, the no-harm rule aims to prevent actions that could harm others. In Imami jurisprudence, water is recognized as a divine blessing and vital resource; its use must align with justice and ethical responsibility (Najafi, 2019). Therefore, *la darar wa la dirar* is crucial when groundwater extraction could lead to ecosystem degradation, aquifer depletion, or harm to other users.

The rule explicitly sets limits on natural resource exploitation, stressing not only individual rights but also public welfare and environmental preservation (Makarim Shirazi, 2021). In areas where water scarcity is a critical issue, unsustainable and unfair groundwater withdrawal can have severe effects on farmers, communities, and ecosystems. Consequently, exploitation must be done in ways that avoid harm to others and contribute to conserving water resources. Even if access to groundwater is

technically possible, extraction cannot proceed in a manner that imposes damage on others or the environment (Kazemi & Farahani, 2020).

This principle creates both an ethical and legal framework obligating water users to observe public interest and ecological stability. It becomes even more important in times of crisis, such as drought and water conflict. The no-harm rule can serve as a key decision-making guide for regulating water use, helping reduce social tensions and environmental disputes. By applying *la darar wa la dirar* in water policy and planning, society can achieve both justice and sustainability.

In summary, the *la darar wa la dirar* rule, as one of the core principles of primary rulings, safeguards the rights of others and the natural environment. It provides an essential strategy for managing water and natural resources responsibly. Those who exploit groundwater are obliged to comply with this rule to protect water reserves, promote social justice, and support sustainable development (Moridi et al., 2016).

3.2. Groundwater Extraction from the Perspective of Secondary Rulings

From the standpoint of Islamic jurisprudence, groundwater extraction is a subject connected to secondary rulings. These rulings respond to particular circumstances and to social and individual necessities, and they can operate as a temporary solution when people's lives or livelihoods are at risk. Secondary rulings are those issued in special conditions due to social or personal difficulties. In contrast to primary rulings—which are general and enduring—secondary rulings are temporary and contingent on specific conditions. They are designed in light of needs and crises that may confront society or individuals. For example, in circumstances such as drought or environmental crises, necessities may arise that require the modification or adjustment of primary rulings (Mousavi, 2021). Groundwater extraction typically becomes necessary when surface waters are insufficient or when, due to climate change and drought, water sources become limited. In such conditions, Islamic jurisprudence addresses groundwater specifically and permits, in emergencies, more extensive utilization of these resources. Such utilization can be considered a fundamental need for survival and the provision of life's necessities (Talebzadeh & Hasanzadeh Divkolaie, 2019). Because of their flexibility, secondary rulings can help protect collective interests while attending to environmental necessities. For instance, if in a particular region groundwater becomes the only source sustaining people's lives, Islamic jurisprudence allows these resources to be used temporarily and under control to prevent greater harm. This approach shows that the Islamic legal system is not confined to individual issues; when facing social crises, it also prioritizes public interests and societal welfare (Hajian, 2019). On the other hand, secondary rulings ensure that, in emergencies, public rights and the common good are also observed. These rulings must be formulated so that they address both individual needs and collective interests. For example, at times when groundwater resources are at risk, it is possible to enact rules that regulate the exploitation of these resources to protect public health and welfare (Joneidi, 2017). In sum, groundwater extraction in special and critical circumstances under the secondary rulings of Islamic jurisprudence not only functions as a solution to individual problems, but also serves as a tool for safeguarding public rights and securing social interests in the face of crises. Through its flexibility, this legal system demonstrates its capacity to respond effectively to new challenges and changing social conditions.

3.2.1. Necessity and Emergency

In Islamic jurisprudence, “necessity” (*darura*) and “emergency” are key concepts for understanding secondary rulings. These rulings come into play when the use of natural resources—particularly groundwater—is essential for the survival of an individual or a community. Specifically, in situations where groundwater is the only source of water in an arid region and people have an acute need for it, primary rules such as the *la darar* (no-harm) principle may be adjusted or modified (Kashani, 2008). Imam Khomeini states in *Tahrir al-Wasilah*: “In a state of necessity, it is permissible to use underground water resources, even if it harms others, when preserving life is obligatory,” which clearly indicates that in emergency conditions, exploiting groundwater is permissible if the preservation of life and human survival depends on it (Mousavi Khomeini, 1983). This view underscores the importance of human life in the Islamic legal system; accordingly, the preservation of life and health takes precedence (Dehghan, 2016). Moreover, the maxim “necessities permit prohibitions” (*al-darurāt tubīh al-mahẓūrāt*) emphasizes that, in emergencies, certain prohibitions or restrictions may be temporarily lifted or relaxed (Subhani, 2011). For

example, if there is a vital need for water and the lack of access would endanger people's lives, Islamic jurisprudence allows individuals to use groundwater—even if such use might otherwise cause harm to others. Overall, this maxim shows that the preservation of human life and health is paramount in Islamic law and that the system has the flexibility needed to address crises and exceptional conditions (Kashani, 2008). Consequently, secondary rulings in Islamic jurisprudence not only aid resource management during crises but also play an important role in preventing social and individual harm (Subhani, 2013). These rulings serve as a legal framework for managing resources in times of emergency. For instance, in conditions of drought or water scarcity, sound decisions taken through secondary rulings can help meet people's vital needs (Dehghan, 2016). In this regard, Islamic jurisprudence seeks a balance between individual rights and societal needs and strives to make rational and reasonable decisions in light of emergency conditions. Given the foregoing, it can be concluded that necessity and emergency are major topics seriously addressed by secondary rulings in Islamic jurisprudence, which answer how the right to life and health can be protected during crises. This approach reflects a dynamic and capable legal system in confronting the complex challenges faced by societies.

3.2.2. *The Islamic State's Ruling on Exploitation*

When water resources—especially groundwater—are severely limited and facing crisis, the importance of managing and regulating their use becomes acute. In this context, the Islamic state may, on a temporary basis and under specific conditions, supervise and manage the extraction and distribution of groundwater. This action is grounded in the secondary rulings of Islamic jurisprudence, which allow the state to prioritize public rights over private rights. Therefore, where natural resources are being exploited irregularly or inequitably, the Islamic state can restrict or even halt such exploitation to ensure social justice. Shaykh al-Tusi addresses this in *al-Mabsut*, explaining that the Islamic state may assume management of natural resources when needed and is obliged to manage them in a way that preserves public rights and social justice (Tusi, 2008). This emphasis on the principle of public interest (*maslaha 'amma*) and the guardianship-based functions of the Islamic government highlights the broader duties placed upon the state. From the perspective of Islamic jurisprudence, managing natural resources is a foundational function of Islamic governance. Ayatollah Makarem Shirazi likewise states that the Islamic state must counter irregular exploitation of natural resources and may act to restrict consumption when necessary (Makarim Shirazi, 2021). This underscores the importance of state oversight over resource exploitation. The Islamic state has a duty to manage resources in a way that not only meets current societal needs but also prevents social and environmental crises. Ayatollah Javadi Amoli further emphasizes that protection of the environment and natural resources is an intrinsic duty of the Islamic state (Javadi Amoli, 2012). Hence, when groundwater exploitation could damage the environment or create social inequities, the state is authorized—by invoking secondary rulings or even by suspending certain primary applications—to regulate and manage such exploitation. This demonstrates the state's authority and responsibility to safeguard the public interest and prevent misuse of resources. In effect, the ruling recognizes that the state must act so that the use of natural resources benefits all segments of society and prevents inequality and the violation of individual rights. In the same vein, Shaykh al-Tusi stresses that the Islamic state may, when necessary, enact specific regulations for managing natural resources to preserve the public good (Tusi, 2009). This analysis shows that, in Islamic jurisprudence, public rights and social justice are key priorities in natural resource governance. Where private interests might undermine societal welfare, the Islamic state is obliged—using jurisprudential standards—to emphasize public rights and to ensure justice in resource exploitation. As an example, Ayatollah Subhani notes that the government may specify times and quantities for water withdrawal to prevent social harm (Subhani, 2013). These views show that the Islamic state must participate actively in water-resource management and prevent any form of abuse.

In general, the Islamic state's ruling on issues related to natural-resource management—especially in conditions of crisis and scarcity—is grounded in the guardianship-based system of Islamic government and the principle of public interest. This indicates that the Islamic state, not only as a governing authority but also as a guardian of the public good and social justice, bears a major responsibility in managing resources. Thus, Islamic jurisprudence on groundwater extraction clearly reflects two foundational principles: preserving justice and balancing individual rights with public rights, and maintaining flexibility in the face of exceptional conditions. Primary rulings are formulated on general principles without regard to specific circumstances, whereas secondary rulings are envisaged to meet temporary and exceptional needs. This distinction reflects the comprehensive

approach of Islamic jurisprudence in addressing complex social and economic issues. On the one hand, individual rights and ownership—based on effort and the revival of resources—are recognized; on the other, public interests and the prevention of harm to society take precedence. This equilibrium between rights and responsibilities enables Islamic jurisprudence to offer a fair and effective approach in the face of environmental crises and resource scarcity, especially regarding natural resources such as groundwater, highlighting the importance of equitable management and attention to social interests alongside individual rights.

4. Legal Rulings Governing Groundwater Extraction

The legal rules on groundwater extraction in Iranian law are overseen by specific statutes, the most important of which is the *Law on Fair Distribution of Water* enacted in 1982. This law defines the exploitation of groundwater resources subject to stipulated limitations and standards so that withdrawals proceed sustainably and with due regard for the public interest. In other words, these rules have been crafted to both facilitate individuals' use of such resources and protect natural assets from excessive depletion and degradation. What follows is a comprehensive examination of the legal rulings on groundwater extraction with an emphasis on environmental protection (Islamic Republic of Iran, 1982, 1984).

4.1. *Exploitation of Groundwater and Observance of the Public Interest*

Groundwater exploitation in Iran, as a vital source for meeting human and economic needs, is of high importance. Nevertheless, such exploitation must be carried out in a manner that does not infringe upon the rights of others or the public interest. In other words, each person has a right to use groundwater to satisfy their needs, but cannot exercise that right in a way that impairs others' access to the resource. Consistent with the Iranian Civil Code's approach, exploitation of natural resources is permissible only insofar as it does not harm others; that freedom is expressly conditioned by respect for public rights and interests—individual rights in the use of natural resources such as groundwater are not absolute and must be calibrated to collective needs and benefits (Badi-sar & Ahmadi, 2017; Katouzian, 2004). In this regard, the body of rules on groundwater exploitation endeavors, on the one hand, to meet individual needs and, on the other, to prevent endangerment of water resources through a precautionary regulatory approach. For example, if a person's use of groundwater results in severe depletion or drawdown, that exploitation may be deemed a violation of others' rights and detrimental to the public interest; in such circumstances, the state or competent authorities may impose regulations and limits to supervise and control withdrawals and to prevent waste and decline of water resources (Pilvar, 2014). This not only helps conserve water resources but also prevents environmental and social crises. While groundwater can yield substantial public benefits—especially in areas where surface water is limited, and particularly for agriculture and potable supply—misuse can cause falling water tables, contamination, and social tensions over water allocation; thus, robust oversight and sound management are indispensable (Nazari, 2016). The applicable laws and regulations should therefore be designed so that groundwater exploitation advances the public interest, which requires cooperation among the state, local communities, and water users. Public education and awareness regarding the importance of conserving water resources and sustainable extraction practices can also mitigate groundwater-related problems (Jamali & Abdollahi, 2019; Pilvar, 2014). In sum, balancing individual use and the public interest—through appropriate legislation and regulation together with enhanced public awareness—can improve the status of water resources and elevate quality of life in society.

4.2. *Preserving Resources for Future Generations*

A fundamental principle in the law governing groundwater extraction is the necessity of preserving these resources for future generations. This principle is emphasized in Article 6 of Iran's *Law on Fair Distribution of Water*, which provides that groundwater exploitation must be conducted in a manner that safeguards renewable water resources and leaves them available for posterity; it effectively prohibits over-abstraction and underscores the need for sustainable resource management, thereby preventing degradation and irresponsible exploitation (Islamic Republic of Iran, 1982; Niknejad, 2020). Unlawful and excessive withdrawals can gravely affect water reserves and sharply reduce them, leading not only to diminished groundwater

but also to damage to local ecosystems and environmental crises. Accordingly, Article 6 functions as an effective legal instrument for protecting groundwater resources (Kazemi & Farahani, 2020). Preserving renewable groundwater is one of Article 6's principal aims; as significant renewable resources, aquifers must be sustained to supply future generations. This requirement speaks to sustainability and protection—not merely of existing reserves but also of the land's capacity to store groundwater in the future. Proper management improves groundwater quality, supports equilibrium in the hydrologic cycle, and helps conserve biodiversity (Mace, 2013; Safari & Janjani Goodarzi, 2020). Observance of this principle in water legislation is thus essential and has been framed as a legal obligation directed at conserving natural resources. Ultimately, conserving groundwater and managing it prudently as a national asset not only improves today's quality of life but also secures water for future generations—an approach that is especially critical amid intensifying water crises and climate change (Niknejad, 2020).

4.3. *The Duty to Protect the Environment*

The laws of the Islamic Republic of Iran, particularly on the extraction of natural resources, establish robust duties to protect the environment. Under Article 19 of the *Environmental Protection and Enhancement Act* of 1974, any activity that pollutes or degrades natural resources, including groundwater, is unlawful—an especially salient constraint for groundwater extraction. The statute requires that water-resource exploitation be conducted so as not to harm the environment (Shariatmadari, 2003). As essential national resources, aquifers must be managed under environmental principles and oversight; harmful withdrawals that degrade or pollute natural assets are prohibited, and the rule of non-harm must be respected. In particular, groundwater users are obliged to prevent contamination of water and soil by chemical or industrial substances (Amjadian, 2015). A key concern here is safeguarding ecosystems dependent on groundwater (e.g., wetlands and plains recharged by aquifers). Damage to such ecosystems can produce irreparable environmental losses and harm natural habitats (Price, 1996). By setting environmental requirements and establishing supervisory frameworks for groundwater exploitation, the legislature seeks to balance economic development with environmental protection. A closer look at Iran's legal rulings on groundwater extraction shows that, through legal and environmental constraints, the lawmaker has endeavored to organize exploitation so that current needs are met while the rights of future generations are protected. With emphases on permitting regimes, the principle of non-harm, and environmental stewardship, the legal framework envisions a balanced and sustainable approach to groundwater use (Islamic Republic of Iran, 1984; Safari & Janjani Goodarzi, 2020). From a legal standpoint, this duty to protect the environment marks an important shift in Iran's approach to natural resources: whereas environmental considerations once received limited attention, growing concern over climate change and pollution has prompted more rigorous legal treatment. Especially in the groundwater context, current laws play a pivotal role in securing sustainable supplies and optimal management. In light of these laws, environmental protection is not only a priority but a continuing obligation for the future (Kardovani, 2011; Kazemi & Farahani, 2020).

5. **Jurisprudential and Legal Conditions for Groundwater Extraction**

Groundwater extraction, as a vital source for meeting human and agricultural needs, requires compliance with specific conditions established to protect water resources and safeguard the environment. The following discusses these conditions from both jurisprudential and legal perspectives.

5.1. *Jurisprudential Conditions for Groundwater Extraction*

In Islamic law, the extraction of groundwater is subject to a series of conditions and requirements intended to preserve water resources, respect the rights of others, and ensure public benefit.

5.1.1. *Conditions of Groundwater Extraction Based on Hayazat al-Mubahāt (Appropriation of Permissible Property)*

In Imami jurisprudence, *mubahāt* refers to resources not owned by anyone and available for public use, including groundwater, pastures, and other natural resources. *Hayazah* denotes taking possession of such permissible property, and by

using and reviving it, an individual can acquire ownership (Tusi, 2008). Groundwater is considered among the *mubahāt*; however, for its extraction to be lawful, specific conditions must be observed.

Both Imami jurisprudence and Iranian law hold the general principle that natural resources like groundwater are originally permissible for use by all. They are treated as public assets not under private or state ownership until appropriated. Appropriation means personal effort and control that convert public goods into private property. For example, when a person extracts groundwater, this constitutes *hayazah* and can confer ownership. Yet such ownership is conditional: appropriation must not infringe upon the rights of others or cause harm. Scholars have outlined criteria, including the intention of use for one's own benefit and the prohibition against encroaching on others' entitlements (Najafi, 1981).

Shaykh al-Tusi explicitly states in *al-Mabsut* that appropriation must remain within the bounds of Shari'a and not infringe on others: "Disposal in permissible property must not cause any violation of others' rights" (Tusi, 2009). Likewise, Imami jurists emphasize that *hayazah* of resources such as groundwater is valid only when it respects both legal and social obligations, protecting public interests and individual rights. As Allameh Hilli notes in *Tahrir al-Ahkam*, use of public resources must preserve others' rights and collective welfare (Allameh Hilli, 1993).

Additionally, environmental and climatic considerations are fundamental. If groundwater extraction causes aquifer depletion or environmental damage, it is strictly impermissible. Conservation of natural resources and avoidance of ecological harm are essential in Islamic law (Mohaqqeq Hilli, 2004). Jurists further advise prioritizing efficient technologies and water-saving practices over uncontrolled withdrawal (Talebzadeh & Hasanzadeh Divkolaei, 2019).

Thus, ownership of groundwater via *hayazah* is not absolute; it is a qualified right conditioned on compliance with Shari'a and public interest. Individuals must act within legal frameworks and avoid actions that harm others or damage the environment. This creates a balance between individual rights and collective benefit in the use of natural resources (Mousavi, 2021).

5.1.2. Conditions of Groundwater Extraction Based on the Right of *Intifā'* (Usufruct)

The right of *intifā'* in Islamic jurisprudence refers to benefiting from another's property without full ownership—akin to usufruct rights in modern law. This right, similar to lease or custodianship, grants the holder use of benefits while restricting actions that imply ownership. It may be granted for a limited period or scope. In the context of groundwater, *intifā'* allows use of the resource under defined conditions while protecting the underlying property and ensuring sustainability (Ghazali, 2015).

Two main conditions govern usufruct-based groundwater extraction in Islamic law:

- **(a) No Harm to Others:** Groundwater use must comply with the *la darar wa la dirar* principle. Any withdrawal causing harm to others—such as drying neighboring wells or diminishing drinking supplies—is impermissible (Moridi et al., 2016). Social and ethical responsibility for the impact on other users' livelihoods must be considered.
- **(b) Preservation for the Future:** Islamic law implicitly requires sustainability, ensuring that resources remain available for future generations and are not depleted irresponsibly (Jamali & Abdollahi, 2019). Excessive extraction can cause long-term environmental damage and reduce future access.

These conditions embed social responsibility and ethics into natural resource use. Extraction must meet current needs while safeguarding future access. Islamic principles require alignment with public welfare and environmental preservation, avoiding injustice and exploitation.

In conclusion, groundwater usufruct under Islamic law requires strict adherence to non-harm, sustainability, and fairness. These standards establish a socially responsible and environmentally protective framework for managing vital water resources (Kazemi & Farahani, 2020).

5.2. Legal Conditions for Groundwater Extraction

Groundwater extraction, as a vital source for meeting human and agricultural needs, must comply with specific conditions designed to protect water resources and preserve the environment. The following section outlines these conditions from a legal perspective.

5.2.1. *Conditions for Groundwater Extraction Based on the Principle of Appropriation of Permissible Property (Hayazat al-Mubahāt) in Law*

In Iranian law, groundwater extraction is regulated by the principle of appropriation of permissible property (*hayazat al-mubahāt*) and water resource statutes. *Hayazah* refers to taking possession of natural resources available to the public and belonging to no one. However, this process must be performed in accordance with legal frameworks to prevent destruction and misuse of water resources.

The Civil Code of Iran grants individuals the right to appropriate natural resources like groundwater, provided that their use does not harm other resources or infringe on others' rights. Article 381 of the Civil Code states: "Whoever takes possession of a permissible thing shall become its owner". This provision recognizes ownership rights over natural resources accessible to all, but it is conditioned upon compliance with fairness and social considerations.

Moreover, Article 147 of the Civil Code clarifies that underground waters are considered *mubah* (permissible) until they are privately appropriated. Accordingly, all individuals may use them until exclusive ownership is established. This principle safeguards public rights by ensuring general access and preventing monopolization of essential natural resources like water. However, contemporary legal scholarship suggests this principle must be accompanied by stricter regulatory controls to address today's water crisis. Legislators are encouraged to implement sustainable water management measures to protect ecosystems and mitigate environmental impacts (Karimi Soltani, 2015).

Thus, while Iranian law allows individuals to benefit from groundwater under the doctrine of appropriation, it requires compliance with statutory regulations, acquisition of necessary permits, and adherence to environmental protection. Noncompliance can lead to legal sanctions and environmental harm. The system aims to balance individual rights with public interest and environmental sustainability.

5.2.2. *Conditions for Groundwater Extraction Based on the Right of Usufruct (Haq al-Intifā')*

The right of usufruct (*haq al-intifā'*) in Iranian civil law allows an individual to benefit from another's property without full ownership. Article 40 of the Civil Code defines usufruct as the right to use property without the authority to transfer ownership (Katouzian, 2004).

The *Fair Distribution of Water Act* (1982) integrates this concept by defining groundwater as a public asset. Article 2 of the Act states that groundwater belongs to the public and no person or group may exploit it without proper authorization. The government, as trustee of public resources, issues exploitation permits and monitors water use to ensure sustainability.

Consequently, usufruct of groundwater is treated as a socially conditioned and environmentally responsible right rather than an unrestricted private entitlement. Users must comply with legal requirements, avoid environmental degradation, and respect the collective interest. This approach transforms usufruct from a purely private right into a regulated social and environmental responsibility (Shariatmadari, 2003).

5.2.3. *Obtaining Legal Permits*

Obtaining legal authorization is one of the most fundamental safeguards to prevent illegal or excessive groundwater exploitation in Iran. Under current laws, any person seeking to drill or extract groundwater must obtain a permit from competent authorities, particularly the Ministry of Energy (Hajian, 2021).

Article 3 of the *Fair Distribution of Water Act* explicitly requires that "any well drilling must comply with technical standards and be authorized by the competent authority" (Yararshadi & Kianian, 2017). These permits involve technical and environmental assessments to monitor sustainable withdrawal and protect aquifers.

Permit systems are also vital for transparent resource management. They allow the state to track extraction, plan sustainable water policies, and impose restrictions during drought or water scarcity. This framework supports equitable access, protects ecosystems, and empowers authorities to manage crises effectively (Hemmati, 2018).

Failure to comply with permit requirements leads to legal consequences and contributes to environmental degradation. By enforcing this system, Iranian water law balances private usage with long-term public and ecological interests. Legal permitting

thus acts as a preventive and adaptive mechanism for sustainable resource governance, ensuring that groundwater remains a shared and responsibly managed national wealth.

5.2.4. *Environmental Impact Assessment and Sustainable Water-Resource Management*

Environmental impact assessment (EIA)—especially for natural resources such as groundwater—is regarded as a fundamental precondition to any extraction operation. EIAs involve a complex process of study, analysis, and rigorous evaluation designed to identify and forecast potential environmental, social, and economic consequences of extraction projects. Properly implementing EIA not only helps detect adverse effects on sensitive ecosystems and water quality but also supports informed, evidence-based decisions to mitigate those effects (Kazemi & Farahani, 2020; Mohammadi, 2023).

EIA functions primarily as a preventive tool. Its central aim is to provide accurate, documented information on a project's positive and negative environmental impacts so decision-makers and implementing agencies can avert serious environmental problems and minimize adverse consequences for ecological and human health. For example, pre-extraction testing of water quality—regarding heavy metals, chemical contaminants, and shifts in hydrochemistry—can prevent long-term environmental damage (Kazemi & Farahani, 2020; Price, 1996).

Accordingly, adherence to environmental safeguards is essential in groundwater extraction. These safeguards include conducting EIAs and complying with sanitary and environmental standards during well drilling and operation. In parallel, Iranian legal and policy instruments require that water exploitation proceed without harming ecosystems and within a regulatory framework designed to prevent degradation (Babaei & Babaei Zakliki, 2022; Shariatmadari, 2003).

An important component of EIA is assessing impacts on local ecosystems—plants, animals, and microorganisms that directly or indirectly depend on groundwater. Any reduction in groundwater levels can affect the survival and health of these organisms and ultimately trigger broader ecological change. The social repercussions—such as effects on local livelihoods—must also be scrutinized; for instance, diminished primary water sources can precipitate forced migration, reduced agricultural output, and economic hardship (Hajian, 2021; Najafi, 2019).

Under national and international practice, EIA findings must be formally documented and reported. Such documentation covers all project aspects—geographic setting, extraction methods, technologies used, and environmental projections—and serves as an official basis for independent review and ongoing regulatory oversight. It also ensures that corrective actions can be implemented promptly when needed (Hemmati, 2018; Jamali & Abdollahi, 2019).

Given the environmental and social complexity of extraction projects, EIAs are indispensable for conserving natural resources and securing environmental sustainability. While the primary purpose is to prevent harm, EIA results also deepen understanding of ecosystems and inform more effective management strategies. Overall, EIAs provide a framework for more balanced, sustainable decision-making to protect the environment (Agah & Hassani Sa'di, 2014; Mohammadi, 2023).

Sustainable water-resource management, in turn, demands strict compliance with legal requirements and respect for the rights of others. Iranian laws and regulations have been enacted to protect water resources and promote responsible exploitation, obligating that groundwater extraction occur under specific conditions to prevent environmental damage and the violation of others' rights (Islamic Republic of Iran, 1982; Mousavi, 2021).

Under environmental rules, exploitation of water resources must follow permitting and EIA procedures to evaluate potential ecosystem impacts and avert environmental losses; the objective is to ensure compliance with environmental safeguards and to minimize adverse effects on water resources (Mohammadi, 2023; Yararshadi & Kianian, 2017).

National law also requires operators to respect public and neighboring rights. Where damage or pollution occurs, responsible parties must compensate for losses and remedy adverse effects—an approach that strengthens water security, protects the public interest, and fosters social responsibility among users (Hajian, 2021; Hemmati, 2018).

Another legal requirement is planning for sustainable exploitation. Operators must submit programs to maintain and improve groundwater quality and adopt modern, sustainable techniques in extraction. Implementing such plans curbs water consumption, reduces waste, and protects water resources over the long term (Ebrahimi Sa'ati, 2021; Mace, 2013; Safari & Janjani Goodarzi, 2020).

In sum, the body of water-management rules obliges users to observe standards that protect the environment, ensure water security, and uphold the rights of others. Observance of these rules advances better, more sustainable management of water resources and helps safeguard them for future generations (Islamic Republic of Iran, 1982; Kazemi & Farahani, 2020).

5.2.5. Attention to Restrictions and Prohibitions

Paying attention to legal restrictions and prohibitions on the use of groundwater is a fundamental condition of lawful extraction and a key legislative strategy for protecting this vital resource. In recent years, over-abstraction and reduced precipitation have lowered groundwater tables and threatened ecosystems in many regions; to counteract this, lawmakers have adopted limits to prevent excessive withdrawals, especially in arid and semi-arid areas where aquifer depletion risks and ecological harm are acute (Ildaremi et al., 2023; Niknejad, 2020).

Under these provisions, failure to observe established limits can result in monetary penalties and sealing of illegal wells. Such sanctions are legally significant as deterrents: by applying legal pressure, lawmakers aim to prevent further degradation of water resources and protect national water security (Islamic Republic of Iran, 1982; Yararshadi & Kianian, 2017).

The environmental impacts of over-extraction include not only declining groundwater levels but also land subsidence and soil salinization, which can threaten ecosystems and undermine agricultural productivity (Fattahi & Zare'i, 2020; Kardovani, 2011; Moridi et al., 2016).

Accordingly, protective policies and sustainable groundwater-management measures have become legislative priorities. In Iran, in addition to financial penalties, the law authorizes further measures—such as limiting withdrawals or physically sealing offending wells—as part of a preventive strategy to preserve natural resources for future generations (Islamic Republic of Iran, 1982; Yararshadi & Kianian, 2017).

Where statutory conditions and standards for extraction are ignored, violators may face legal action, including fines, shutdown orders, and even criminal liability. The legal framework explicitly treats unauthorized groundwater exploitation as an offense subject to sanction—an approach intended to preserve water resources and deter violations (Moridi et al., 2016; Yararshadi & Kianian, 2017).

Taken together, these restrictions and prohibitions function as essential tools for conserving natural resources and preventing ecosystem degradation. They not only protect water resources but also raise public awareness of their importance and the need for sustainable management (Jamali & Abdollahi, 2019; Kazemi & Farahani, 2020).

6. Conclusion

The jurisprudential and legal analysis of groundwater extraction shows that sustainable use of these vital resources requires integrating Islamic legal reasoning with statutory water governance. Imamiyyah jurisprudence, through fundamental principles such as *lā ḍarar* (no harm), the principle of justice, the prohibition of waste, and the classification of natural resources into *anfāl* and *mubāḥāt*, offers a moral and religious framework for using water responsibly. It emphasizes protecting public rights and future generations while defining individual and collective duties toward nature.

On the other hand, Iranian statutory law—through codified frameworks such as the *Fair Distribution of Water Act* and the *Environmental Protection and Enhancement Act*—creates operational and supervisory mechanisms to prevent monopolistic and excessive exploitation, ensuring social equity and sustainable development.

This study highlights that ignoring environmental considerations in groundwater extraction leads to aquifer depletion, land subsidence, ecosystem destruction, and severe socio-economic crises. Yet, the jurisprudential system has strong adaptive capacity: rules such as *iḥyā'* (revival and lawful appropriation) and the obligation of fair exploitation can align with contemporary environmental and water regulations. If ecological ethics are respected, coherent sustainable water management becomes achievable.

The research indicates that harmonizing the Islamic legal system with statutory law can provide an applied model for groundwater governance—one that simultaneously safeguards public rights, protects ecosystems, and ensures fair and

intelligent use. It also shows the critical role of public education and awareness in reducing pressure on water resources, especially in household, agricultural, and industrial contexts.

It is recommended that policymakers and regulatory bodies update oversight mechanisms and legal restrictions while drawing on Islamic environmental ethics. Expanding training and public information frameworks can increase collective participation in protecting groundwater. Moreover, interdisciplinary research in environmental jurisprudence, water law, and resource management can guide comprehensive, sustainable policy design and offer models for other nations facing water crises.

Ultimately, this analysis shows that lawful and sustainable groundwater use is only possible through the deliberate combination of precise jurisprudential principles with statutory law. Achieving social justice, environmental protection, and intergenerational water security demands a holistic and scientifically informed approach.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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