

Comparison of Stringency of the Environmental Requirements and Compliance with them in Upstream Sector of Oil and Gas in Iranian and American Law

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ABSTRACT

The purpose of this study is to compare the stringency of and compliance with environmental requirements in the upstream sector of oil and gas in law of Iran and the USA. This study is conducted using the mixed entanglement method (qualitative–quantitative). In the qualitative part, library studies are used. In the quantitative part, the studied society is a group of six professionals in the field of oil and gas, who filled out a questionnaire consisted of 34 questions prepared by the Worley Parsons[†] in a similar research approved by the jurisdictions of 10 countries. The questions are prepared by a team of experts with international experience. The components of stringency of and compliance with law during the phases of approval, operation, and closure of a hydrocarbon project are studied using the Delphi method. At the level of stringency, the environmental assessment in the US is carried out with human resources and costs 10 and 26 times more than those in Iran. The US, with 13 scores, is more stringent than Iran with 5 scores. In the project closure phase, Iran does not impose any obligations for rehabilitation and restoration. At the level of compliance, the construction environmental management plan (CEMP) is mandatory in both countries. In Iran, the list of violations and their consequences will not be published. The US regulatory mechanisms of restoration are an appropriate model. On the whole, Iran gains 29 scores, and the United States obtains 42 scores. The recommendations are based on these two scores.

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[†]<https://www.medicinehat.ca/home/showdocument?id=11659>

1. Introduction

Oil and natural gas have been the primary sources of energy since the 1950s to respond to the growing demand for energy due to population growth, and this dominance is expected to continue for decades to come (Edwards, 1997). The global oil industry possesses ample power and wealth. In many countries, both oil exporters and importers have taken over the economy. The countries with oil resources are carefully protecting this wealth, and oil taxation is an important aspect of this industry. The geological, engineering, and financial implications of this industry are global (Johnston, 1994). The scope of environmental activities includes economic activities the main purpose of which is to reduce or eliminate pressure on the environment or the use of natural resources. The technical nature and criteria for environmental protection activities and management of environmental protection resources are those activities the main purpose of which is to prevent, reduce, and eliminate pollution and other manifestations of environmental degradation (Schenau, 2018). The oil and gas industry has environmental potential risks such as the emissions of gases and particulates during drilling, production, and refining; intensifying greenhouse effect, acid rain, and groundwater pollution; reducing water quality; damaging biodiversity; and destruction of the ecosystem. The pollution results of the activities of this industry from the exploration stage to refining and dumping of crude oil affects the seas, air, water, soil, and our planetary creatures. Pollution is associated with almost all stages of oil and gas production from exploration to refining. The emissions of airborne gases and particles generated during drilling, production, and refining cause pollution. For example, studies by a number of researchers in the United States show that oil exploration and production in the United States have had adverse

environmental effects on soil, surface water, groundwater, and ecosystems in 36 states and production centers (Kharaka & Hanor, 2003). From this perspective, the awareness of major environmental issues has necessitated the regulation of oil and gas industry activities. The fourth principle of the “Rio” declaration emphasizes the conceptual integration of development and the environment in order to achieve sustainable development and environmental protection, and it should be considered as an integral part of the development process (<https://bit.ly/3hV5DeG>, 1992). Therefore, environmental management guidelines for oil and gas exploration and production are based on the collective experience gained through the United Nations development program and oil industry.

1.1. Statement of the Problem

The privacy of the resources is the stimulus to the legal system and oil and gas contracts in the US, and most of the activities in this sector are based on this characteristic. Mineral rights and oil and gas leases in the United States are affected by real estate rights; due to the fact that land the ownership and the ownership of the mineral resources may be separate, oil companies can approach the owners of mineral resources directly. The private ownership of mineral resources and the large scale of US fields have led to hundreds of oil companies to be involved in oil and gas operations. The large number of oil companies ready for operation and the lack of administrative formalities by the owners of mineral resources have made exploration and drilling operations much faster than in other parts of the world, leading to the dynamism of the oil and gas industry, which reduces the barriers to entry in this industry and the dynamism of the US economy (Asgharian, 2012). Table 1 lists some of the laws, regulations, and institutions related to the US oil and gas sector.

Table 1. Environmental acts and the related organizations in oil and gas sector in the USA[†].

Abbreviation	Title
CAA	Clean Air Act
NAAQS	National Ambient Air Quality Standards
CWA	Clean Water Act
ESA	Endangered Species Act
TSCA	Toxic Substances Control Act

[†][https://content.next.westlaw.com/Document/I466099561c9011e38578f7ccc38dcbee/View/FullText.html?transitionType=SearchItem&contextData=\(sc.Search\)](https://content.next.westlaw.com/Document/I466099561c9011e38578f7ccc38dcbee/View/FullText.html?transitionType=SearchItem&contextData=(sc.Search)).



Abbreviation	Title
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
NEPA	National Environmental Policy Act
EPCRA	Emergency Planning and Community Right-to-Know Act
RHA	Rivers and Harbors Act
OSHA	The Occupational Health and Safety Administration
	Special wastes (cement kiln dust waste and crude oil and natural gas waste).
	Used oil
	The EPA's standards of methane emissions from landfills and the oil and gas sector.
	Regulatory requirements for hydraulic fracturing.
OPA	Oil Pollution Act
	Environmental impact assessments (EIAs)
EPA	Environmental protection agency
DOJ	US Department of Justice
API	American Petroleum Institute

In Iran, more than a decade has passed since the environmental impact assessment process. This assessment does not provide singly the sustainable development goals of the country because the general and sometimes transient rules and the interference of taste in implementation challenge the effectiveness of these rules. The results of the analysis of different aspects of environmental impact assessment in Iran show that the most important challenges and limitations are in the field of laws and regulations; some laws do not possess enough deterrence. There are some shortcomings in the administrators in terms of capabilities and approaches, evaluation methodology, process of preparing and evaluating project review reports, monitoring, control, and supervision in the expert field. Moreover, the weakness of public participation is also evident; a review of the environmental impact assessment laws of the developed countries and their comparison with Iran suggests that Iran's environmental impact assessment rules are general and inefficient (Dabiri & Kiani 2007). The requirements of strategic environmental assessment are evident at two levels, namely at the legislative level and at the decision-making and enforcement level. The policies, enforcement, and compliance with legal requirements will not work unless legislation is enacted in accordance with advanced

countries. The adoption of comprehensive and deterrent laws and the integration of macro environmental considerations into the policies, programs, and plans of the country prior to their implementation will lead to sustainable development. (Khoshneshzadeh et al. 2012). The Iranian legislator's view is broad and concise and has different perception capabilities. This general view is obvious in preventing environmental pollution; however, the laws of the United States of America are very broad and detailed and has been edited in all aspects of the subject. Furthermore, this issue has inevitably expanded in the field of performance. In the context of upstream contracts of oil and gas in US, environmental laws include any subject-matter law; decree; regulation; lawsuit; set of rules; judicial order; interim order; declaration of commission or order issued by the central government; provincial authorities, including effective or prior effective laws, governing the control of any pollutant or protection of air, water, soil, or the environment; and the disposal of hazardous waste (<http://www.epa.gov>, 2017). This study aims to identify and evaluate the successful experience of the US in this field and proposes its application in order to improve the environmental requirements in Iranian oil and gas industry and to increase the level of compliance with them. Therefore, from the viewpoints of the components

and general concepts of strictness and compliance with laws and regulations, the environmental requirements of the two countries are compared herein in three stages, i.e. the life cycle of a major hydrocarbon project, including approvals or permits, operations, and terminations.

1.2. Research Objectives

The evaluation of environmental, legal requirements has been carried out with the aim of identifying environmental legal problems of the Iranian oil and gas industry, identifying common themes and their advantages compared to the US laws and regulations, proposing amendments to the existing laws and regulations, and improving environmental indicators and concepts such as stability, adequacy, impact, and different implementation costs; the ability to meet specific environmental requirements is also addressed. We assume that the Iranian law, unlike the US law, needs to be reviewed in the enactment of environmental regulatory requirements in terms of stringency and compliance with laws and regulations, particularly the requirements for approval, operation, and termination of hydrocarbon projects.

2. Theoretical Foundations and Literature Review

Compliance with environmental regulations is required in all activities likely to cause damage to the environment, and it is more important in some operations such as the extraction of crude oil because of its nature and its greater impact on the environment (Foroughi Nia et al., 2017). The spread of pollution caused by petroleum has led countries to look for appropriate solutions for counteracting its damaging effects. The reason is that the regulators of oil contracts do not consider themselves to be bound by two fundamental issues; the first is the need to enforce environmental rules in oil contracts on the basis of the international trade principles and international laws, and the second is the failure to apply these rules correctly in the legal relations between the parties.

Therefore, it is very important to find some suitable solutions for gaining a common and beneficial understanding between the parties of the contract to facilitate the implementation of environmental regulations. The proof of the need to include environmental rules in oil contracts, which is the most important document in regulating the legal relationships of the parties, can be used as a framework to insert environmental obligations of the parties so as to institutionalize the use of energy resources with

environmental protection, as stated in the Rio Declaration.

Parker and Peet in their joint book titled “International Law with Emphasis on the Marpol Convention and its Additional Protocols” conducted a comprehensive review of the inadequacy of oil pollution control and international legislation. From their point view, the two main factors in preventing oil pollution and the effectiveness of preventive precautions are the inconsistency of international regulations with scientific findings and the inconsistency of the existing conventions with real needs. They wanted structural changes in the content of international conventions related to oil pollution and the development of the relevant international laws in the long run (Parker & Pete, 1987). Amani in his book titled “International Oil Contract Law” argues that as the nature of oil contracts is a commitment to the outcome, an oil contract is terminated only when all the commitments of the parties in the oil projects have been fulfilled (Amani & Ismaili, 2014). Saber in his essay titled “Mutual Trade in the Upstream of Oil and Gas Sector”, considers applying environmental regulations during oil operations to be a government duty in national resources (Saber, 2007). Zamani believes that although international environmental laws have been able to bring about a fundamental change in the principles of international responsibility, they still lack effective enforcement mechanisms (Zamani, 2002). Iranpour also considers environmental regulations in oil contracts in terms of implementing some types of stakeholder participation in decision making but not exercising the absolute sovereignty of the host government (Iranpour, 2014). In an article titled “Legal Principles Governing Upstream Contracts of the Iranian Oil and Gas Industry”, it has been stated that these principles have an imperative aspect that makes it impossible to avoid them as the red lines which are governing the conclusion of foreign contracts in the upstream sector of the country’s oil and gas industry. One of the principles discussed in this article that is related to the present study, is to guarantee a safe harvest of oil and gas reserves during the contract period (Ebrahimi et al., 2014).

A study titled “International Comparison of Leading Petroleum and Gas Producing Areas for Environmental Requirements” was carried out by British Worley Parsons Company in London and its subsidiaries in Calgary Alberta, Canada, in cooperation with the Oil and Gas Producers Association and by using the information collected from questionnaires from 10 regions around the world. This study has examined and compared



environmental policies, laws, and regulations in the upstream oil and gas industry, and it is not just a review of the performance and impact of the role of governments. Legal studies in 10 regions, representing the 7 major continental regions worldwide, showed that environmental policies and regulatory laws and regulations in Alberta Canada, Queensland Australia, and the Gulf Coast of the United States were the leading comparisons. Questionnaires and information from this study were used to collect information and to compare the environmental requirements in Iran (Worley Passons Corporation Annual Report, 2014). Disregard for environmentally sustainable capacities, inappropriate exploitation of natural resources, human tendency to exploit the environment, and disregard for the logic of economics in the utilization policies on environmental and natural resources have created conditions that all societies have somehow faced environmental problems (Sajjadi et al., 2017). As the environmental problems of human activities have spread, it has become clear that economic activities cannot continue without environmental restrictions. On the one hand, the principle of shared but different responsibility is one of the international principles of the environment, which originates from the concept of the common heritage of humanity and emphasizes the shared responsibility of states to protect the environment; at the same time, their various commitments take into account the different specific circumstances of the countries in creating environmental problems and their technical and economic capabilities to address environmental problems. This principle has been applied to many international documents and the World Trade Organization agreements. Although it has not yet become an international customary rule, its key role in the development and enforcement of international environmental law through the fairness of treaty commitments and the promotion of sustainable development in developing countries is significant (Abdollahi, 2019). Today, the countries that do most of the environmental degradation have no sense of commitment to correct the process of degradation and reduction of pollution, so the type of legislative should start from the center of global management, the United Nations. Government sovereignty is one of the oldest principles in the domestic and international arena that has been accepted by most legal systems. The territory of a state includes not only land but also territorial waters within the boundaries of a state; it includes rivers, bays, and lakes in surface and the groundwater in depth. It also includes certain sections of the coastal sea, including open bays and their islands that are located less than 24

miles away and are under the exclusive jurisdiction of the coastal government; this territorial jurisdiction is also permitted up to 12 miles of shoreline, with an emphasis on safeguarding the safe passage of foreign ships. Therefore, since the subject of reciprocal contracts may be due to the existence of oil and gas resources onshore or at sea, it will entail the exercise of state sovereignty (Ebrahimi et al., 2014). The relevant environmental laws in Iran are Article 50 of the constitution and the law of the environment approved on 18/06/1974 and the amendment on 15/11/1992 as well as the law on the prevention of air pollution approved on 23/05/1995. The 7th principle of the Petroleum Law, approved on 29/09/1987, obliges the Ministry of Petroleum to act in the course of petroleum operations while properly planning, monitoring, and taking full care so as to conserve natural resources and wealth and facilities and to prevent environmental pollution (water and air) in coordination with the relevant organizations. Also, the environmental regulations in the free trade industrial zones are similar to those in the Iranian mainland, and a unit of the Environmental Department, which is located in the organization of each free trade area, performs the duties of controlling the proper enforcement of environmental laws and regulations in these areas. Accordingly, general regulations of the country have policies to protect the environment, and if the environmental pollution has the following conditions, it is considered to be a crime:

- The severe violation of obligation;
- The breached commitment has fundamental importance for the protection of the environment (Darabi Nia, Foroughinia, Naghavi Marmati, 2013: 128).

The characteristic of the US environmental laws is that in addition to compulsory civil penalties, the role of citizens and non-governmental organizations in enforcing the environmental laws is addressed. There is a freedom of information circulation in the United States, and bylaws and specific environmental information are made available to citizens under the Sappfund Law. Greater ability is given to individuals and organs to expose complaint and lawsuits to enforce environmental regulations, which encourages executives to pursue upstream enforcement actions (<http://www.epa.gov>, 2017). Another paper titled "Comparative Study of Air Pollution Crimes in Iranian Law and the US Federal Law with Emphasis on Fresh Air Law of the United States" has conducted a comparative study and examined crimes related to air pollution in Iranian law (under Islamic Penal Code and other laws) and in the United States

federal law specifically dealing with environmental issues related to air pollution and US federal law under United States Code. Examining the provisions of the United States Federal Code and comparing it with the domestic law, demonstrate that, on the one hand, these regulations are more complex and extensive because of entrance into extensive and specialized codes and style sheets; thus, the criminalization of violations of such rules by the federal legislature have resulted in the introduction of widespread and specialized statutes and regulations and in offenses under the federal Clean Air Act; on the other hand, the penalties provided by the law, opposite to federal clean air law, are not sufficiently severe for the prevention of air pollution and consequently will not reflect the necessary deterrence; second, because of the general criminalization under Article 688 of the Islamic Penal Code, it was inconsistent with the principle of legality of punishments for the sake of failure; also, because of the wide scope of the inclusion, it will ignore the legislature's ruling on the subject matter. Under US law, state executive plans, implemented in each state in coordination with the Federal Environmental Protection Agency, provide air pollution prevention solutions due to different solutions to reduce pollution according to the specific characteristics of the region and its dynamics. A better and more effective method is created (Khatam Goya & Sabouri Pour, 2015). In another work entitles "Investigating the Performance Indicators of Environmental NGOs in Achieving Environmental Sustainability" by Allahyan et al., the concept of efficiency has been proposed by the UNDP and the World Bank in the form of eight indicators of participation, legitimacy, and rule of law; transparency; accountability; people centeredness and satisfaction; equality of rights and justice; efficiency and effectiveness; and accountability (Allahyan et al., 2010).

3. Research Method

This study was conducted in parallel with two methods to allow the comparison of the results of both methods.

3.1. Librarian Method and Comparative Law Documents

In this method, the environmental requirements of the upstream oil and gas industries were studied in the US and Iranian legal systems so that their commonalities and differences are discovered and could be understood sufficiently.

Due to the background of the subject and the theoretical framework, this method has used the reference books, research articles, scientific research journals, government documents of both countries, journals and information journals, statistics, computer resources such as the Internet and official sites, international conference papers and statements, and the interviews and opinions of experts.

3.2. Descriptive-Survey Research Method with an Emphasis on Delphi Method

In the next step, a questionnaire was designed in both Persian and English languages; this questionnaire was designed by the order of the Canadian Association of Petroleum Producers (CAPP) commissioned by Worley Parsons in 2014, which has been used for international comparative studies on environmental regulation in several oil and gas producing countries. The questions of the questionnaire have been designed by an international team of experienced professionals based on the concepts of rigor, transparency, and compliance. These questions lie in three stages of the life cycle of a large hydrocarbon project, namely the approval and authorization, the operation, and the termination of the project. "Yes" answers have a value of one and "No" answers have a value of zero; responses that have a wider range are classified by a simple chain such as 1 to 3. The scores given to each country are the result of the answers to a questionnaire after the revision phase by the professionals.

3.3. Statistical Scope

In this study, the opinions of six experts of Iran University and Environmental Protection Agency in environmental law requirements have been used to complete the questionnaire. A similar research conducted by Worley Parsons was used to collect information about the United States, and the views of six international experts in the field of upstream oil and gas contracts related to the research were systematically used. The study has selected 10 countries out of 75 countries to study based on the level of their recent oil and gas activities and how they are managed.

4. Data Analysis

4.1. Results

The generality and possibility of evading responsibility and some rules are temporary in the set of regulations related to the environmental requirements of the oil and gas industry in Iranian law. On the other hand,



the multiplicity of decision-makers with the least convergence in this issue has led to the low level of efficiency of environmental requirements in Iran. Considering the environmental requirements of oil and gas laws in the United States, as well as research backgrounds comparing major oil and gas producing countries with the United States, shows that the US is at the forefront of formulating, implementing, and monitoring these requirements.

5. Conclusions, Discussion, and Suggestions

5.1. Discussion

Comparison of the stringency of environmental requirements and the level of compliance with them in phases of approval, operation, and closure of a large hydrocarbon project in the two countries reveals that the United States and Iran have achieved 73 and 39 scores respectively. Thus, the United States is meaningfully ahead of Iran.

a. Results at the level of stringency

Approval phase: Both countries demand environmental assessment as a prerequisite (Iran 18 scores and the US 27 scores). Gaining approval for beginning the project on a large scale in Iran takes between 6 to 18 months, and \$75,000 is required to receive approval. However, in the US, it costs more than \$2 million over 18 months.

In Iran, less than 10 persons are employed for the environmental assessments of large oil projects, while in the US, up to 50 persons in North Dakota and over 100 in the Gulf Coast serve this process. The shorter time and the lower cost of performing evaluation in Iran is not a positive factor here because considering the responses of other options indicates the higher quality, greater depth, and importance of these assessments in the US.

Operation phase: The two countries are very similar in environmental requirements such as extending environmental regulatory authorizations, providing regular regulatory reports and environmental management plans, and explaining regulatory requirements and criteria such as thresholds.

Closure phase: The scheduled termination of project operations in both countries is required. In Iran, unlike the US, there are no mandatory requirements for reform at the end of the life. The standards of reconstruction and rehabilitation have been defined in both countries; a government certificate will be issued if any resuscitated activities are carried out in Iran after the project is completed. No guarantees or bonds will be received in

Iran to guarantee the fulfillment of resuscitation obligations at the end of the life of the facility; however, in the US, such guarantees are made for the end-of-life commitments. Similar to the Gulf Coast of the US, in Iran, there is no specific governmental program to rebuild abandoned facilities and oil wells in cases where engineering firms have failed; nevertheless, in North Dakota, the government has programs specifically in reconstruction and rehabilitation.

At the end of the projects, the deficiencies of environmental laws and regulations and their impact on pollution in Iran are evident because there is no need to reform at the end of the project in Iran and the government has no plan in this regard. At this stage, a significant difference is confirmed in the environmental requirements of the two countries, and these differences are obvious. Sufficient financial implications and guarantees for reforming are clearly anticipated in the United States. It can be concluded that there is environmental pollution caused by the abandonment of facilities after the termination of the projects. The need to reform and rebuild facilities in the United States can enhance the country's environmental indicators, and these facilities have become good opportunities for environmental threats.

b. Results at the level of compliance with environmental requirements

At this level, Iran gains 11 scores but the US receives 15 scores totally.

Approval phase: In both countries, it is necessary to submit CEMP. In Iran and the US Gulf Coast, the reference standard is used for environmental assessment.

Operation phase: Unlike the US, there is no announcement or publication of violations and their consequences in Iran. In the case of violations, there is no legal protection in Iran, while in the US, legal protections are available. For instance, the person reporting a violation receives protection from authorities against losing his or her job in the US. There are laboratories in the two countries that measure the threshold of a determined limit. Regulatory mechanisms in Iran are constrained to only setting limits on the ceiling of oil and gas production. Nonetheless, in the United States, in addition to these limits, there are deterrent tools such as legal actions, imprisonment, and fines.

Closure phase: There is no monitoring mechanism in Iran to ensure the revitalization of the outdated facilities, and the monitoring will not continue after the

termination of the project. Monitoring continues in North Dakota when the projects ends.

5.2. Suggestions

Proper modeling of environmental assessments by examining the details of the approval stage of hydrocarbon projects in the United States and requiring environmental assessment and remediation in Iran through the preparation of a rigorous and robust executive compliance code indicate:

- Developing and communicating mechanisms for public and expert's opinions and other social partners when drafting environmental upstream oil and gas laws and regulations;
- Assigning responsibility to NGOs for hydrocarbon projects to play a constructive role in tackling social erosion, environmental degradation, violating people's legal rights, and resolving problems and obstacles in the way of implementing oil and gas industry projects to avoid incorrect and superficial judgments about the parties concerned;
- Forecasting incentives to accompany and participate in the hydrocarbon projects, as well as observing social and environmental requirements and methods for preventing the destruction of onshore and marine ecosystems;
- In Iran, the proposed plans of the Ministry of Oil have forecasted that the exports of crude oil and gas will be doubled or over. On the other hand, according to the laws of the US the exports of crude oil have generally been banned. Therefore, by comparing and paying attention to the general policies on employment, the policies on the resisting economy, and the general policies on the oil and gas sector, the ban on the export and sale of crude oil in Iran should be enacted and enforced; the export of only processed goods and finished petroleum products should be allowed. This could be a rational start to remove the dependence of the country's current budget on oil. If this law is adopted, Article 13 of the Resistance Economics Policy, titled "Tackling the Income from Oil and Gas Exports and Increasing the Exports of Petroleum Products", will be implemented;
- The quarterly and annual environmental monitoring reports and information at a community level and the consequences of failing to comply with environmental requirements across the oil industry should be submitted by the environmental protection agency for the purpose of clarifying and proposing amendments to the laws and regulations.

Examples include (1) the rate of combustion of gases or the reported continuous increase in the coefficient of recovery and final withdrawal from oil and gas reservoirs and (2) the implementation of requirements for the reconstruction of oil facilities, especially in the south of the country, which in addition to improving the productivity of the oil industry, it can create one million new jobs, according to some officials;

- In addition to environmental considerations, necessary forecasts should be made about the adverse social impacts at the end of the life of the oil facility on the host community. For example, solutions should be developed for the stagnation resulting from the project completion and the maintenance of the indicators of quality of life and urban development. Moreover, accordingly, the relevant standards for reporting, identifying, and evaluating projects after termination shall also include environmental and social impacts;
- The assessment and identification reports of environmental impacts at the end of the project must be capable of being adapted to new conditions, regulations, and standards. Further, this capability should cover all stages of the hydrocarbon project life cycle, including approval, operation, and termination.
- The end of any oil project must be clearly stated at the time of obtaining the oil project approval. Completion standards should be formulated onshore and offshore, and indicative methods should be developed for unused facilities and wells. Operations, including corrections and resuscitation, should be reported transparently to officials and the public.

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