

Legal Limitations and Consequences of Unilateral Exploitation of Shared Hydrocarbon Fields by Adjacent States and Mechanisms for Their Resolution (With Emphasis on the Arash Gas Field)

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Abstract

The unilateral exploitation of shared oil and gas fields constitutes one of the most challenging issues in international law, particularly in regions containing transboundary hydrocarbon reserves such as the Arash Gas Field (shared between Iran and Qatar). Such actions may give rise to political, economic, and legal tensions among the states concerned. From the perspective of international law, the development and exploitation of shared fields should be conducted in accordance with the principles of cooperation, good neighborliness, and equity. However, in the absence of specific agreements or binding legal mechanisms, some states may resort to unilateral extraction. Customary and treaty-based international law, including the principle of permanent sovereignty over natural resources (United Nations General Assembly Resolution 1803) and the 1958 Geneva Convention on the Continental Shelf, emphasize the necessity of cooperation among states in the utilization of shared resources. Furthermore, international judicial practice, such as the judgment of the International Court of Justice in the North Sea Continental Shelf Cases, has affirmed the principles of equity and the obligation not to cause harm to the interests of other states. Nevertheless, the absence of a comprehensive and binding legal regime governing the management of shared hydrocarbon fields creates opportunities for unilateral exploitation. The Arash Gas Field (known in Qatar as the “North Dome” field) represents a prominent example of the legal and technical challenges associated with unilateral extraction. Reports indicate that Qatar has commenced exploitation of this field without reaching an agreement with Iran. Such actions may result in reservoir pressure depletion and a reduction in Iran’s share of the common resource. From the standpoint of international law, this conduct may be regarded as a violation of the principle of reservoir unity and the obligation to cooperate in good faith. Moreover, the utilization of dispute-settlement mechanisms, including negotiation, mediation, and referral to international tribunals, may contribute to the reduction of tensions. Ultimately, the development of a comprehensive legal framework under the supervision of international organizations such as the United Nations could help prevent future disputes. The unilateral exploitation of shared oil and gas fields, particularly in the Arash Field, not only undermines fundamental principles of international law but also threatens regional stability.

Keywords: Unilateral exploitation, shared oil and gas fields, international law, Arash Gas Field, principle of equity, international cooperation, dispute resolution.

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1. Introduction

Iran is one of the few countries that possesses numerous shared and transboundary oil and gas fields with its neighboring states. Accordingly, reports indicate that Saudi Arabia's extraction from four shared oil fields is more than ten times greater than Iran's. Iraq has also extracted more than twice as much as Iran. Other fields are in a similar situation. The Arash oil and gas field is one of Iran's strategically important undeveloped fields, shared with the Neutral Zone between Kuwait and Saudi Arabia. The extension of the geological structure of the Arash field in Iranian waters and in the Neutral Zone between Kuwait and Saudi Arabia reaches Kuwait's Al-Durra field, most of whose area lies in Kuwaiti and Saudi waters and has reportedly been exploited since 1975. According to this boundary, approximately forty percent of the existing oil and gas structure of the Arash field is located in Iranian waters. Iran-Saudi relations have expanded following the resumption of bilateral relations through China's mediation during the current year. However, after seven years of setting aside disputes, the issue of ownership over the Arash gas field may now create certain disagreements between the two countries in the field of energy. The dispute over the Arash gas field is not confined to Iran and Saudi Arabia; Kuwait is the third party to the dispute, because the field is shared among Iran, Saudi Arabia, and Kuwait, while Kuwait asserts that the Arash oil field is Kuwaiti-Saudi and that Iran has no right to exploit it. Shared natural resources are resources that, in their natural state and without human intervention, cross the land or maritime boundaries of one state and enter the territory of another state. Unlike solid minerals, which can be divided more easily on the basis of established boundary lines between states, oil and gas resources are migratory because of their fluid nature and may exit the reservoir through any outlet created in it. In view of this characteristic, if any state proceeds to exploit these fields within its own territorial jurisdiction, such exploitation may cause the movement of in-situ fluids, particularly gas, throughout the entire reservoir and may result in the transfer of all or a significant portion of the reserves located within the territorial jurisdiction of the adjacent state. From the totality of the technical issues concerning the characteristics of oil and gas and their reservoirs, it can be inferred that, in addition to the possibility of estimating the reserves existing in shared oil and gas fields, a reduction in reservoir pressure—assuming that Iran does not extract from the shared field—together with an abnormal pressure decline relative to the usual extraction volume, indicates the movement of fluid from Iran's territorial jurisdiction toward the neighboring state. Such movement, as a result of the production operations and non-conservation-oriented practices of the neighboring state, leads to the migration of in-situ fluids. Moreover, while causing irreparable damage to the reservoir, examples of which can be enumerated, such as the trapping of part of the reserves, reservoir degradation due to extensive drilling operations, and non-conservation-oriented exploitation, it also causes shared reserves to leave Iran's territorial sovereignty. This issue itself constitutes a basis for examining and explaining the rights of states possessing shared reserves over natural wealth located within their territorial jurisdiction.

2. The Arash Gas Field between Iran and Kuwait

The Persian Gulf, with a width of 400 kilometers, is entirely a continental shelf, and the whole area falls within the legal regime governing continental shelves. The Arash field, known by Kuwaitis as Al-Durra, is located in the northern Persian Gulf and was discovered in 1960 or 1967 by the Japanese oil company AOC. The oil and gas reserves of this field are estimated at 300 million barrels of crude oil and 11 trillion cubic meters of natural gas. The beginning of the dispute between Iran and Kuwait over the Arash field dates back to the absence of maritime boundary delimitation between the two states. The central point of dispute concerns the method of determining the boundary of the continental shelf waters between the two countries, because the Kuwaiti government does not accept Iran's straight baseline for determining continental shelf boundaries and maintains that Iran's maritime baseline should be located before Kharg Island and closer to the Iranian coast. This dispute dates back to the 1960s, when maritime boundaries had not been properly defined, and the Iranian government granted the maritime boundary concession to the Anglo-Iranian Oil Company, while the Kuwaiti government granted the concession to Royal Dutch Shell. These two concessions overlap in the northern part of the field. In previous years, the National Iranian Oil Company drilled an exploratory well known as "Arash Well No. 1" to determine the in-place reserves of the Arash gas field. In 2001,

after Iran began exploration operations in the Arash field, Kuwait immediately threatened Iran with filing a complaint before international forums. Following the visit of the Emir of Kuwait to Tehran during the presidency of Mr. Khatami, Iran suspended its exploration activities and used the platform constructed for this field in other fields. This shared field between Iran and Kuwait was discovered in 2000/2001. The Arash oil and gas field contains initial in-place crude oil of 457 million barrels in the Gadvan Formation, initial in-place gas of 22.5 billion cubic meters, and 83.6 million barrels of gas condensates in the Fahliyan Formation. It appears that parts of this field are also shared with Saudi waters. The Arash gas field is known in Saudi Arabia and Kuwait as Al-Durra. This field contains 13 trillion cubic feet of gas reserves. It is located southwest of Kharg Island and between the boundaries of the three countries of Iran, Kuwait, and Saudi Arabia. Exploitation of this field has so far been delayed for numerous reasons. The disputes began when Kuwait claimed that the gas reserves in the area selected by Iran for drilling were shared with one of its fields known as “Al-Durra” and, by threatening to file a complaint against Iran before international institutions, compelled Iran to stop further activities in this field. After the shared nature of this field between Iran and Kuwait was accepted, the determination of the share of each country became the subject of debate. The Iranian side maintained that half of the Arash field belonged to Iran, whereas the Kuwaiti side claimed ownership of more than fifty percent of the field (Thomas et al., 2024). In 2001, Kuwait prevented Iran from conducting exploration and drilling operations in the waters of this field, and Iran, while lodging an objection against Kuwait, suspended its exploration operations in the field. Since then, negotiations over this oil field between Iran and Kuwait have continued. Accordingly, the Khafji Joint Operations Company, established through joint investment by Saudi Aramco and Kuwait Gulf Oil Company, will soon begin new drilling operations in the offshore Al-Durra field in order to optimize exploitation of the Arash gas field. Although Iran maintains that half of this field belongs to the country, Kuwaiti officials consider their share to be greater than Iran’s.

Limitations on Unilateral Exploitation of Shared Fields by Adjacent States

In a general classification, the country’s shared fields may be divided into three groups. The first group consists of fields that are undeveloped on both sides or are at an equal stage of development; the Aban, Azar, and Yadavaran fields fall within this category. The second group consists of fields in which Iran has taken the lead in development. According to available statistics, Iran has surpassed its neighbor in the development of the Dehloran, Paydar-e Gharb, and Azadegan gas fields. The third group consists of fields in which the neighboring state has overtaken Iran and is extracting at an ever-increasing pace without observing conservation-oriented production considerations. The Persian Gulf fields, including South Pars, Forouzan, Hengam, and Arash, belong to this category. Special attention must be given to the development of this group of fields, and by identifying existing obstacles, the process of exploitation must be expanded and developed. In this section, the existing obstacles in the field of shared reservoirs are presented, and these obstacles are examined in two dimensions: contractual and non-contractual.

3. Contractual Obstacles

Apart from political disputes between Iran and its neighbors over shared gas reservoirs and the sanctions imposed on the country, legal and contractual obstacles within the legal system have prevented the Islamic Republic of Iran from achieving significant success in exploiting the country’s shared fields and from developing these reserves comprehensively in the same way as neighboring countries. These obstacles include contractual terms and their enforcement guarantees. In some cases, bureaucratic red tape also causes delays even in approved projects. Legal and regulatory obstacles, including the ambiguity and instability of commercial laws and regulations in Iran and the existence of laws and regulations that create serious barriers and restrictions to the attraction of foreign investment, are also among the fundamental challenges in this area. Indeed, in countries with advanced business environments, commercial laws are revised and amended in accordance with contemporary necessities. In this regard, the lack of up-to-date commercial laws may be regarded as one of the obstacles to attracting investment (Brower & Tepe, 2023). Among these issues, the contractual model and contractual instability are addressed below. Contractual model: The limitations arising from Articles 44, 80, and 81 of the Constitution and, consequently, annual budget laws, five-year development plan laws, and petroleum laws, particularly the Petroleum Law enacted in 1987/1988, led in recent decades to the selection and use of the buyback method for attracting foreign investment, especially in the upstream gas sector. Therefore, the emphasis of Iranian laws on the exclusive use of this method in upstream contracts, and the non-acceptance of other types of contracts recognized in the industry and used by Iran’s neighboring states in their own fields, on the one hand, and the

unattractiveness of buyback contracts for foreign investors active in those countries, on the other hand, have prevented the emergence of a common basis for bilateral action. Nevertheless, in some cases, the Islamic Republic of Iran has been able, through negotiations with its neighbors, to persuade them to engage in joint action through this method. An example is the Yadavaran oil area, which is shared with Kuwait and is currently under exploitation and production.

Investors in all fields are always seeking a secure environment for their capital so that they can focus on their activities with lower risk. In principle, risk is an inherent element of any investment, and investors' efforts in this regard are directed toward managing and reducing this phenomenon. The gas industry is among the riskiest industries, and one of the essential characteristics of actors in this field is their degree of risk tolerance. However, the usual risks in this field are the risks of non-discovery or non-commerciality of a field, whereas risks arising from unilateral termination of the contract or disruption of its economic equilibrium make the work of investors complicated and difficult. For this reason, oil contracts generally allocate a clause to the stabilization provision. Through a stabilization clause, the foreign investor seeks to freeze and stabilize the obligations arising from laws and regulations existing at the time of contract conclusion so that the host state cannot alter the equilibrium existing at the time of contract formation by changing existing laws and regulations or enacting new ones. In the traditional view, a stabilization clause means preventing the state from enacting laws and regulations that could undermine the economic equilibrium existing at the time the investment contract was concluded. Today, however, given the recognition of the sovereign right of states to enact laws and regulations necessary for the public interest, the mere conclusion of a contract by the state cannot justify disregarding its sovereign right or prohibiting it from changing its laws and regulations. Rather, in the modern view, the stabilization clause is interpreted to mean that the negative consequences of changes in laws in investment contracts must be appropriately compensated so that the income derived from the contract for the investor remains similar to what it would have been had those laws and regulations not changed (Wälde, 2023).

4. Non-Contractual Obstacles

The Islamic Republic of Iran, as one of the influential states in the region and in the international system, possesses ideals and principles, some of which are in conflict with the interests and principles of capitalist states in the world and the region. This has created an atmosphere of confrontation and conflict and, in some cases, has led to major obstructionist measures against the country by dominant global and regional powers. In addition to these matters, internally, there are also obstacles to the growth and flourishing of the economy and, consequently, of monetary and financial markets. These obstacles have made it impossible, in the absence of international gas companies and financial providers, to rely on domestic capital and resources within continuous and sustainable programs for investment in the gas sector and the development of shared fields in this area. It should be recalled, however, that the first challenge in relation to this issue is the attitude and belief prevailing in the decision-making, policymaking, and managerial system, both at the macroeconomic and national levels and at the levels of energy and the gas sector, regarding the presentation of innovative methods and ideas rooted in a correct understanding of national and transnational environments while also securing national interests. In this situation, approaches to these challenges, both in diagnosing them and in providing a set of policies to resolve them, will be different (Verhoosel, 2022).

Regional Dimension: In 1981, during a meeting of the foreign ministers of Saudi Arabia, Oman, Kuwait, Qatar, Bahrain, and the United Arab Emirates in Riyadh, it was agreed that a council for cooperation among these six Arab states of the Persian Gulf would be established under the name of the Cooperation Council for the Arab States of the Gulf. At that time, the declared purpose of its establishment was to create a framework for cooperation and coordination of governmental policies among member states with regard to the issue of maintaining security in the region. In reality, however, one of the most important reasons for the formation of this council was the victory of the Islamic Revolution and the establishment of the Islamic Republic of Iran. In fact, the creation of this council was a reaction to the occurrence of the revolution in Iran, and from the outset it adopted a pessimistic and suspicious attitude toward Iran. Its conduct during Iraq's imposed war against Iran, including actions such as providing assistance by member states to the Iraqi government and creating facilities through which part of the annual oil export revenues of Saudi Arabia and Kuwait was transferred to the Iraqi government's account, confirms this point (Wälde, 2023).

Global Dimension: Today, gas has become a strategic and vital commodity for the continuation of Western industrial life, and even the emergence of new forms of energy has not diminished its value. Therefore, given the distribution of this

commodity across the earth, control over gas resources has become a principal priority for major powers, so that through this vital and strategic sector they may secure sustainable energy security for themselves and their allies and, by supervising this sector, maintain control and dominance over their other rivals. Iran, as an influential power in the Middle East and possessing vast gas reserves, has therefore become the target of efforts by major global powers seeking various ways to deprive it of opportunities for progress and to create obstacles, including sanctions, so that Iran cannot exercise its influence in the field of its energy resources. Sanctions are non-military measures that adversely affect the transfer of goods, services, or capital to a country, and their purpose is to punish, penalize, or compel that country to align itself with the political objectives of the sanctioning state, or to express the sanctioning state's dissatisfaction with the acts and conduct of the sanctioned state (Schrijver, 2020).

The breadth of Iran's gas sector, its technological dependence on modern technologies for gas exploration, development, and production, and the country's urgent need for foreign exchange revenues derived from gas exports have caused this sector to be used by the United States and the European Union as a key sector for making sanctions more effective. Sanctions targeting Iran's gas sector have provided for penalties against companies that, in various ways, assist the development of different activities in Iran's gas industry. However, the most important impact of U.S. sanctions in the gas sector has been the reduction of investment for financing development projects. Given the enormous capital intensity of this industry and its significant need for advanced technologies and equipment, the financing of which is highly difficult, these sanctions created severe difficulties in the initial years. After some time, due to the extraterritorial U.S. sanctions against Iran in 1996, financing gas projects became extremely difficult. These sanctions, enacted in the form of the ISA, were passed by the U.S. Congress in 1996. The main objective of this law was to sanction foreign companies so that they would refrain from investing in Iran. Under this law, American and non-American companies were prohibited from making annual investments exceeding 40 million dollars in Iran's gas industries, and in 1997 this amount was reduced to 20 million dollars. In addition to imposing an investment ceiling in Iran's gas industry, the United States, through its influence in the World Bank and the International Monetary Fund, also deprived Iran of effective long-term loans. The prohibition of investment in Iran's gas sector and, consequently, the prohibition of purchasing Iranian gas, along with issues such as the need for high volumes of investment in this sector, the shortage of domestic capital in this area, the advanced age of the country's gas reservoirs and equipment, and the destruction and damage of part of the equipment during Iraq's imposed war against Iran, created numerous problems for this industry. Consequently, the exploitation of shared gas resources also faced fundamental challenges.

Domestic Dimension: Today, a large part of the shares of international gas companies such as British Petroleum is held by the private sector and by members of the public. In Iran, however, due to factors such as mistrust and the lack of transparency in the capital market and stock exchange, this has not been realized. Capital market transparency refers to the amount of information concerning market conditions and transactions on a particular temporal basis. This transparency is often divided into two categories: pre-trade transparency, which concerns the announcement and dissemination of prices or other transaction-related indicators and parameters, and post-trade transparency, which concerns the disclosure of data and information about completed transactions. Markets that disclose only a small amount of information are considered opaque (Bessembinder et al., 2025). In Iran, stock markets, in addition to these two characteristics, have intensified this lack of transparency by engaging in formal or artificial transactions in certain areas.

5. International Responsibility of States in Relation to Unilateral Exploitation of Shared Oil and Gas Fields

The international responsibility of states concerning shared gas fields has multiple sources, which are discussed below.

5.1. Responsibility Arising from the Breach of Customary and Treaty Rules

Article 12 of the Draft Articles of the International Law Commission of the United Nations on Responsibility of States provides: "There is a breach of an international obligation by a State when an act of that State is not in conformity with what is required of it by that obligation, regardless of its origin or character." From the perspective of the International Law Commission, the mere non-conformity of a state's conduct with an obligation binding upon it is sufficient. With respect to shared gas fields, there are numerous agreements that have already been mentioned. Breach of states' obligations under joint

development and unitization agreements, as well as breach of the obligation contained in the common-reservoir clause in bilateral agreements, may constitute a basis for invoking the international responsibility of the state. Such breach may take the form of an executive act or the enactment of domestic legislation contrary to the provisions of the aforementioned agreements; in any event, it gives rise to international responsibility. On the other hand, Article 6 of the Convention on the Continental Shelf and Article 77 of the 1982 Convention recognize the sovereign rights of states over natural resources located in the continental shelf. As stated in the Guyana–Suriname arbitral award, breach of Articles 74 and 83 of the Convention concerning efforts to reach provisional arrangements in cases of delimitation disputes entails responsibility for contracting states and gives rise to the injured state’s entitlement to compensation. Moreover, according to one view, irrespective of treaty obligations under the 1982 Convention and bilateral treaties, states are customarily obliged to cooperate in the exploitation of shared gas fields, and any act contrary to that customary rule may give rise to responsibility (Bernhardt, 2020). Accordingly, it may be said that states party to bilateral agreements bear responsibility for breaching the obligations contained in those agreements; states party to the 1982 Convention on the Law of the Sea bear responsibility for breaching the provisions of that Convention in addition to breaching the customary rule of cooperation; and states not party to those treaty provisions bear responsibility for breaching customary rules. Nevertheless, no judgment has yet been rendered by international dispute-settlement bodies solely on the basis of customary responsibility in the field of shared gas fields.

5.2. *Responsibility Arising from Abuse of Rights*

One of the rules of international responsibility of states is that a lawful act of a state that causes harm may entail international responsibility. For example, Article 22 of the 1958 Convention on the High Seas provides that if merchant vessels are pursued by warships on suspicion of piracy or other prohibited activities, and it is subsequently established that the suspicion was unfounded and damage was caused as a result of the pursuit, the damage must be compensated. This theory is rooted in domestic law, and it may be said that its basis lies in the theory of strict liability or risk-based liability. In fact, the mere causing of harm to another, regardless of intention or motive, gives rise to responsibility, even if the person causing the harm is acting in the exercise or enforcement of a right. Article 300 of the Convention on the Law of the Sea requires member states to fulfill the duties prescribed in the Convention in good faith and to exercise the rights and jurisdiction recognized therein. From the perspective of some scholars, the International Law Commission since the 1970s has focused more on secondary rules of responsibility, namely rules governing the parameters and procedures of responsibility, rather than on the conduct that itself gives rise to responsibility. For this reason, the Commission’s final draft in 2001 did not refer to the rule prohibiting abuse of rights (Byers, 2022).

5.3. *Legal Responsibility of Neighboring States in Unilateral Exploitation of Shared Oil and Gas Fields*

According to the report of the sixty-second session of the International Law Commission, held in 2010 concerning shared natural oil and gas resources, three different views were expressed by states. Some states maintained that the legal rules governing natural oil and gas resources are similar to the legal rules governing shared groundwater aquifers, and that extraction by states from such resources should therefore be limited to an equitable and reasonable extent. Although water differs from oil and gas in terms of its characteristics and properties, their common feature lies in their fluid and migratory nature, which, despite apparent differences, may justify a similar legal treatment. In view of the principle of permanent sovereignty of peoples and nations over natural resources, recognized as a peremptory norm in international law, states possessing natural resources have the exclusive right to explore, extract, and exercise control over natural resources located within their sovereign jurisdiction, and they may exploit and sell them in any manner they desire. The conduct of various states in different parts of the world and under different political and economic systems demonstrates that sovereignty over natural resources has been accepted as an inviolable right (Cantegreil, 2021).

5.4. *The Legal Model for Exploitation of Iran’s Shared Gas Fields*

Undoubtedly, obtaining an equitable share from these fields depends on greater investment in the medium term and the application of a proper scientific method in production. Failure to exploit shared reservoirs optimally because of insufficient

reservoir information and a lack of awareness and proper reservoir management may lead to reduced production and reservoir blockage, thereby affecting the interests of both parties. In the agreement approved between Iran and Qatar, it is expressly stated: "Agreement concerning the boundary line dividing the continental shelf between Iran and Qatar: the Imperial Government of Iran and the Government of Qatar, desiring to determine accurately, equitably, and precisely the boundary line between their respective areas of the continental shelf over which they possess sovereign rights under international law." Accordingly, the single article of the agreement on the delimitation of the continental shelf between Iran and Qatar, approved in 1969/1970, emphasizes the equidistance line and states that delimitation of the continental shelf between the parties shall be based on the median line.

Iran's shared gas fields and the method of extraction from them: Agreements between Iran and other states with which Iran has shared fields, particularly the common South Pars/North Field reservoir, as well as the conduct and treatment of Iran and other states sharing the reservoir, especially Qatar, toward their contractors, are governed only by their domestic regulations and have no connection with the opposite state. Consequently, the opposite state is deprived of any right to comment on how the other party's contractor behaves toward the shared reservoir. Therefore, each state has the opportunity, disregarding what is important to the other state concerning the conduct of its contractors toward the shared reservoir, to require its contractors to generate the greatest profit and benefit for it in the short and medium term. In this regard, no single operator has been employed for the exploitation and development of shared reservoirs in Iran's shared fields in the Persian Gulf. With respect to supervision over the conduct of contractors toward the shared reservoir, as with the manner of interaction with and employment of contractors, oversight of the proper performance of their duties is carried out without an agreement between the two states owning the reservoir and solely on the basis of the domestic laws of each country.

Conservation-oriented management in the exploitation of shared reservoirs: Article 2 of the agreement on the delimitation of the continental shelf between Iran and Qatar in the Persian Gulf implicitly emphasizes, by requiring compliance with a set of technical principles in the exploitation of shared reservoirs, the application of conservation-oriented management during extraction from such reservoirs. Despite the legal obligation of the two states, Iran and Qatar, to reach agreements in this respect after the discovery of the shared South Pars/North Field reservoir, they have in practice failed to reach a formal agreement on how to apply unified management to this shared reservoir. For this reason, from the beginning of exploitation until the present, each has separately and with minimal cooperation engaged in exploiting the shared South Pars/North Field reservoir. However, despite the emphasis on conservation-oriented and unified extraction in the continental shelf delimitation agreements between Iran and the littoral states of the Persian Gulf sharing common reservoirs, conservation-oriented management has been neglected and disregarded in the legal mechanism for extracting from shared hydrocarbon reservoirs, especially gas, in this region, and particularly in the shared South Pars/North Field reservoir. It may therefore be said that the legal mechanism for the exploitation of Iran's shared resources with other Persian Gulf states, especially its gas resources, is inadequate and inappropriate (Weaver, 2023).

6. Legal Analysis of the Conduct of Kuwait and Iran in Exploiting the Arash Gas Field

Apart from discrepancies in the statistics and figures relating to the extent to which the two countries benefit from the Arash gas field, the conduct of the two states since the conclusion of the continental shelf delimitation agreement has been unilateral conduct and unilateral exploitation, in such a way that no practical mechanism based on joint exploitation exists between the two countries. In fact, this practice may be regarded as subsequent practice in relation to the treaty, which, pursuant to subparagraph "b" of paragraph 3 of Article 31 of the Vienna Convention on the Law of Treaties, may be considered an interpretative element of the treaty. Although different narratives and reports exist regarding the manner of Kuwait's extraction and the migration of Iranian gas toward Kuwait, and consequently the extraction of Iranian gas by that country, the reality is that the data underlying this claim are not precise or reliable. What has been overlooked in this regard is Kuwait's share of the field and the multiple levels of investment made by the Kuwaiti government. Nevertheless, it must be noted that gas migrates because of its fluid nature. Although Kuwait's extraction from this gas field may take place within investment projects and within the territorial jurisdiction of that country, such action may gradually cause gas to move from Iran's territorial jurisdiction toward Kuwait and thereby harm Iran's interests. In this case, the responsibility or non-responsibility of the Kuwaiti state becomes a matter of inquiry.

In the absence of such a clause, recourse to the rule of capture may encourage inequitable outcomes, in such a way that a state with weaker opportunities and capabilities should be afforded protective measures. The view based on the rule of capture, despite its simple and understandable appearance, has fundamental defects and has few supporters. This is because the principle of the independence of state will, principles such as respect for the territorial integrity of other states, the principle of non-aggression, the principle of non-intervention, the principle of state sovereignty over natural resources, and environmental obligations all constitute limitations on this rule and obligations of states. Moreover, proponents of the rule of capture cannot demonstrate extensive state practice applying this rule (Murase, 2020). In addition, the rule of capture belongs to domestic law, and in oil and gas law its origin is in the United States. Even in that country, this rule has undergone modifications, such as the doctrine of correlative rights, conservation regulations, and the prohibition of trespass upon another's property. Therefore, in principle, recourse to this rule is not compatible with the fluid nature of these substances, and there is no reason why this rule should apply in international law. Furthermore, since the judgment of the International Court of Justice in the *Lotus* case, international tribunals, in numerous decisions concerning the settlement of international disputes, have emphasized the need for cooperation among states in the exploitation of shared natural resources. In principle, the subject of the Court's decision in that case was something other than shared oil and gas fields. On the other hand, the 1982 Convention on the Law of the Sea, numerous bilateral agreements, common-reservoir clauses in maritime delimitation agreements, resolutions of the United Nations General Assembly, and environmental obligations contained in foundational international instruments all confirm the lack of acceptance by states of the idea of the rule of capture. In other words, there is no explicit rule giving preference to the rule of capture over international cooperation, and there is no example of international practice expressly applied according to this rule and resulting in a judgment based upon it (Lowe, 2024). Generally, and as a matter of principle, natural resources located on land fall under the exclusive sovereignty of states, and any exploitation of them is contingent upon obtaining the consent of those states. Natural resources located in the continental shelf are likewise subject to the exclusive jurisdiction of the coastal state and, in this respect, are in a similar position to natural resources located on land. The only difference is that the coastal state possesses territorial sovereignty on land and in the territorial sea, whereas on the continental shelf it possesses sovereign rights, while the rights of other states, such as freedom of navigation, are also preserved. At the same time, the rights of the coastal state over natural resources of the continental shelf are inherent and exclusive, and exploitation by other states depends on obtaining permission from that state. Generally, where each of two states independently exploits the reservoir within the limits of its own jurisdiction, although each exercises its own sovereign rights, this is condemned under the principle prohibiting abuse of rights if it results in the violation of the other state's sovereign rights over the continental shelf. This is because neither state may exercise its rights in a manner that causes harm to the other. It is perhaps for this reason that some international instruments have adopted an approach based on cooperation. Therefore, it may be said that if Kuwait's unilateral actions within the limits of its own sovereignty are such that, as a result of excessive exploitation, South Pars gas migrates toward that country, harm is caused to Iran's right to exploit those resources, and Kuwait will bear responsibility for violating Iran's sovereign rights over the continental shelf and Iran's territorial integrity through abuse of rights. It should be noted that the greater part of the area of the Arash gas field lies within Kuwait's maritime jurisdiction. It may perhaps be said that the reason for adopting a cooperation-based approach in the bilateral agreements between Iran and Kuwait was also to prevent the conflict of exercises of sovereignty leading to the violation of one party's sovereign rights.

Kuwait's maritime jurisdiction covers a quantitatively broader portion of the field. The main issue is the method of extraction from the field. The use of drilling technology in a manner that causes the rapid migration of gas from the Iranian area toward Kuwait, the drilling of wells in areas adjacent to the boundary line, and unconventional exploitation methods that cause depletion of the entire reservoir to Iran's detriment are among the indications that must be considered in evaluating Kuwait's method of exploitation (Lowe, 2024).

International law establishes the procedural rule of cooperation for the exploitation of shared oil and gas fields. Depending on the circumstances, this rule has manifested itself in various forms, including joint development, unitization, and common-reservoir clauses in delimitation agreements. In interpreting this agreement in light of the law governing shared fields, it may be said that exploitation in the prohibited zone stipulated in the agreement, directional drilling resulting in the removal of hydrocarbon resources from the area of Iran's continental shelf, and abuse of Kuwait's right to exercise sovereignty in a manner that violates Iran's sovereign rights over natural resources of the continental shelf are prohibited. At the same time, in evaluating

these actions, attention must be paid to that country's approximately twofold share of the field. Despite the provision of mechanisms for cooperation and unitization in the aforementioned agreement, no practical action has so far been taken in this regard.

7. Legal and Contractual Mechanisms for the Exploitation of Shared Gas Fields

Given the criticisms directed at all three generations of buyback contracts and the problems that these contracts face in their implementation, the need to revise this contractual model has long been felt. In the area of shared fields, a new contractual generation can also create a fundamental transformation. New upstream gas contracts must be free from the defects and obstacles of buyback contracts and must possess characteristics that make them attractive to foreign investors while also securing the national interests of the country and the interests of investors. Among the most important of these characteristics, which also affect the discussion of shared fields, is the compatibility of the country's upstream contracts with internationally recognized standards. The oil and gas industry possesses unique characteristics compared with other industries, and these characteristics have led to the emergence of a customary law and a set of standards and principles specific to this industry, which are taken into account in all forms of upstream oil and gas contracts. One criticism directed at buyback contracts is that this type of contract is not compatible with the international practices of upstream contracts in the oil and gas industry. Therefore, the inclination to design a new contractual generation that is more compatible with the international standards and customs of the upstream sector, and that can compete with common regional and global contracts, is among the important reasons for the necessity of designing a new contractual generation.

Maximizing investors' incentives to enter high-risk and shared fields: The failure to provide an appropriate and dynamic mechanism for creating and enhancing the level of incentives for international oil companies to enter high-risk or shared fields is another criticism directed at current buyback contracts. Therefore, in designing new contracts, the necessary flexibility and attractiveness must be provided to enable international oil companies to participate more effectively in the country's various hydrocarbon fields (Brownlie, 2020).

Observance of conservation-oriented production standards: Protection and preservation of the reservoir is one of the fundamental concerns of the host state in oil projects. International oil companies consistently seek to increase their profits and maximize extraction within a short period of time, and this may cause damage to the reservoir. Therefore, the host state always allocates a clause of the contract to this issue and provides an enforcement guarantee for it. This issue has also been raised in buyback contracts, but its realization in all cases has faced ambiguities. Accordingly, in the new contractual generation, reliance on policies such as cooperation and the contractor's commitment to long-term production and enhancement of the field recovery factor, preparation of a conservation-oriented operations plan by the contractor and its implementation after the employer's approval, and the provision of financial incentives may be effective in achieving this important objective.

Oil contracts in Iran fall within the category of administrative contracts. Pursuant to Article 2 of the Petroleum Law enacted in 1987/1988, the country's petroleum resources are considered anfal and public wealth, and according to Article 45 of the Constitution, they are placed at the disposal of the Islamic government. All facilities, equipment, assets, and investments made or to be made inside and outside the country by the Ministry of Petroleum and its affiliated companies belong to the Iranian nation and are at the disposal of the Islamic government. The exercise of sovereign rights and ownership over petroleum resources and facilities belongs to the Islamic government, and pursuant to the provisions and powers expressly stated in this law, it is entrusted to the Ministry of Petroleum, which must act in accordance with the general principles and programs of the country.

Under the stabilization clause, the host state cannot alter the equilibrium existing at the time of contract conclusion by changing existing laws and regulations or enacting new laws and regulations. Since oil contracts in Iran are governmental contracts, and since the state cannot be prohibited from legislating by virtue of any contract, the inclusion of a stabilization clause in Iran's buyback contracts and new petroleum contracts is excluded. However, measures may be adopted to prevent contractual instability and to create secure conditions for investors.

One of these measures is the inclusion of a renegotiation clause in contracts. Horn defines renegotiation as the joint effort of the parties to adapt the contract to new conditions by modifying its provisions. The inclusion of such a clause in the contract

may increase the confidence of both the contractor and the employer in the face of unforeseen circumstances and may guarantee their rights against such circumstances (Ong, 2022).

In Iran's buyback contracts, renegotiation has been accepted in the following manner: the scope of work and the method of project implementation may be changed based on information obtained from new drilling operations. This matter must first be raised in the joint committee of the employer and the contractor; if a majority vote is not obtained, the issue is referred to the senior managers of the parties, and the final remedy is referral of the dispute to arbitration. On the other hand, in Iran's buyback contracts, the National Iranian Oil Company set a ceiling for the contractor's costs, and the costs incurred by the contractor were payable only up to that predetermined limit. Under this mechanism, the contractor's economic risk arose only if it spent more than the contractual ceiling. If such costs resulted from additional work or an increase in the scope of work, the contractor could reclaim them; only if the cost increase resulted from reasons other than these would the contractor face the risk of disruption of the project's economic equilibrium, for which no compensation mechanism had been provided. However, in the new model of Iranian petroleum contracts, in order to remedy this deficiency, no ceiling is set for the contractor's costs, and all costs incurred with the employer's approval are recoverable. From this perspective, no risk is imposed on the contractor.

8. Conclusion

The right of permanent sovereignty over natural resources means that states possessing natural resources have the right to exercise control over the natural resources located within their territory and may extract, exploit, and sell them in any manner they desire. The conduct of various states across the world, with different political and economic systems, demonstrates that sovereignty over natural resources is recognized as an inviolable right, to the extent that the International Court of Justice in The Hague, in the case concerning Congo v. Uganda, expressly acknowledged that the principle of sovereignty over natural resources forms part of international custom. As Articles 56, 77, and 81 of the Convention on the Law of the Sea also provide, the coastal state has exclusive rights and sovereign authority for the exploration and exploitation of natural resources located in its continental shelf and may authorize and regulate drilling in this area for any purpose. Therefore, if the coastal state does not explore or extract the natural resources of the continental shelf, no one may undertake such activities without the explicit permission and consent of the coastal state. According to these articles, natural resources mean mineral and other non-living resources of the seabed and subsoil. In explaining and interpreting the aforementioned articles, particularly Article 77, it may be stated that since the general expression "no one" also includes adjacent coastal states, the application of the other phrases that operate as the rule in this paragraph indicates that the neighboring coastal state may not, through operations that it carries out within its own territorial jurisdiction, cause the migration of natural resources existing in the continental shelf of another state and, through its exploration and exploitation operations, appropriate those resources that fall within the exclusive jurisdiction of the neighboring state. On this basis, it may exploit the continental shelf in the exercise of its sovereign rights only to the extent that it is certain that the extracted resources have been taken from its own jurisdiction and have not migrated from the continental shelf of another state. Article 300 of the Convention, which conditions the exercise of sovereign rights on good faith and the absence of abuse, and paragraph 2 of Article 79 of the same Convention, which limits the measures of the coastal state in exercising its exclusive sovereign rights over the continental shelf to reasonable measures in exploration and exploitation operations, support this interpretation. Therefore, a fortiori, any drilling that begins within a state's own maritime jurisdiction but whose producing section enters the maritime jurisdiction of the adjacent state constitutes, pursuant to the aforementioned articles, particularly Article 81 of the Convention on the Law of the Sea and the governing principles, a breach of international obligations and an encroachment upon the sovereign and exclusive jurisdiction of another state. The point inferred from the totality of international agreements, whether bilateral or multilateral, including the Convention on the Law of the Sea, is that if the will of states had been directed toward recognizing unregulated, unilateral, or so-called capture-based extraction in the exploitation of shared gas fields, they would never have referred to the necessity of joint cooperation in the exploitation of these fields. Consequently, in view of the principle of equity and other recognized principles, practices, and rules of international law, it may be concluded that states possessing a shared reservoir may exercise the right to extract natural oil and gas resources to the extent of their share of the reservoir, taking into account the criteria and indicators of equitable extraction, which will be unique to each reservoir and to the adjacent states concerned according to the circumstances. For some time, reducing oil production from independent fields and implementing early and accelerated production plans from the

country's shared and border oil and gas fields have been placed on the agenda of the Ministry of Petroleum, and measures have also been considered in this regard. Nevertheless, obstacles remain along this path, and these have prevented exploitation from beginning in many fields or production from reaching an appropriate level. This study sought to examine not only legal and contractual problems and challenges, but also financial obstacles and, in particular, the broad economic and political sanctions imposed against this industry, so that by considering all these factors together, a proper understanding of the existing conditions in the country and in the international system regarding shared fields could be obtained, and appropriate solutions could be proposed to overcome this situation and improve the manner and level of exploitation. Undoubtedly, the conclusion of bilateral or multilateral agreements and exploitation based on joint development, whether through a single-state model, participation of two states in exploitation, or the creation of an appropriate joint authority, constitutes the most suitable method for exploiting fields and secures maximum benefits for both states. However, problems arising from the contractual system and the bureaucracy governing this sector, along with political issues and problems resulting from the inability to finance the fields, have prevented optimal exploitation of the fields. Reforming the contractual system and moving from the buyback contractual model toward modern contractual models, securing investment in the country's oil and gas projects, increasing the capacity of energy diplomacy, and employing innovative financing methods and attracting domestic capital may be regarded as mechanisms for overcoming this situation and improving the environment governing the exploitation of shared oil and gas fields.

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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