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Foundations, Limits, and Legal Consequences of the Development and Use of Nuclear Technologies from the Perspective of Islamic Jurisprudence and International Law

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ABSTRACT

This article examines the jurisprudential and legal dimensions of nuclear energy in light of Islamic sources. Given the novelty of nuclear technology and the absence of explicit textual provisions in religious sources concerning this issue, it is argued that the use of peaceful applications of nuclear energy—such as electricity generation, medical treatment, and agricultural development—is permissible under the general principles of Shi'i jurisprudence, including the rule of no harm (La Darar) and the obligation to secure public welfare as a prerequisite duty (Muqaddimat al-Wajib). The study emphasizes that providing clean energy as an alternative to fossil fuels constitutes an indicator of social welfare in the contemporary era, and that the Islamic ruler bears responsibility for pursuing such objectives. Furthermore, the principle of negation of domination (Nafy al-Sabil) obliges Muslim societies to strive for the acquisition of strategic technologies, since attaining scientific capability in strategic domains contributes to collective dignity and independence. Conversely, the research provides a detailed analysis of civil liability arising from potential damages caused by nuclear activities, interpreting such liability within Islamic legal doctrines of causation (Tasbib) and destruction or direct damage (Itlaf). In the military sphere, relying on Islamic humanitarian principles and doctrinal teachings prohibiting the use of massively destructive weapons, the production and use of nuclear weapons are considered prohibited (haram). This position is also reflected in the religious decree (fatwa) issued by the Supreme Leader of the Islamic Republic of Iran. Ultimately, the article concludes that Islamic jurisprudence permits—and under certain circumstances encourages—the acquisition of peaceful nuclear technology, provided that ethical and military limits, particularly the prohibition of weapons of mass destruction, are strictly observed in alignment with national interests and the promotion of societal welfare.

Keywords: Nuclear energy, International law, Islamic jurisprudence, Deterrence, Nuclear weapons, Peaceful energy.

Introduction

In the contemporary world, nuclear energy is considered one of the most significant symbols of scientific advancement and, simultaneously, political power. The importance of this technology extends beyond energy production and sustainable development to include ethical, environmental, and security implications that have



generated extensive debate within international law and legal philosophy. Since humanity succeeded in releasing the immense energy embedded within atomic structure, the boundaries of knowledge and power have fundamentally transformed. This technological achievement created a profound duality: an extraordinary capacity for improving human life alongside the potential threat of collective destruction.

The central question of this research is whether the use of nuclear energy technology is permissible in light of international law and Islamic jurisprudence, and if so, where the boundary lies between its peaceful and military applications. The article aims to examine international legal rules and Islamic jurisprudential principles governing nuclear energy and to clarify the positions of the Islamic Republic of Iran within this framework, with particular emphasis on the convergence and tension between concepts of military deterrence and humanity's ethical responsibility. In international legal discourse, regulation of nuclear activities has developed through multilateral legal instruments designed to balance technological development with global security obligations (1-3).

History and Concept of Nuclear Energy

Approximately three centuries before the Common Era, Democritus concluded through philosophical observation that material objects, despite their differing appearances, are composed of extremely small and indivisible particles, which he named "atoms," meaning indivisible in Greek. Nearly two thousand years later, John Dalton proposed that atoms possess internal structure and are divisible under certain conditions. This concept remained theoretical until Albert Einstein introduced the equation $E = mc^2$ in 1927, demonstrating that immense energy could be released through atomic transformation.

Earlier, in 1896, Henri Becquerel discovered unusual emissions from uranium, identifying the phenomenon later termed radioactivity. Subsequently, Pierre Curie and Marie Curie discovered radium, a highly radioactive element. Later scientific research identified three principal types of radiation—alpha, beta, and gamma—each capable of causing biological damage similar to severe radiation burns.

Discovery of Nuclear Fission and the Beginning of Applications

The discovery of nuclear fission by Otto Hahn and Fritz Strassmann in 1938, followed by its theoretical interpretation by Lise Meitner and Otto Frisch, redirected scientific inquiry toward practical applications. Governments rapidly recognized the military potential of this discovery, leading to the Manhattan Project during World War II and ultimately to the production of the first atomic bombs. The destructive consequences of nuclear weapons later became a foundational concern of international humanitarian law and prompted extensive legal reflection regarding the legality of nuclear weapons use (3, 4).

Transition from Militarization to Peaceful Supervision

Following the military use of atomic weapons by the United States in Hiroshima and Nagasaki, the international community recognized the necessity of controlling nuclear technology. This awareness contributed to the establishment of international institutional mechanisms aimed at preventing nuclear proliferation while promoting peaceful applications. International organizations assumed supervisory roles to ensure that nuclear materials would not be diverted toward military purposes, reflecting broader principles governing international institutional cooperation (5). The emergence of global regulatory frameworks later culminated in treaties establishing safeguards, verification regimes, and legal commitments concerning peaceful nuclear development (1).

Key Nuclear Concepts

Nuclear technology refers to technology based on nuclear reactions. Originating in the United States, this technological domain encompasses a wide range of applications—from smoke detectors to nuclear reactors and nuclear weapons used by certain states. Today, among the various applications of nuclear technology, nuclear energy production has received particular global attention.

Nuclear technology involves the capability to transform naturally occurring uranium into enriched uranium through atomic fission processes, generating extremely high levels of energy. When uranium atoms undergo fission, nuclear energy is released in the form of heat, which can be used to produce steam and drive electricity-generating turbines.

Nuclear technology includes two principal components:

Uranium Enrichment: A process that increases the proportion of the fissile isotope Uranium-235. This process is essential both for peaceful purposes, such as fuel for power reactors, and for military applications involving weapon production. Because of this dual-use nature, enrichment activities have become central to international legal regulation and non-proliferation obligations (1, 3).

Nuclear Reactors: Facilities in which controlled chain reactions generate heat and subsequently electricity. Precise regulation and supervision of these processes constitute the core subject of legal and jurisprudential governance in nuclear law, requiring compliance with international institutional standards and safety frameworks (5).

Benefits and Risks of Nuclear Energy

Nuclear energy represents a double-edged sword, offering undeniable benefits alongside potentially catastrophic and irreversible risks. Evaluating this technology requires a balanced assessment of both dimensions from legal, ethical, and policy perspectives.

Benefits and Peaceful Applications

Nuclear energy is considered one of the cleanest energy sources worldwide due to its minimal greenhouse gas emissions. It prevents the release of billions of tons of carbon dioxide annually, significantly contributing to climate change mitigation efforts. International legal discourse increasingly recognizes peaceful nuclear energy development as compatible with sustainable development goals, provided that safeguards and non-proliferation obligations are respected (3).

Nuclear energy possesses extremely high energy density, meaning that small quantities of nuclear fuel can generate vast amounts of electricity while requiring less physical space compared to conventional energy sources. This technology also helps preserve fossil fuel reserves and reduces long-term energy production costs. Furthermore, nuclear waste is stored under controlled and regulated conditions, and operational experience worldwide demonstrates a relatively high level of safety when strict regulatory oversight is applied.

The advantages of nuclear energy are particularly evident under contemporary conditions of climate change and increasing global energy demand:

Clean and sustainable electricity generation is achieved because nuclear reactors produce virtually no greenhouse gas emissions and can operate continuously regardless of weather conditions, thereby strengthening national energy security (3).

In nuclear medicine, radioactive isotopes are widely used in diagnostic procedures such as PET scanning and in therapeutic treatments including radiotherapy for cancer patients, saving millions of lives worldwide.

Industrial and agricultural applications include sterilization of medical equipment, food preservation technologies, and genetic research aimed at improving agricultural productivity.

In the field of art, one of the most common applications of nuclear technology is X-ray radiography, which enables deep examination of artworks to determine artistic techniques, compositional alterations, previous restorations, authenticity assessments, and other analytical dimensions.

Space exploration represents another significant application, where nuclear batteries power satellites and planetary probes through high-capacity generators capable of operating over long distances and transmitting scientific data back to Earth.

Nuclear technology can also influence plant characteristics by modifying traits such as color, growth rate, flowering patterns, maturity timing, and productivity through controlled mutation processes.

In mining industries, nuclear acoustic and isotopic techniques allow scientists to analyze the physical and chemical properties of geological layers, determine the suitability of deposits for mineral preservation, conduct well monitoring, and perform isotopic dating.

Commercially, nuclear energy maintains a close relationship with economic development. The construction and operation of nuclear power plants can function as a major industrial sector and revenue source for governments while simultaneously supporting electricity generation, medical industries, agriculture, and numerous commercial activities linked to advanced technological infrastructure (3, 5).

Disadvantages and Nuclear Risks

Despite its numerous and undeniable benefits, nuclear energy also entails harms and risks that require careful attention. One of the most important concerns is the danger of nuclear accidents, such as radioactive leaks, which can have serious and hazardous environmental and public-health consequences. Radioactive contamination can cause genetic mutations in plants and animals and lead to various diseases, including cancer. In addition, employees of nuclear power plants may be exposed to chronic radiation, increasing the likelihood of leukemia and other illnesses. The storage and transportation of nuclear fuel and radioactive waste also involve distinct environmental and security challenges and therefore require strict preventive measures.

Nuclear risks are multi-dimensional in nature:

Risk of catastrophic accidents: Incidents such as Chernobyl (1986) and Fukushima (2011) have shown that a technical failure may lead to widespread release of radioactive materials, rendering large areas uninhabitable for decades.

Management of nuclear waste: Such waste remains radioactive for thousands of years and requires complex and costly long-term disposal solutions, thereby imposing a significant ethical burden on future generations.

Security threat and proliferation: The most serious risk is the transfer of nuclear technology and materials to actors who may use them to build weapons, a concern that lies at the heart of global non-proliferation policy (1, 3).

From an ethical standpoint, the question of humanity's responsibility toward nature and future generations is of vital importance in this context; protecting the environment and human life constitutes a core moral imperative that must be integrated into any assessment of costs and benefits.

Nuclear Energy in International Law

Following the Hiroshima catastrophe, international law has sought to establish a legal framework for the controlled use of nuclear energy through multilateral treaties. This framework is commonly structured around three pillars: non-proliferation, disarmament, and the right to peaceful access. These pillars have been elaborated through treaty regimes and related legal practice (1, 3).

Treaty on the Non-Proliferation of Nuclear Weapons (NPT)

The NPT, which entered into force in 1968, constitutes the cornerstone of the nuclear non-proliferation regime (1). The treaty classifies states into three main groups:

Nuclear-Weapon States (NWS): States that tested a nuclear weapon before January 1967 (the United States, Russia, the United Kingdom, France, and China). They undertake obligations toward complete disarmament.

Non-Nuclear-Weapon States (NNWS): States that commit never to manufacture nuclear weapons and, in exchange, retain the right to benefit from peaceful uses of nuclear energy.

The primary objective of the NPT is to prevent the horizontal spread of nuclear weapons while promoting the peaceful use of nuclear energy under international oversight (1, 3).

The Role of the International Atomic Energy Agency (IAEA)

The IAEA is the principal supervisory institution in this domain. It monitors compliance with relevant treaty obligations and seeks to ensure that nuclear materials and technologies are used exclusively for peaceful purposes. Its monitoring mechanisms include periodic inspections and the application of safeguards. The "Additional Protocol" framework is designed to grant inspectors broader access to nuclear facilities to strengthen assurances against diversion. This institutional role reflects the broader legal logic of international organizations in supervising specialized regimes (5).

Other Key Treaties

Comprehensive Nuclear-Test-Ban Treaty (CTBT): This treaty prohibits any nuclear test explosion, whether for military or purportedly peaceful purposes. Although it has not fully entered into force, many states observe its commitments in practice.

Nuclear-Weapon-Free Zones (NWFZs): Regions (such as Latin America or Africa) in which participating states commit not to develop or possess nuclear weapons.

Treaty on the Prohibition of Nuclear Weapons (TPNW): Entering into force in 2021, this treaty aims to achieve the comprehensive prohibition of nuclear weapons, although the main nuclear-armed states have not joined it (2).

International law thus seeks, through a multilateral legal regime, to prevent peaceful nuclear technologies from being transformed into military threats (3).

Military Application of Nuclear Energy and Deterrence

The military application of nuclear energy refers to the capability to develop nuclear weapons, while nuclear deterrence is a strategic doctrine that aims to prevent war (or major armed aggression) by generating fear of catastrophic consequences. These two concepts have profoundly shaped global geopolitics since the mid-twentieth century.

The Doctrine of Deterrence

Nuclear deterrence means that a state, by maintaining a nuclear arsenal, seeks to deter an adversary from military attack by raising the expected costs to an unacceptable level (often associated with the notion of “mutually assured destruction” or MAD).

Political advantage (from the perspective of nuclear powers): Preserving independence and preventing large-scale conventional wars among great powers.

Legal critique: The doctrine is premised on the threat to use a weapon that is inherently immoral and plausibly unlawful under core principles of international humanitarian law.

The Illegitimacy of Using Nuclear Weapons in International Law

While the NPT does not expressly prohibit the use of nuclear weapons (as it recognizes the reality of possession by certain states), judicial practice and the principles of international humanitarian law impose severe constraints:

Principle of proportionality: Civilian harm must not be excessive in relation to the anticipated military advantage. Given the large-scale and long-term environmental effects of nuclear weapons, compliance with proportionality is almost impossible.

Principle of distinction: Nuclear weapons cannot reliably distinguish between military objectives and civilian populations.

ICJ Advisory Opinion: In 1996, the International Court of Justice, in its Advisory Opinion, stated that the threat or use of nuclear weapons would generally be contrary to the rules of international humanitarian law, and it also emphasized the intergenerational harms associated with such weapons (4).

Deterrence and Contemporary International Law

Nuclear deterrence remains one of the most central and controversial concepts in international security and modern military strategy. It relies on the capacity of a state or coalition to prevent armed attack by threatening nuclear retaliation. Many legal scholars argue that the persistence of deterrence doctrine stands in direct tension with the spirit of the United Nations Charter's prohibition on the use of force and with human-rights principles, except perhaps where it is framed as an emergency response to an imminent nuclear attack (5).

Nuclear Energy in Islamic Jurisprudence

When Islamic jurisprudence confronts modern technologies—especially those with potential for massive destruction—it issues rulings on the basis of the general objectives of the Sharia (*Maqasid al-Sharia*), which aim at protecting life, property, intellect, lineage, and religion.

Foundational Jurisprudential Rules in Nuclear Applications

Several jurisprudential maxims play a central role in evaluating the use of nuclear energy:

The rule of no harm (*La Darar wa La Dirar*): “There shall be no harm and no reciprocating harm in Islam.” Any act leading to severe harm to human beings or the environment is impermissible. This maxim strongly proscribes the use of nuclear weapons due to their uncontrollable lethal consequences (6, 7).

The prohibition of corruption on earth (*Hurmāt al-Fasād fi al-Ard*): Using technology for widespread destruction, ecosystem collapse, famine, and long-term disease is treated as a clear instance of corruption on earth and is absolutely forbidden.

Protection of human life (prohibition of killing an innocent person): Jurisprudentially, killing an innocent person is likened to killing all humankind; therefore, using nuclear weapons—which entails killing innocents—is unequivocally prohibited (6, 8).

The principle of negation of domination (*Nafy al-Sabil*): This principle holds that God does not legislate any rule that would enable the domination of unbelievers over believers; in other words, there is no rule in religion that legitimizes the domination of a non-Muslim over a Muslim. In light of this rule, acquiring nuclear energy technology may serve to strengthen Muslim authority and prevent foreign domination. Jurisprudential discussions on contemporary issues often treat this maxim as supporting the permissibility of peaceful nuclear technology for Islamic countries, particularly when it contributes to defensive capacity and national independence (8, 9).

The public-interest principle (*Maslahah*): In Islamic jurisprudence, *maslahah* indicates that when an action is necessary for the welfare of the Islamic community, it acquires legitimacy and becomes permissible. In the nuclear context, this principle may be invoked to justify acquiring and producing peaceful nuclear energy, provided that such actions serve the welfare and interests of the Muslim community. In other words, where a genuine public interest exists, the ruling may shift toward permissibility or even obligation (6, 9).

The presumption of permissibility in using natural resources (principle of *Ibāhah*): This principle, in contrast to a presumption of prohibition, reflects the primary rational rule that disposal over things is permitted irrespective of specific legislative intervention. Thus, Islam—by emphasizing human stewardship on earth and the subjection of nature for human benefit—presumes permissibility in using natural resources unless specific evidence indicates reprehensibility or prohibition. This presumption provides the jurisprudential basis for lawful exploitation of energy resources, including nuclear energy (6, 8).

The rule of “the prerequisite of an obligation” (*Muqaddimat al-Wājib*): This rule concerns whether the prerequisites of a religious obligation are themselves obligatory. In Islamic jurisprudence, it means that if performing an act is obligatory, then the necessary prerequisites for performing it also become obligatory. Accordingly, access to nuclear technology and the production of peaceful nuclear energy may be regarded as a prerequisite for preserving independence and preventing domination by hostile forces. For this reason, striving to acquire this technology and employing it peacefully may be obligatory or at least recommended (7, 9).

Distinguishing Between Peaceful Nuclear Use and Military Weapons in Islamic Jurisprudence

Weapons of mass destruction are commonly described through four defining criteria: (1) they are non-conventional weapons; (2) they are weapons that eliminate non-combatants, such as women, the elderly, and

children; (3) they produce extensive—sometimes irreparable—destructive effects on future generations and the environment; and (4) they possess exceptionally high destructive capacity.

Islamic jurisprudence distinguishes between different uses of nuclear energy:

Peaceful applications: If nuclear technology is used to generate energy for society, treat patients, or advance scientific development, and it is subject to strict oversight to prevent diversion, it is not only permissible but also desirable in view of public welfare, particularly under the public-interest rationale (*al-maslahah al-mursalah*) (6, 9).

Military application (weapons): The production, stockpiling, threatening to use, or using nuclear weapons—especially weapons of mass destruction—is deemed religiously prohibited (*haram*) due to its inherently immoral character and its grave violation of the principles of protecting life and avoiding corruption and devastation (6-8).

Given Islam's emphasis on human dignity, the use of weapons that intrinsically violate human dignity is rejected.

Destructive Dimensions of Nuclear Weapons

Nuclear weapons—whether based on fission or fusion—have persistent destructive effects in addition to immediate mass killing:

Radioactive contamination: Residual nuclear materials may affect ecosystems and living organisms for thousands of years. Such contamination implicates future generations who bear no responsibility, constituting a direct violation of intergenerational justice in both jurisprudence and ethics (6, 9).

Uncontrollable use: There is always a possibility of accidental detonation or escalation resulting from miscalculation, which further amplifies the moral and legal gravity of maintaining such arsenals.

The Official Position of Shi'i Religious Authorities Regarding Nuclear Weapons

Ayatollah al-Uzma Khamenei: The Supreme Leader of the Islamic Republic of Iran officially issued a prominent religious decree in 2009 declaring the use of nuclear weapons impermissible. He maintains that, based on religious foundations, employing such instruments of mass killing is prohibited and constitutes an instance of “destroying agriculture and progeny,” which is forbidden in the Qur'an. He has repeatedly emphasized that the Islamic Republic of Iran does not seek and will not seek the production of nuclear weapons.

Ayatollah Makarem Shirazi: He has likewise stated that, consistent with the Supreme Leader's position, nuclear weapons are religiously prohibited.

Ayatollah Abdollah Javadi Amoli: He has emphasized that possessing weapons of mass destruction is categorically forbidden in religion and that this is an explicit religious message: such weapons should not be produced.

Ayatollah Ja'far Sobhani: By reference to Islamic rules of war (including non-aggression against the elderly and prohibitions on poisoning water), he has implicitly underscored the prohibition of destructive instruments and expressed hope that those who possess such weapons will dismantle them.

Ayatollah Hossein Noori Hamedani: He has promoted the slogan “Nuclear energy for all, and nuclear weapons for no one” as a key guiding principle.

In light of these statements, it may be concluded that the prevailing position among leading Shi'i religious authorities is the prohibition of producing, developing, and using nuclear weapons and weapons of mass destruction, on the ground that such weapons contradict the ethical and jurisprudential principles of Islam (6-9).

International Nuclear Treaties and Jurisprudential Compatibility

Comparative analysis indicates that the overarching objectives of international nuclear law can be situated within the ethical and jurisprudential principles of Islam.

Convergence Between Non-Proliferation Principles and the Preservation of Peace

The NPT's emphasis on the "non-proliferation of nuclear weapons" aligns directly with the religious prohibition on producing weapons of mass destruction in Islamic jurisprudence. Both normative systems treat the prevention of the spread of instruments that threaten global security and human survival as a moral and legal obligation (1, 3, 6).

The Right to Development Versus Oversight Constraints

International law—particularly for non-nuclear-weapon states—emphasizes the "right to peaceful use" of nuclear energy. This right provides an important legal foundation for the claimed legitimacy of Iran's peaceful nuclear program. From a jurisprudential perspective, governments have duties to pursue scientific progress and secure public welfare; if nuclear technology serves those ends, its peaceful use is permissible (3, 9).

However, this right is not absolute. International law requires implementation of international oversight mechanisms, and Islamic jurisprudence—by virtue of the obligation to honor undertakings and agreements—also treats compliance with inspections as binding when the objective is the preservation of peace and the protection of public welfare (5).

The Question of Mutual Security

While nuclear deterrence (premised on the existence of nuclear weapons) is tolerated within aspects of the current international system, Islamic jurisprudence generally rejects it. Although some jurisprudential analyses attempt to justify maintaining a defensive nuclear arsenal in the face of an adversary's nuclear threat through a reciprocity rationale, the predominant view among religious authorities—especially given the risks of unforeseen accidents—rests on an absolute prohibition (6, 9).

Comparison Between Nuclear-Weapon States and Non-Nuclear-Weapon States

A comparison of nuclear-weapon states and non-nuclear-weapon states shows that these two categories differ substantially in political, economic, and security terms. Nuclear-weapon states typically enjoy greater international influence and power, but they also carry high military expenditures and may contribute to regional instability. Non-nuclear-weapon states tend to exercise less influence internationally, yet they often allocate resources to socio-economic development and can play a constructive role in maintaining regional stability. Accordingly, the existing international structure has created a deep divide between nuclear-weapon holders and other states, producing wide-ranging legal and ethical consequences (1, 3).

The Duality of Nuclear Powers

The five recognized nuclear-weapon states enjoy an exclusive privilege of possessing these weapons and, under the NPT framework, are obligated to pursue complete disarmament. In practice, however, they often use nuclear

arsenals as political leverage and as guarantees of power, while advancing disarmament commitments slowly. Ethically, this situation reflects structural discrimination and conflicts with the principle of sovereign equality (1, 3).

The Position of Non-Nuclear States and the Right to Development

Non-nuclear-weapon states under the NPT face extensive oversight in pursuing peaceful nuclear development (including enrichment) and are frequently exposed to security accusations. This legal dualism—permitting possession for a select group while absolutely prohibiting it for the majority—remains one of the greatest legitimacy challenges of the NPT regime (1, 3).

A Legal Interpretation of the Right to Development

From the standpoint of international development law, each non-nuclear-weapon state possesses a right to use the full nuclear fuel cycle for peaceful purposes, including enrichment, but this right is conditioned on credible assurances against diversion. Islamic jurisprudence can be read as supporting this right on the condition that outcomes do not harm the global community, consistent with the no-harm principle applied at a broader, transboundary level (3, 6).

Iran's Perspective on Peaceful Nuclear Energy

As a leading country among developing states, the Islamic Republic of Iran has regarded the development of nuclear power plants as a necessity within its long-term energy-supply program for multiple reasons, including development-driven energy needs, acquisition of advanced technologies, diversification and energy security, clean-energy production, environmental considerations, and technical and economic benefits. Domestic legal requirements have also set a long-term objective for constructing and operating nuclear power plants capable of producing 20,000 megawatts of electricity. Accordingly, the Atomic Energy Organization of Iran has formulated and pursued long-term plans for developing the nuclear fuel cycle and related research activities.

Legal Foundations of Iran's Position

Iran's positions in international fora rest on two main pillars:

Rights under the NPT: As an NPT party, Iran claims an inalienable right to enrich uranium on its own territory and to use it in power and research reactors.

Full oversight: Iran has declared readiness to implement enhanced inspection arrangements and to cooperate with international supervisory mechanisms to demonstrate that it has no intention of diverting its program toward militarization (1, 3).

The Necessity of Nuclear Technology for Development

Given the limited nature of fossil-fuel reserves and commitments to reduce greenhouse-gas emissions, nuclear electricity generation is presented as a vital infrastructure for sustainable development. From Iran's viewpoint, access to this technology signifies scientific authority and national independence in securing the country's future needs (3).

A Clear Distinction Between the Fuel Cycle and Weapons

Iran consistently argues that its nuclear fuel-cycle program (including low-enriched uranium production for reactors) is fundamentally different from nuclear weapons development. International restrictions, in this view, should be implemented on the basis of this distinction rather than merely on states' scientific capacities (1, 3).

Supporters' and Opponents' Views on Nuclear Energy

The debate over nuclear energy encompasses a broad spectrum of perspectives, each supported by substantial arguments. Proponents emphasize the importance of nuclear technology for stable energy supply, reduction of environmental pollution compared to fossil fuels, rapid scientific and medical advances, and improvements in human living standards. Opponents or cautious observers focus primarily on the risks of nuclear accidents, the production of radioactive waste, and consequences for the environment and public health, underscoring the necessity of the highest safety and oversight standards (3).

Supporters: Independence and the Future of Energy

Supporters of nuclear energy view it as the only short- and medium-term solution to the intertwined crises of energy and the environment. Their central argument is that the dangers associated with nuclear weapons should not deprive humanity of an abundant and clean energy source. This perspective rests on the premise that nuclear risks can be managed through engineering safeguards and strong regulatory oversight.

Opponents: Unmanageable Risks

Opponents—particularly environmental activists—argue that no level of operational safety can absolutely guarantee the absence of accidents. They stress that the risk of a catastrophic event (such as Chernobyl) is more severe than risks associated with fossil fuels because nuclear consequences can be long-lasting and transboundary.

An Rational-and-Sharia Approach

From the perspective of practical reason and Islamic jurisprudence, decision-making should be grounded in a balance of forces: the immense benefits obtained (securing energy for future generations) weighed against potential harms (risks of accidents and waste). If the highest safety standards can minimize accident risks—standards that may be construed jurisprudentially as fulfilling the duty of safeguarding trusts—and if militarization can be decisively prevented, then peaceful use is desirable. But if the trajectory deviates toward militarization, religious prohibition supersedes any rational licensing for the technology's use (6, 9).

Conclusion

A comparative examination of the status of nuclear energy in international law and Islamic jurisprudence shows that, with respect to military applications, there is considerable convergence between the two normative systems: the use of weapons of mass destruction is rejected both because it violates the principles of proportionality and distinction in international law and because it contradicts the Islamic jurisprudential prohibitions against corruption on earth and the killing of innocents.

By contrast, in the sphere of peaceful applications, international law (notably the NPT framework) and Islamic jurisprudence both recognize the legitimacy of using nuclear technology for development and human welfare, provided that it is subject to rigorous oversight and accompanied by a commitment to non-proliferation.

The central finding of this study is that the core tension does not lie in nuclear technology as such, but rather in how it is interpreted and the intent governing its use. States are therefore obliged, through strengthened international cooperation and faithful compliance with oversight commitments (such as international nuclear supervision), to ensure a safe and peaceful trajectory for the use of this powerful technology. In this regard, Islamic jurisprudential principles can function as a strong ethical foundation in support of nuclear disarmament.

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All authors equally contributed to this study.

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The authors of this article declared no conflict of interest.

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Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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