

Revisiting the Guarantee Mechanisms in Financing Upstream Oil and Gas Projects: Emphasis on Nongovernmental Guarantee Funds

Saeid Daneshi^{1*} and Abbas Kazemi Najafabadi²

¹ PhD Candidate in International Oil and Gas Contract Management, Faculty of Law and Political Science, Allameh Tabatabai University, Tehran, Iran

² Associate Professor, Department of Private Law, Faculty of Law and Political Sciences, Allameh Tabatabai University, Tehran, Iran

Highlights

- A comprehensive analysis of structural, institutional, and legal challenges affecting the financing of upstream oil and gas projects within Iran's financial system
- Clarification of the role of smart guarantees in enhancing project finance standards and facilitating capital mobilization in the energy sector
- A comparative study of successful international experiences to design a context-specific and locally adaptable guarantee model for Iran
- Exploration of the untapped potential of recent legislation and strategic policy documents to replace traditional guarantees with flexible, institutional mechanisms
- Introduction of a conceptual framework for the establishment of a specialized institution—The Oil Guarantee Fund—with an independent legal structure and nongovernmental governance model
- Proposal of a governance framework, institutional architecture, and supervisory requirements aimed at mitigating default risk and enhancing credit reliability in high-risk energy projects

Received: May 25, 2025; revised: August 18, 2025; accepted: September 02, 2025

Abstract

Financing upstream oil and gas projects in Iran—particularly for nongovernmental companies—faces numerous obstacles, including the lack of effective guarantee mechanisms, absence of credible collaterals, limited access to sovereign guarantees, and skepticism among financial institutions. This paper, adopting a descriptive-analytical approach and grounded in the study of existing legal and institutional frameworks, examines the legal capacities for designing and utilizing alternative instruments to traditional guarantees in the financing of high-risk projects. Within this context, and based on the Production and Infrastructure Financing Act enacted in March 2024, the executive bylaw on the establishment of nongovernmental guarantee funds, and other upstream legal documents, the establishment of an institution titled the Oil Guarantee Fund is proposed as an innovative solution. This fund is designed to mitigate default risk, facilitate project credit assessment, and replace bank- or property-based guarantees for companies active in the oil and gas value chain. Its legal structure is envisioned on the model of nongovernmental institutions and private joint-stock companies. The proposed model has been developed through a legal analysis of the relevant documents and informed by the outcomes of expert panels comprising specialists in energy law, finance, and public policy. Findings of the study indicate that the establishment of such a fund, capable of issuing valid guarantees based on contractual commitments, provides a practical tool to strengthen institutional trust and facilitate investment in upstream oil and gas projects. The article also presents a conceptual and institutional framework for the fund and offers recommendations for its policy-level and legal implementation.

* Corresponding author:

Email: S_Daneshi@atu.ac.ir

Keywords: Funding gap, Guarantee fund, Project finance, Upstream oil and gas.

How to cite this article

Daneshi, S.S. and Kazemi Najafabadi, A., *Revisiting the Guarantee Mechanisms in Financing Upstream Oil and Gas Projects: Emphasis on Nongovernmental Guarantee Funds*, *Petroleum Business Review*, Vol. 9, No. 4, p. 20–42, 2025. DOI: [10.22050/pbr.2025.525871.1395](https://doi.org/10.22050/pbr.2025.525871.1395)

1. Introduction

One of the fundamental challenges in industrial development is the financing gap, defined as the discrepancy between the actual financial needs of economic enterprises and their effective access to financial resources. Multiple factors contribute to this gap, among the most critical being the limited financial resources available in many countries, particularly in developing economies. In Iran, the issue is further exacerbated by the imbalanced structure of the banking system, the weakness of the capital market, limited private sector investment, diversion of capital from productive sectors, inefficiencies in the National Development Fund, and the government's chronic budget deficits (Daneshi, 2019). Moreover, specific international conditions and economic sanctions have intensified the legal, economic, and political risks within the business environment.

In many cases, however, the lack of financial resources is not the sole obstacle to project financing. A more significant challenge lies in the inability of enterprises to provide collaterals and guarantees acceptable to the financial system. Although many companies seek financial support, they often lack access to valid collateral, or their proposed guarantees lack sufficient liquidity, ultimately transferring the risk of default to financial institutions and creating an atmosphere of distrust regarding the repayment of principal and interest. Previous studies have primarily focused on identifying the causes of delays or failures in development projects but have often failed to offer practical solutions.

This article aims to propose an effective approach to facilitate project financing, particularly in the upstream oil and gas sector, which serves as the driving force behind project execution. Upstream oil and gas projects are inherently risky, capital-intensive, and require extended periods to become operational. Before production begins, companies in this sector typically hold intangible and non-bankable assets—such as capital expenditures, service contracts, or prospective rights to undiscovered reserves—that the banking system does not recognize as collateral. Consequently, financial institutions consider the default risk in upstream oil and gas projects to be high, resulting in limited interest from banks and private investors in financing these ventures.

In recent years, legislators have sought to address these challenges by designing innovative financial mechanisms. Nevertheless, a key question remains: what legal and institutional mechanisms can effectively overcome these structural financing barriers and facilitate the inflow of capital into exploration and production projects? This paper argues that untapped legal capacities within upstream regulatory frameworks may offer practical tools for stakeholders in this sector. One particularly relevant instrument for enhancing and facilitating project financing—based on legal documents such as the Production and Infrastructure Financing Act, the Guidelines on Financing Upstream Oil Contracts, and the Bylaw on the Licensing of Nongovernmental Guarantee Funds—is the establishment of a specialized Oil Guarantee Fund. The proposed fund is designed to mitigate default risks, enhance the creditworthiness of companies seeking funding, and serve as a substitute for conventional collaterals by issuing credit guarantees, thereby enabling capital mobilization for high-risk projects.

2. Challenges in financing upstream oil and gas projects

In the industrial business landscape, upstream oil and gas projects are consistently categorized as high-cost, high-risk, and long-term ventures. Financing such projects—particularly in developing countries—faces numerous and complex obstacles. These challenges arise from a combination of factors, including the intrinsic characteristics of the projects, broader macroeconomic conditions, and various legal and institutional constraints. The following sections examine the most critical of these challenges in detail.

2.1. Inherent risks in upstream oil and gas projects

Upstream oil and gas projects, particularly in the exploration and development phases, are inherently subject to multiple risks. The presence of numerous uncertainties and diverse variables—geographical, technological, and economic—each with varying degrees of impact, is a defining characteristic of these projects (Schiozer & Ligerio, 2004). Traditional risk analysis mechanisms often fail to capture the full extent of the risks and uncertainties associated with such projects (Supriyadi, 2013). These risks include uncertainty in resource discovery, technical complexities, volatility in global oil prices, and exposure to geopolitical conditions.

During the exploration phase, there is always the possibility of not discovering commercially viable reserves, rendering the return on investment uncertain and risky for investors (Tordo, 2011). These uncertainties are further exacerbated in countries lacking robust geological information infrastructure or competent public and private sector institutions. Global oil price volatility also directly affects the profitability of upstream projects, particularly those relying on future cash flows for loan repayment. Consequently, exploration companies are often compelled to develop complex financing structures and implement risk mitigation tools to hedge against such volatility. Moreover, upstream projects in developing countries are frequently exposed to geopolitical risks, unstable policy environments, and frequent changes in tax regulations or environmental policies. Collectively, these factors contribute to heightened investor caution when considering entry into such markets.

2.2. Weak collateralization of project-based assets

In upstream oil industry projects, the assets that exploration and production (E&P) companies can offer are often in the form of incurred expenditures or contractual rights over reserves—commonly referred to in financial literature as intangible assets. Financial institutions perceive these assets as having limited collateral value because, in the event of default, realizing and liquidating them is highly complex and time-consuming. This inherent limitation represents a major barrier to attracting investment from the banking system and risk-averse investors (Khoshnoud & Esfandiari, 2017). A key structural obstacle in financing upstream oil and gas projects is the illiquidity of guarantees and assets associated with the early phases of these projects. At this stage, assets typically consist of intangibles such as exploration licenses, geological data, drilling expenditures, and contractual agreements—none of which are easily converted into cash. Consequently, these assets cannot be considered reliable collateral for securing financing from banks or other financial institutions (Clews, 2016).

Conventional banking systems, particularly in developing countries, are generally reluctant to accept such assets as collateral. This reluctance is mainly due to the absence of a transparent secondary market for these asset types and the inherent difficulty in accurately assessing their value. Financial institutions prefer tangible assets such as real estate, machinery, or cash deposits, which can be readily seized and liquidated in the event of default. This aversion is especially pronounced during the exploration phase, when the project has yet to generate income and there remains a real risk of failing to discover commercially viable reserves.

In Iran, in addition to this structural limitation, the lack of specialized institutions for technical and economic evaluation of upstream projects further complicates the situation. Many banks lack the expertise or tools necessary to assess the risk of project-based assets. The result is a systemic bias in the financial sector toward short-term, low-risk projects, whereas oil and gas projects require long-term, risk-tolerant investment strategies. In countries with successful energy sector experiences, specialized entities—such as asset valuation firms, public and private guarantee institutions, and energy exchanges—play a significant role in facilitating financing for projects lacking liquid assets. As long as Iran's financial system does not develop the necessary tools and institutions to accept non-liquid assets during early project phases, the upstream oil and gas sector will continue to face difficulties in attracting funding. This underscores the urgent need to establish intermediary specialized institutions and adopt modern financial models for project evaluation and credit assessment in the energy sector.

2.3. Ineffectiveness of conventional investment mobilization methods

Traditional financing methods for oil and gas projects in Iran—such as reliance on budgetary resources, bank loans, and the issuance of financial instruments like sukuk and participation bonds—have proven ineffective for various reasons. First, public funds are severely constrained due to chronic budget deficits, fluctuating oil revenues, and the prioritization of current expenditures over capital investments. Consequently, the government is largely incapable of financing large-scale, long-term upstream projects. Moreover, banks face multiple constraints, including asset-liability mismatches, low capital adequacy ratios, and strict regulatory requirements for large-scale lending. These challenges are further exacerbated when the projects in question lack liquid and collateralizable assets (Salavatian & Hoseini Dowlatabadi, 2019).

In the capital market domain, while financial instruments such as Ijarah sukuk, Istisna, Murabaha, and profit-based securities have been developed, most of these tools are designed for infrastructure or industrial projects with predictable and stable revenue streams. Upstream oil and gas projects—particularly during the exploration phase—are characterized by high inherent risk, uncertain cash flows, and long payback periods, rendering them largely ineligible for such instruments. As a result, capital market investors show little inclination to engage with these projects (Kohan-Houshnejad & Mahdavi, 2018).

Furthermore, empirical evidence from the issuance of oil-related bonds in Iran indicates that, due to the absence of transparent project evaluation frameworks, the lack of specialized credit rating agencies, and the absence of reputable institutional players for guarantees and market-making, these instruments have not been well received by investors. Therefore, under current conditions, conventional financing tools in Iran are inadequate to meet the unique demands of upstream oil and gas projects, primarily due to sector-specific risks and institutional shortcomings. In addition, international financing for such projects faces substantial limitations stemming from geopolitical constraints and economic sanctions. Over the past several years, the involvement of upstream oil and gas companies with reliable financing capabilities has sharply declined, further compounding the sector's financial bottlenecks.

2.4. The absence of modern guarantee and credit assessment tools

In Iran, the legal and institutional framework necessary for the development of modern guarantee instruments and credit assessment mechanisms is either nonexistent or in its early stages. Moreover, there is no designated institution for the specialized credit evaluation of energy-related projects, and the banking system lacks adequate tools for assessing long-term, high-risk ventures. Nonetheless, this issue has received increasing attention in recent years. For instance, pursuant to the enactment of the Law on Financing Production and Infrastructure on March 12, 2024, the establishment of a National Financing

Council has been mandated. This body is intended to promote and expand innovative financing models, enhance coordination among financial actors, strengthen integrated oversight of financial operations, broaden the scope of eligible collateral and guarantees, and improve the national credit rating system.

In many other countries, instruments such as default insurance, environmental liability compensation funds, sovereign guarantees, and other financial guarantee mechanisms have evolved to create a more secure investment environment. However, as long as such tools do not mature and scale sufficiently to cover credit risks, the Iranian financial system will continue to face structural limitations in securing reliable financing for major projects.

2.5. Environmental and political risks

Upstream oil and gas projects, by virtue of their capital-intensive and long-term nature, are inherently exposed to a variety of non-economic risks. Among the most significant are political instability, international sanctions, and geopolitical uncertainties (Tehrani & Ebrahimi, 2020). These risks not only increase the cost of financing but, in many cases, prevent projects from reaching full realization—or even from being initiated. Political instability and weak institutional frameworks render the investment climate in many developing countries highly insecure. Consequently, numerous financiers and international financial institutions regard participation in upstream energy projects in such jurisdictions as prohibitively costly and uncertain. Additionally, public sector entities in these countries often lack the technical and managerial capacity to effectively manage the complexities of upstream oil and gas development, resulting in delays in licensing, inter-agency conflicts, and inconsistent policy frameworks (Asongu et al., 2022).

In the case of Iran, the structure of externally imposed economic sanctions has severely hindered access to international finance, obstructed technology transfer, limited the entry of foreign partners, and disrupted the execution of existing contracts. These sanctions have led to increased investment costs, the withdrawal of foreign companies from joint ventures, and a significant decline in the economic viability of oil development projects (Mofidian & Keshavarzian, 2015). In light of these challenges, establishing transparent legal frameworks, enhancing international engagement, developing risk mitigation instruments, and leveraging the services of international risk insurance providers are among the most effective strategies for mitigating the adverse impact of these risks.

2.6. Structural constraints and contractual models

Following a series of contractual experiences in Iran's oil industry, the last pre-revolutionary Petroleum Law—passed in August 1974—explicitly prohibited the sale and ownership of oil in the reservoir prior to production, thereby designating service contracts as the only permissible contractual model for upstream operations. After the Islamic Revolution and the post-war reconstruction phase, the 1993 national budget law authorized the use of buy-back contracts to address the sector's investment needs. As a result, a new generation of service contracts under the buy-back model began to be signed with foreign oil companies from 1995 onward (Mohebbi, 2008).

Subsequently, in an effort to attract investment and introduce a more appealing contractual structure for investors, the Iranian Cabinet approved the “General Terms, Structure, and Model of Upstream Oil and Gas Contracts” on August 3, 2016, thereby introducing the IPC (Iran Petroleum Contract) model. The first contract under this structure was signed in July 2017 for the development of Phase 11 of the South Pars gas field, involving a consortium comprising Total (France) with a 50.1% stake, CNPC (China) with 30%, and Petropars (Iran) with 19.9%.

Nonetheless, one of the fundamental challenges in financing upstream oil and gas projects in Iran remains the instability of policy and the absence of clear, robust, and functional contractual models. A review of the past four decades of Iran's legal and contractual framework reveals that contractual arrangements have often been designed in response to specific political or economic circumstances, lacking deep legal, jurisprudential, or economic grounding. Consequently, they have frequently been sidelined or suspended with each change in administration or policy orientation (Ebrahimi & Shirjani, 2014).

A comparative analysis of upstream contractual structures shows that Iran's contractual approaches not only lack continuity but are also technically inadequate to address the complexities of modern oil and gas projects. In particular, deficiencies in the legal and financial architecture of upstream contracts have led both foreign and domestic investors to question the reliability of capital recovery mechanisms and risk-mitigation tools (Gholami Ghaderi & Ebrahimi, 2022). Furthermore, jurisprudential and economic analyses indicate that part of the ongoing contractual challenges stems from the failure to effectively align Islamic legal principles with the practical financial and technical requirements of large-scale energy projects. The absence of a coherent strategy for technology transfer, underutilization of domestic contractors' technical capabilities, and the lack of innovation-driven, contract-based models have further compounded these structural issues.

3. The role of guarantees in project finance

3.1. The concept and function of guarantees in project finance

Project finance, particularly in developing countries, is often applied to large-scale economic or social infrastructure projects (Aminzadeh & Abdi, 2014). Historically, the most common financing model for oil and gas projects has been project-based financing. The term "project finance" generally refers to a method in which the project's own assets and revenues serve as the primary source of repayment (McNair, 2016). As previously noted, despite their strong economic potential and substantial future revenue streams, upstream oil and gas projects frequently suffer from the inability of exploration and production (E&P) companies to provide off-project collateral. From the perspective of financial institutions, the assets associated with such projects often have limited collateral value because they are difficult and time-consuming to liquidate in the event of default. The capital-intensive, long-term, and high-risk nature of these projects further underscores the need for structured and effective guarantees. Especially when governments, due to budgetary constraints or sanctions, are unable to issue direct financial commitments, institutional and non-sovereign guarantees become critically important.

In the context of project finance, guarantees are a vital tool for mitigating financial risk, enhancing project creditworthiness, and attracting funding. They serve as a complementary element within financial structures by reducing default risk and reinforcing the confidence of investors and financial institutions. The Organization for Economic Co-operation and Development (OECD) defines guarantees as "a type of insurance policy that protects banks and investors against the risk of non-payment" (Mirabile, Benn, & Sangaré, 2013). More technically, a guarantee is a legally binding agreement in which a guarantor undertakes to fulfill part or all of a debtor's obligations—whether debt, equity, or other instruments—if the primary obligor defaults or the investment value is lost.

Legally, according to Article 648 of the Iranian Civil Code, a guarantee (*Zeman*) is defined as an agreement whereby a third party assumes responsibility for a debt owed by the principal debtor—effectively, a financial commitment. Substantively, guarantees are commitments that become enforceable upon the occurrence of defined risks, such as the failure of the obligor to fulfill financial obligations, thereby protecting the lender or investor from loss. Guarantees serve both protective and

enabling roles: they shield financiers from exposure while facilitating investment in high-risk environments (Imani Markid & Darvishi, 2021). One of the most pressing barriers to investment in Iran's upstream oil and gas sector is the lack of institutional infrastructure for issuing reliable guarantees to both domestic and foreign investors. This absence has prevented many otherwise economically viable projects from securing appropriate financing. Furthermore, the Iranian legal and financial systems have traditionally focused on conventional forms of collateral, such as real estate and bank-issued guarantees, making the adoption of more innovative instruments particularly challenging. However, international best practices in development finance and climate-related projects have demonstrated that intelligent and flexible guarantee mechanisms can significantly enhance the investment appeal of risky projects (Sial & Chandrasekhar, 2024).

In conclusion, guarantees function as a bridge between risk and capital—especially crucial in large-scale, uncertain ventures such as upstream oil and gas development. Revisiting and reforming the legal and institutional frameworks surrounding guarantees is therefore a prerequisite for strengthening the financial architecture of this critical sector.

3.2. Sovereign guarantee mechanisms and their limitations in energy projects

In the context of external financing for projects—particularly in strategic sectors such as oil and gas—guarantees play a pivotal role in the structure of financial agreements. The issuance of sovereign or legal guarantees typically begins at the stage of signing a general Framework Agreement. At this stage, following negotiations between the Iranian banking system and a foreign bank, an agreement is concluded outlining the general terms of credit lines and mutual commitments. Based on this framework, credit line contracts and other financial arrangements are subsequently finalized.

Given the international complexities and high-risk nature of the oil and gas industry, foreign investors and lenders frequently request a sovereign guarantee. These guarantees represent a formal and binding commitment by the government to fulfill financial obligations in the event of specific occurrences, such as borrower default, and are usually prioritized for large-scale infrastructure projects (Zhengrong et al., 2019). Broadly, sovereign guarantees can be categorized into two main types:

a. Financial guarantees

This type of guarantee obligates the government to repay a debt if the borrower—whether a local government or a state-owned enterprise—defaults or becomes insolvent. Financial guarantees are typically unconditional, irrevocable, and highly liquid, potentially placing a direct burden on the national budget and debt ceiling. Since these guarantees are not contingent upon private-sector performance, they transfer all project risk to the state. For this reason, their use is generally discouraged in public-private infrastructure partnerships.

b. Performance guarantees

Under this category, the government undertakes to compensate losses or fulfill contractual obligations if the public-sector party fails to perform as stipulated in the original contract (e.g., construction or operation agreements). These guarantees are designed to ensure the continuous and effective execution of project deliverables and often cover risks such as exchange rate fluctuations, regulatory changes, or administrative delays. Performance guarantees are typically issued by governmental entities, such as the Ministry of Economic Affairs and Finance or other relevant agencies, and are formalized through separate legal instruments with clearly defined activation mechanisms. In some cases, these guarantees reinforce existing contractual commitments in a more explicit and enforceable form; in others, they introduce new obligations on the part of the government beyond the original scope of the agreement.

The key stakeholders typically involved in sovereign guarantees include:

- Guarantee recipient: the project company or private investor
- Guarantor: the central government or a relevant ministry (such as the Ministry of Finance or Ministry of Oil)
- Guaranteed entity: usually a state-owned company, a line ministry, or another public-sector counterpart in the original project agreement

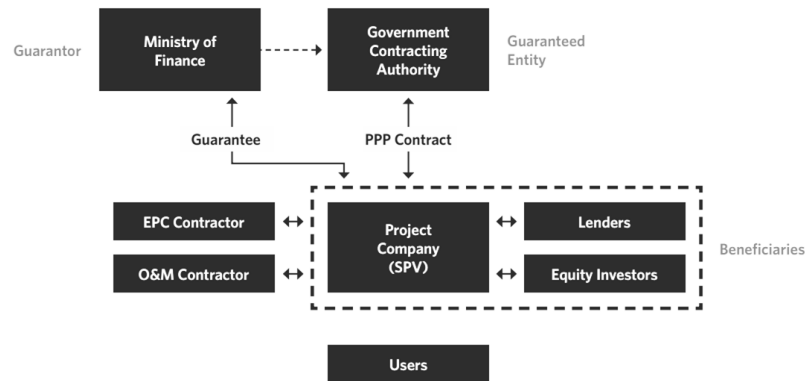


Figure 1

Financing structure of a public-private partnership with government guarantee (Zhengrong Lu et al., 2019)

Despite their significance, sovereign guarantees are often reserved in practice for large-scale, state-driven projects, such as cross-border pipelines, joint development of shared fields, international refineries, or major petrochemical complexes backed by national companies. Conversely, smaller projects—particularly those located within domestic fields or undertaken by private-sector actors—are typically deprioritized. Moreover, in contexts where access to international credit lines is limited and macroeconomic or political risks are elevated, even medium-sized projects frequently face delays or rejections in obtaining sovereign backing. This situation creates a substantial gap between the actual financial needs of private energy projects and the availability of state-backed support instruments.

Later sections of this paper will examine potential alternative mechanisms—particularly non-sovereign institutional guarantees—that could help bridge this financing gap.

3.3. Successful practices and challenges in using guarantees in project finance

A review of international experiences in the application of guarantees for infrastructure project finance—particularly in the energy sector—reveals that the innovative and strategic design of guarantee mechanisms can play a decisive role in attracting investment and mitigating risk. When properly structured, these instruments enhance project bankability and build confidence among investors and financial institutions. However, contrasting case studies also illustrate that a lack of careful calibration in the design and implementation of guarantees may impose significant fiscal burdens on governments. Excessive or poorly targeted guarantees, especially those detached from rigorous risk assessments, can undermine public finances and lead to unsustainable contingent liabilities.

This section highlights selected examples of both successful and problematic applications of guarantees in energy-related projects across different jurisdictions, drawing lessons for the strategic use of such instruments in resource-constrained and high-risk environments.

Innovative guarantee structures in power projects: the cases of Kenya and Nigeria

In Kenya, a series of Independent Power Producer (IPP) projects were launched in 2009 under the BOO (Build-Own-Operate) model with 20-year long-term contracts. One notable example was the Thika Power project, which became the first to secure limited financing from an international commercial bank. Due to the Kenyan government's inability to provide full payment guarantees, the project adopted innovative mechanisms such as revolving letters of credit and political risk insurance to mitigate potential risks. These measures reassured investors that payment defaults and political risks would be covered even in the absence of sovereign guarantees. The project leveraged a combination of instruments, including risk guarantees from the International Development Association (IDA), financing from the International Finance Corporation (IFC), and political risk coverage from the Multilateral Investment Guarantee Agency (MIGA) (World Bank Report, 2015).

This creative structure enabled the project to mobilize the necessary capital while alleviating the financial burden on the government. Figure 2 outlines the key actors involved in the financing and guarantee mechanisms of this project.

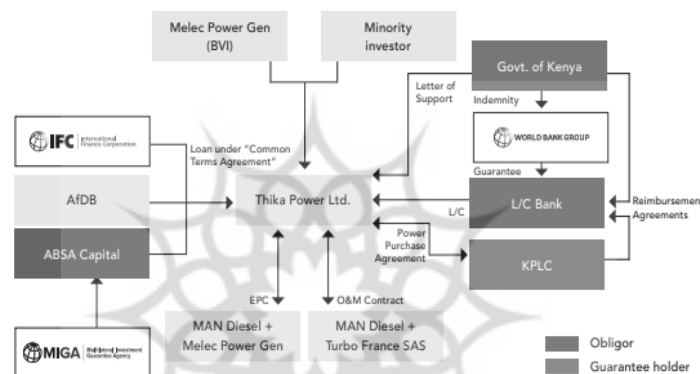


Figure 2

Key actors involved in the financing and guarantee mechanisms of the Thika Power project (World Bank Group, 2015)

In Nigeria, the Azura-Edo gas-fired power plant project, launched in 2015 with a capacity of 459 MW and a financing volume of USD 876 million, demonstrated how international guarantees can effectively attract investment. The project benefited from political risk insurance provided by the Multilateral Investment Guarantee Agency (MIGA) and a payment guarantee from the World Bank.

A particularly noteworthy feature of this case was the innovative contractual mechanism known as the Put-Call Option Agreement (PCOA), which replaced conventional sovereign guarantees. Under this model, in the event of early termination of the Power Purchase Agreement (PPA), the government was obligated to purchase the project at a price not lower than the outstanding debt. Although this arrangement resembled a sovereign guarantee in practice, it was legally framed as an asset acquisition rather than direct debt repayment, thereby achieving broader political and financial acceptability (World Bank, 2017).

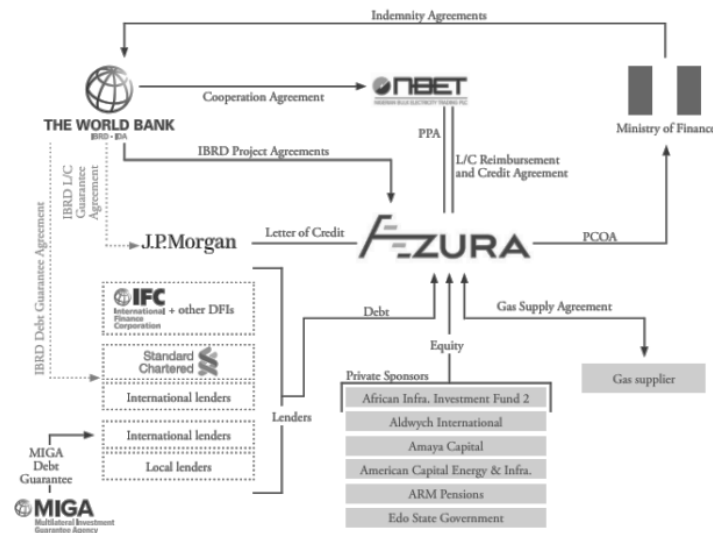


Figure 3

A project-based payment guarantee case study—Nigeria: The Azura-Edo Independent Power Plant (World Bank Group, 2017)

Revenue guarantees and demand risk in transport projects in Brazil and Spain

In the São Paulo Metro Line 4 project in Brazil, launched in 2005, minimum revenue guarantees were employed to mitigate demand risk for investors. Specifically, the government agreed to compensate a portion of financial losses if actual ridership fell below projected levels. Conversely, if revenues exceeded expectations, a share of the excess earnings was returned to the government. This model offered a flexible design that effectively aligned the interests of both parties—the public sector and private investors (Brandão et al., 2012).

In contrast, Spain's experience between 1998 and 2004 provides cautionary lessons. During this period, the Spanish government financed numerous transport infrastructure projects based on overly optimistic assumptions regarding economic growth and traffic increases. These projects were backed by contractual guarantees known as Responsabilidad Patrimonial de la Administración (RPA). Following an economic downturn and a sharp decline in traffic volumes, several projects went bankrupt, leaving the government with more than €5 billion in liabilities. This case illustrates that public guarantees—when not grounded in rigorous demand analysis and economic forecasting—can result in severe and uncontrollable fiscal consequences (Zhengrong et al., 2019).

Structural shifts in Vietnam's sovereign guarantee policy

During the 2000s, the Vietnamese government utilized extensive sovereign guarantees—including payment guarantees and foreign exchange convertibility—to attract foreign investment in energy projects. However, starting in 2011, these guarantees were significantly curtailed and restricted to specific projects requiring approval by the National Assembly or the Prime Minister. One notable policy shift involved capping foreign exchange conversion guarantees at 30% for Build-Operate-Transfer (BOT) projects, aimed at preserving the country's foreign currency reserves. While these changes sought to reduce dependence on sovereign guarantees, they also raised concerns among investors regarding financial security. Nevertheless, the gradual development of domestic financial markets and increased participation by local banks in infrastructure financing marked a broader transition toward localized project finance. This shift not only reduced reliance on government-backed guarantees but also contributed to more sustainable growth in the financing of Vietnam's energy sector (ibid).

4. Legal capacities for facilitating oil industry financing through guarantees

Over the past decade, particularly with the ratification and implementation of several high-level legislative instruments, a new outlook has emerged for facilitating project financing through legal mechanisms and modern regulatory frameworks. These legal developments—aimed at enhancing transparency, reducing demand-side risks, and activating new financial instruments—have implicitly created capacities for developing alternative forms of guarantees and institutionalizing support for high-risk projects.

This section of the article focuses on the existing legal capacities and seeks to answer the following key question: What tools, mechanisms, or institutions does Iran's current legal and financial system provide for offering alternative guarantees in financing upstream oil and gas projects? To address this question, we analyze the structural and functional aspects of core legal documents, including the Law on Financing Production and Infrastructure, its implementing regulations, sector-specific oil financing guidelines, and emerging institutional and digital platforms. This analysis not only reveals the current capacities for non-sovereign and non-traditional guarantees but also lays the legal and conceptual groundwork for proposing a facilitative solution, which will be elaborated in the article's concluding section.

4.1. Review of key legal instruments related to guarantees

4.1.1. The law on financing production and infrastructure

The Law on Financing Production and Infrastructure, passed by the Islamic Consultative Assembly (Parliament) on March 12, 2024, and officially communicated to executive bodies under notification number 11-665/6714 dated April 30, 2024, represents one of the most significant legislative efforts in the past decade to address structural financing needs in Iran's productive and infrastructure sectors. Its overarching goal is to establish legal and institutional frameworks for attracting investment—particularly from the private sector—and to diversify financing methods for projects with high strategic priority and economic impact.

The law promotes the development of modern financial instruments, including Future Promissory Notes, factoring through contractual receivables, and supply chain finance via electronic bills of exchange. Additionally, it outlines several measures to strengthen the national credit rating system. These include the establishment of credit rating agencies, the creation of unified credit profiles for legal and natural persons, and mechanisms for assessing the creditworthiness of individuals entering the economic space who have not yet obtained a credit rating. The law mandates that all data-producing bodies—including the Judiciary, the Deeds and Properties Registration Organization, the Customs Administration, the Tax Affairs Organization, and the Law Enforcement Force—share relevant data with the Central Bank's Credit Information Database.

Another important dimension of the law is its emphasis on the modernization of guarantee and collateral systems. This includes authorizing the establishment of nongovernmental risk guarantee funds under the supervision of the Ministry of Economic Affairs and Finance, aimed at supporting startups and innovative businesses. Furthermore, the law recognizes a wide array of assets as eligible collateral, including residential and commercial properties, brand names, end-of-service benefits, stable income streams (such as salaries and subsidies), and even shares—provided they are accepted by accredited collateral institutions. According to the 2024 report of the Institute for Management and Planning Studies, the law contains several key provisions that, from the perspective of this paper, provide a solid legal foundation for the development of innovative guarantee instruments.

Emphasis on diversification of financing methods

According to multiple provisions of the law, the government is obligated to create the necessary conditions for active private sector participation in financing production and infrastructure projects, alongside the use of public funds. The law emphasizes the expansion of financing mechanisms such as pre-sale of goods and services, barter arrangements, issuance of securities, and the adoption of non-cash and unconventional instruments. This legal orientation is particularly significant for upstream oil and gas projects, which typically face limited access to conventional financial resources and banking guarantees. It provides an appropriate foundation for leveraging flexible and innovative financing models tailored to the unique characteristics of these high-risk, capital-intensive ventures.

Establishment of financial support institutions

The law introduces mechanisms for establishing or activating financial support institutions directly related to guarantees and risk mitigation in investment processes. The most notable of these mechanisms are as follows:

National financing council (Article 2 of the law)

Pursuant to Article 2, the National Financing Council was established. This council is tasked with fostering coordination and synergy among institutions responsible for financing within the banking, capital, and insurance markets; developing investment models for production and infrastructure projects; strengthening credit assessment systems in accordance with the National Data and Information Management Law; promoting guarantee institutions and instruments; expanding the scope of acceptable collateral for financial institutions; and drafting and approving the necessary regulations for the issuance of collateral-backed securities and guarantee instruments based on a wide range of eligible assets. The council serves as an inter-institutional authority for policy coordination, the removal of financing barriers, and the evaluation of innovative financial instruments.

Establishment of the financial facilitation center

The enactment of this law also resulted in the conceptual and institutional merger of the financing policy-making body with the legally mandated secretariat of the National Financing Council. This merger led to the creation of the Financial Facilitation Center for Production, which functions both as the secretariat of the Council and as the lead entity for production financing in the country. The Center operates as an operational body designed to accelerate financing processes, facilitate access to financial resources, and provide structural and advisory services to project developers.

Strengthening the collateralization system and utilization of guarantees

Articles 5 through 9 of the Law on Production and Infrastructure Financing introduce significant reforms aimed at enhancing the country's financial and collateral frameworks, particularly regarding the efficient deployment of guarantees for project financing—especially in the production and infrastructure sectors. One of the key barriers to financing upstream oil and gas projects in Iran is the lack of adequate tangible or liquid assets that private Exploration and Production companies can pledge as collateral. To address this issue, the new law provides for the establishment of a Comprehensive Collateral Registry and obligates public agencies to identify, value, and ensure the transferability of not only physical assets but also intangible and contractual assets as eligible forms of collateral.

Article 5 authorizes financial institutions operating in the banking, capital, and insurance markets to utilize national credit database reports and information provided by credit rating agencies to grant financing, extend credit, and deliver financial services. This measure is expected to enhance

transparency and operational efficiency in the financial system, allowing institutions to make more informed and precise use of various forms of guarantees.

Article 6 outlines the formation and operation of Guarantee Funds, emphasizing the establishment of nongovernmental funds to provide guarantees tailored to the needs of various productive and service sectors. These funds are authorized to issue a range of guarantee instruments, including payment guarantees, performance bonds, and customs guarantees—each playing a critical role in facilitating access to financing.

Article 7 clearly defines a broad spectrum of acceptable collateral, including movable and immovable assets, production equipment, securities, financial rights, and intellectual property. This legal recognition of diverse asset classes significantly expands the collateral base, improving both flexibility and effectiveness in the collateralization process. Article 8 obliges collateral-accepting institutions to permit the release or substitution of excess collateral upon the request of the collateral provider. This provision introduces greater flexibility in the management of guarantees and empowers borrowers to utilize their financial assets more efficiently.

Finally, Article 9 mandates the creation of a national digital collateral registry system, enabling financial institutions to transparently register and access information related to pledged assets online. This platform facilitates greater visibility, expedites collateral transactions, and improves access to critical data—allowing financial institutions to make better-informed decisions regarding collateral acceptance.

Collectively, Articles 5 through 9 represent a significant step toward modernizing Iran's guarantee and collateral framework. These provisions establish new institutional mechanisms and enhance existing processes, ultimately fostering a more efficient and risk-sensitive financial environment capable of supporting the financing needs of productive and infrastructure-related projects.

Leveraging non-conventional instruments for facilitating finance

The law emphasizes, across various articles, the use of non-conventional financing instruments to facilitate access to capital for strategic and high-risk projects. Notable examples include:

- The Executive Bylaw on the Development of Financing Methods Based on Pre-Sales or Credit-Based Purchases of Goods and Services, which aims to mitigate transactional risks and ensure the protection of both financial and non-financial rights of the parties involved (Article 23);
- The provision for guarantees issued based on oil barter mechanisms, enabling the use of crude oil or petroleum products as collateral or as a medium for the settlement of obligations (Article 34);
- The explicit allowance for the use of cryptocurrencies to attract foreign investment, particularly in contexts where conventional financial channels are restricted or unavailable due to sanctions or regulatory limitations (Article 29).

Each of these instruments, depending on the specific nature of the project and the characteristics of the investor, may serve as a credible basis for issuing guarantees or fulfilling contractual obligations. Their inclusion in the legal framework reflects a broader shift toward financial innovation and flexibility in structuring guarantees, particularly in sectors such as upstream oil and gas that face unique financing constraints.

4.1.2. Directive on financing upstream oil and gas contracts

The Directive on the Financing of Upstream Oil and Gas Contracts, approved by the National Finance Council on October 30, 2024, aims to facilitate the mobilization of financial resources for exploration, development, and enhanced recovery projects in Iran's oil and gas sector. Drafted pursuant to the Law

on Production and Infrastructure Finance, this directive introduces a series of legal and financial mechanisms to increase the bankability of upstream contracts and mitigate investment risk. A central focus of the directive is the deployment of guarantee and collateral mechanisms throughout the financing process. According to its provisions, both domestic and international investors are permitted to pledge either physical assets (equipment, materials, and installations) or contractual assets (verified claims or future income from surplus production) as collateral with financial institutions. Specifically:

Issuance of Payment Undertaking Certificates: The National Iranian Oil Company (NIOC) is obligated to issue certificates of payment commitment for approved investor claims. Notably, after the commencement of initial production and upon investor request, NIOC may issue such certificates for up to 50% of the investor's earned remuneration and financing costs. These certificates can serve as guarantee instruments to facilitate access to new financing or to settle existing debt obligations (Article 4 and related provisions).

- **Use of Oil Warrants and Commodity Deposit Certificates:** Investors may opt to receive up to 80% of their verified and matured claims in the form of commodity deposit certificates, valued at NIOC's spot sale price on the requested trading day. These certificates act as tradeable collateral instruments to settle outstanding obligations (Article 5).
- **Irrevocable Power of Attorney:** Investors may provide NIOC with an irrevocable power of attorney authorizing the company to repay financial institutions directly from the investor's claims in the event of non-performance (Articles 3 and 4 and their respective notes).
- **Collateralization of Physical Assets:** Project-specific physical assets procured by investors may be used as collateral, provided final ownership is transferred to NIOC upon project completion (Articles 2 and 3).
- **Comprehensive Collateral Registry Platform:** The directive mandates the use of a centralized digital platform for registering and monitoring all project-related guarantees and obligations. Financial institutions are required to upload relevant data to this platform (Article 7).

This directive represents a significant step toward improving transparency, reducing lender risk, and strengthening the negotiating position of investors. By institutionalizing mechanisms such as asset collateralization, issuance of future income guarantees, and deployment of contractual claims, the directive aims to unlock financial flows into upstream projects. However, a clear limitation arises from Article 15, which explicitly states that NIOC's obligations toward financial institutions are confined to the provisions of the directive and shall not be construed as a sovereign or unconditional guarantee. This clause underscores the need for complementary guarantee structures. In this context, institutions such as non-sovereign guarantee funds—particularly those with flexible and nongovernmental frameworks—are positioned to play a critical role in augmenting the collateral regime and mitigating contractual risks. Such entities can be strategically leveraged to boost investor confidence and support the sustainable financing of complex upstream oil and gas ventures.

4.1.3. Regulation on licensing the establishment and operation of nongovernmental guarantee funds

The Regulation on Licensing the Establishment and Operation of Nongovernmental Guarantee Funds, ratified by the Cabinet of Ministers on August 19, 2024, seeks to address structural weaknesses in guarantee mechanisms by establishing a legal framework for specialized private guarantee institutions. Under the regulation, a guarantee fund is defined as “a company established with the purpose of issuing guarantees in favor of natural and legal persons, operating within the bounds of the applicable laws.”

These funds are authorized to issue transferable guarantee bonds based on acceptable collateral and the creditworthiness of the applicant. Each bond constitutes a negotiable instrument containing details such as the guarantee ceiling, maturity date, issuer and guarantor identity, applicant information, and reference to the underlying contract. While the primary function of these funds is the issuance of guarantees, they are also permitted to invest or deposit their capital in financial markets. This dual function enables the generation of non-operational income, which mitigates risk exposure, enhances financial viability, and expands the capital base and guarantee limits the fund can provide.

Key highlights of the regulation include the following provisions:

- Definitions, scope of activity, and applicable legal framework (Articles 1–3)
- Classification of funds based on function and ownership structure (Article 4)
- Legal framework for establishing private and specialized guarantee funds (Articles 5–8)
- Requirements for business plans, operational models, financial statements, and procedures for preliminary and final licensing (Articles 9–13)
- Conditions for shareholding and transfer of ownership (Articles 14 and 16)
- Recognition of guarantee instruments issued by these funds as valid legal and commercial collateral (Article 17)

Under this regulation, nongovernmental guarantee funds must be established as private joint-stock companies. Following initial approval from the relevant Steering Council and the issuance of a final operational license by the Ministry of Economic Affairs and Finance, these entities are permitted to commence operations. By defining regulatory and operational requirements, the framework seeks to institutionalize these funds as professional and credible actors within the financial ecosystem.

Funding sources for these guarantee funds include initial capital, revenue from guarantee issuance activities, governmental support, and managed funds from public sources. This arrangement allows sovereign institutions such as the National Iranian Oil Company (NIOC) or the National Development Fund of Iran to participate in capitalizing and operationalizing sector-specific guarantee vehicles. Notably, Article 17 explicitly authorizes these funds to issue various types of financial and contractual guarantees, which may be utilized for loan underwriting, tender participation, project execution, or as acceptable collateral in capital markets. Such guarantees are granted legal enforceability equivalent to official instruments and may substitute traditional collateral such as promissory notes or real estate pledges.

Furthermore, the regulation introduces a structured supervisory framework, comprising oversight by the Ministry of Economic Affairs and Finance and independent auditors approved by the Securities and Exchange Organization. This governance architecture is designed to ensure operational integrity, reduce mismanagement risk, and maintain institutional stability within the nongovernmental guarantee fund sector.

5. The oil guarantee fund: an innovative instrument for facilitating upstream oil and gas financing

Financing upstream oil and gas projects in Iran faces persistent challenges, including the absence of credible guarantees for nongovernmental actors, restrictions on collateralization, and limited access to sustainable funding sources. In this context, the establishment of a specialized nongovernmental institution with the capacity to issue reliable guarantees represents an effective measure to address these obstacles. The proposal to establish an Oil Guarantee Fund, grounded in the Executive Bylaw on Licensing Nongovernmental Guarantee Funds approved by the Council of Ministers in 2024, is advanced precisely within this framework.

The fund is intended to provide financial and contractual guarantees to upstream projects, particularly those involving private-sector participation. It will operate as a nongovernmental private joint-stock company under Iranian law, endowed with an independent and flexible structure, and subject to oversight by the National Financing Council and the Center for Financing Facilitation. The fund's overall framework is organized across three distinct levels:

- Governance level (General Assembly and supervisory authority),
- Policy and strategic oversight level (Board of Directors and specialized committees), and
- Executive and operational level (Chief Executive Officer, specialized units, and the Risk Assessment Committee).

This multi-layered design not only clarifies institutional responsibilities but also ensures effective supervision, accountability, and alignment with broader national financing objectives.[†]

5.1. Scope of activities of the fund

- Issuance of valid guarantees against alternative forms of collateral, including contractual commitments, payment undertakings by the National Iranian Oil Company (NIOC), oil delivery notes, and other asset- or revenue-based instruments.
- Mobilization of initial capital resources through shareholders' cash contributions, administered funds from development institutions (such as the National Development Fund), and blended finance instruments.
- Development of revenue models and financial incentives, including guarantee issuance fees, limited investment in fixed-income securities, and the design of risk-sharing mechanisms with banks and investors.
- Acceptance of financial resources from governmental agencies or sovereign development funds in the form of administered funds, risk-sharing contributions, or grants to strengthen guarantee capacity.
- Implementation of systematic risk assessment processes, encompassing application intake, project credit evaluation, credit rating, and continuous monitoring to manage default risk.
- Functioning as a collateral-accepting institution in the execution of upstream contracts, thereby facilitating smart collateralization tailored to the needs of the industry.

5.2. Proposed governance bodies of the fund

Based on the model structure set forth in the standard statute for guarantee funds, the principal governance bodies of the Oil Guarantee Fund are proposed as follows:

- General Assembly of Shareholders: The supreme decision-making authority, vested with powers to set overall policies, elect the Board of Directors, approve financial statements, amend the statute, and decide on capital increases.
- Board of Directors: A strategic body composed of professionally qualified members elected for two-year terms, responsible for planning, oversight, policy approval, and representing the Fund before official and judicial authorities.
- Chief Executive Officer (CEO): The highest executive authority of the Fund, appointed by the Board of Directors, tasked with implementing board resolutions, managing day-to-day operations, and liaising with financial institutions and investors.

[†] The governance structure and conceptual design of the Oil Guarantee Fund were evaluated through two expert roundtable discussions held in the second half of 2024. These sessions convened a multidisciplinary group of participants, including university professors specializing in energy law, representatives from the National Iranian Oil Company, experts from the banking and capital markets sectors, and advisors from financial policy-making institutions. The insights and data collected during these sessions were incorporated into the analytical design of this article, ensuring that the proposed structure is grounded in both theoretical expertise and practical institutional perspectives.

- Statutory Auditor / Independent Auditor: Appointed by the General Assembly to oversee compliance of the Fund's financial performance with applicable laws and to provide reports to the supervisory authority.
- Risk Assessment and Credit Evaluation Committee: An internal body responsible for reviewing guarantee applicants' proposals, analyzing default risks, and conducting credit rating of projects prior to issuing guarantees.

From the perspective of private law, although the Oil Guarantee Fund has a specialized financial and policy-related mission, it remains a legally independent entity subject to the general rules governing commercial companies—particularly private joint-stock companies—under Iranian Commercial Law. Pursuant to Article 20 of the Commercial Code, the Fund, upon formal registration with the Companies Registration Office, acquires legal personality, independent financial liability, and full legal capacity to conduct civil transactions, conclude contracts, and assume obligations. Moreover, the liability of the Fund's directors toward stakeholders and third parties is governed by Articles 141 and 142 of the Commercial Code.

In terms of supervision, the legal relationship between the Fund and supervisory authorities (e.g., the Ministry of Economic Affairs and Finance or the National Financing Council) is structured through its statute and approved bylaws. During this process, due consideration must be given to the principles of proportionality and institutional independence. Accordingly, the proposed governance bodies must, in addition to their executive roles, be fully aligned with the existing legal framework of the country.

5.3. Ownership structure and shareholder composition

According to Chapter III of its statute, the Fund is structured as a nongovernmental entity, with its capital divided into ordinary and preferred shares. A significant portion of the capital must be provided in cash, while the statute also permits non-cash contributions, such as contractual rights or alternative assets. The thresholds for shareholding, conditions of transfer, and maximum ownership limits are subject to the applicable bylaws and require approval from the supervisory authority.

The proposed shareholder composition of the Fund includes the following categories:

- Private exploration and production (E&P) companies;
- The National Development Fund or other development-oriented institutions, acting as regulators and institutional anchors;
- Banks and financial institutions, participating as institutional investors;
- The National Iranian Oil Company (NIOC), in cases where it contributes nongovernmental investments or liquid assets;
- Nongovernmental public institutions, cooperatives, and specialized energy chambers of commerce.

This initiative is fully consistent with the existing legal framework and can serve as a localized model for institutionalizing guarantee mechanisms in other high-risk industries. Thus, the Oil Guarantee Fund is not merely a remedy for a structural gap in Iran's oil sector but also a practical measure to strengthen investment security, enhance private-sector participation, and advance developmental objectives in the upstream energy domain.

Nonetheless, while the Fund's design as a legal and institutional mechanism may help address deficiencies in guarantees for upstream financing, its implementation is inherently accompanied by risks and constraints that require careful ex-ante consideration. Key challenges include potential conflicts of interest among stakeholders, insufficient private-sector capacity for project risk assessment, possible misalignment of guarantees with banking or capital market requirements, and the Fund's

potential dependence on public resources during crises. Moreover, in the absence of robust institutional oversight and transparent processes in issuing guarantees, the risks of mismanagement or deviation from original objectives may arise. Accordingly, the design of internal governance mechanisms, the establishment of stringent credit evaluation standards, and the formulation of supervisory guidelines for higher-level institutions constitute essential preconditions for the operational success of this initiative.

5.4. Experiences in establishing nongovernmental guarantee funds

Iran has prior experience in establishing nongovernmental guarantee funds. Institutions such as the Export Guarantee Fund of Iran, the Innovation and Prosperity Fund, and the Cooperative Development Fund have each played an effective role in reducing risks and facilitating access to finance within their specialized domains. However, the Oil Guarantee Fund is distinguished from these funds in several fundamental respects:

- **Scope of Activity and Project Nature:** While the Export Guarantee Fund primarily covers commercial and political risks associated with exports of goods and services, and the Innovation and Cooperative funds focus on supporting knowledge-based, technology-oriented, or cooperative enterprises, the Oil Guarantee Fund will be dedicated exclusively to upstream oil and gas projects—projects that are capital-intensive, long-term, and inherently high-risk.
- **Scale and Financial Magnitude:** Given the massive financial turnover in the oil and gas industry and the substantial investments required, the capital base and operational capacity of the Oil Guarantee Fund will be considerably larger than those of comparable funds. This enables it to issue credible, large-scale guarantees that can support multi-billion-dollar projects.
- **Nature of Guarantees Provided:** Existing funds generally focus on traditional financial guarantees or guarantees linked to commercial contracts. By contrast, the Oil Guarantee Fund is specifically designed to accept alternative collaterals, such as contractual commitments, oil delivery notes, and revenue streams from petroleum projects, as the basis for its guarantees.
- **Institutional Interaction and Conflict-of-Interest Management:** Unlike other funds, which primarily interact with a single parent authority (e.g., the Ministry of Industry, Mine, and Trade or the Vice Presidency for Science and Technology), the Oil Guarantee Fund must engage with a broader institutional ecosystem, including the National Iranian Oil Company (NIOC), the National Development Fund, banks, and the capital market. This diversity of stakeholders makes it essential to establish conflict-of-interest management mechanisms, such as joint supervisory committees with representatives of all major stakeholders, as well as mandatory transparency and disclosure requirements in the issuance of guarantees.

In this sense, the Oil Guarantee Fund is not merely a replication of existing models but a novel and tailored institution, aligned with the unique characteristics of Iran's oil and gas industry.

5.5. Operational dimensions and implementation mechanisms of the oil guarantee fund

The effective functioning of the Oil Guarantee Fund depends not only on its legal and institutional design but also on the development of robust operational frameworks and implementation mechanisms capable of building trust among investors and financial institutions. In this regard, several key dimensions can be highlighted:

a) Initial capitalization sources

The fund's initial capital can be secured through a combination of private-sector cash contributions, institutional participation from the National Development Fund of Iran, and administered resources provided by relevant governmental bodies participating in the fund. In addition, non-cash contributions,

such as contractual rights or oil delivery notes, may serve as viable collateral to strengthen the fund's backing.

b) Revenue model

The fund's financial sustainability relies on the design of diversified revenue streams. The most significant sources of income include guarantee issuance fees, premiums paid by applicants for guarantee coverage, and limited investments of available resources in low-risk securities or bank deposits. This model enables the fund not only to cover its operational expenses but also to expand its guarantee capacity over time.

c) Investor attraction incentives

To encourage shareholder and investor participation, the fund can employ instruments such as preferred shares with special rights, risk-sharing mechanisms in project financing, or tax exemptions as provided under upstream legal frameworks. These measures play a crucial role in enhancing the fund's investment appeal and ensuring active engagement from diverse stakeholders.

d) Risk assessment and management process

A core mandate of the fund is the credit evaluation of applicant projects and the assessment of default risk. This process entails evaluating the financial and managerial capacity of applicants, credit rating of projects, designing risk analysis models, and ensuring portfolio diversification in issued guarantees. Such practices help the fund avoid risk concentration and strengthen its reliability in the eyes of financial institutions and investors.

5.6. Implementation challenges and preventive measures

The operationalization of the Oil Guarantee Fund, in addition to its legal and institutional capacities, inevitably faces a set of challenges that, if overlooked, may compromise its core objectives. The most critical challenges and proposed preventive strategies include:

a) Conflicts of interest among stakeholders

Given the involvement of diverse entities—private companies, the National Development Fund of Iran, banks, and the National Iranian Oil Company—the likelihood of conflicts of interest is considerable. To mitigate this challenge, it is essential to adopt transparent governance bylaws, establish independent arbitration and supervisory committees, and incorporate dispute resolution mechanisms into the fund's charter.

b) Limited capacity of the private sector in risk assessment

A significant risk arises from the limited expertise of domestic companies in analyzing and assessing high-risk projects. The recommended solution is to leverage the services of specialized credit rating agencies and draw upon the technical knowledge of international firms with proven experience in project risk evaluation.

c) Misalignment of issued guarantees with banking and capital market standards

If the guarantees issued by the fund fail to conform to the requirements of financial institutions, their effectiveness will be undermined. Therefore, the design of guarantee instruments must adhere to accepted banking and capital market standards and be developed in consultation with regulatory authorities.

d) Risks of mismanagement and deviation from original objectives

In the absence of effective oversight, risks of corruption, mismanagement, or mission drift may arise. Preventive measures include mandatory periodic reporting to supervisory bodies, ensuring transparency in the guarantee issuance process, and employing digital monitoring platforms for real-time performance tracking.

5.7. Technical and managerial infrastructure requirements of the fund

The operational success of the Oil Guarantee Fund is not solely contingent upon the ratification of laws and its charter; it also requires the establishment of robust technical and managerial infrastructure to enable the efficient execution of its mandate. These infrastructures can be categorized into three main dimensions:

a) Managerial infrastructure

The fund requires a professional management team with expertise in energy law, finance, banking, and risk management. Specialized training for managers and experts—particularly in contract analysis within the oil and gas sector and in the assessment of high-risk projects—is a critical prerequisite for ensuring the fund's effectiveness.

b) Technical and information technology infrastructure

The establishment of a comprehensive digital platform is essential for processing applications, conducting project credit assessments, issuing and tracking guarantees, and recording financial transactions. This system must be capable of integration and data exchange with national platforms, such as the Comprehensive Collateral System and the National Investment Information System, thereby preventing redundancy and parallel processes.

c) Supervisory and control infrastructure

The adoption of advanced technologies, such as smart reporting systems and real-time operational monitoring, can significantly enhance the supervisory capacity of higher-level institutions (e.g., the National Financing Council). Moreover, the design of a transparent corporate governance framework—including requirements for regular reporting, independent auditing, and anti-corruption mechanisms—is indispensable for minimizing the risk of deviations from the fund's objectives.

6. Discussion and conclusions

Financing upstream oil and gas projects—owing to their capital-intensive, time-consuming, and inherently high-risk nature—has long been regarded as one of the most complex development challenges in resource-dependent economies. In Iran, these difficulties are compounded by factors such as weak legal and institutional infrastructure, limited public resources, a closed and inflexible banking system, an underperforming capital market, and critical gaps in the guarantee and collateral framework. This study demonstrates that the financing bottlenecks in this sector are not solely attributable to a shortage of financial resources, but more fundamentally to the inability of current systems to absorb inherent risks and provide innovative instruments to reassure lenders and investors. Employing a hybrid approach that combines legal analysis, comparative case studies, and policy-oriented proposals, this article argues that overcoming these constraints requires more than just increasing the flow of capital; it calls for a fundamental redesign of the legal and institutional mechanisms underpinning guarantees and collateralization.

A close examination of key legislative instruments—namely, the Law on Financing Production and Infrastructure (2024), the Guidelines for Financing Upstream Oil and Gas Contracts, and the Bylaw for

the Establishment of Nongovernmental Guarantee Funds—reveals that the legal foundations necessary for developing complementary nongovernmental institutions in the country’s guarantee system are already in place. What remains is the mobilization of political will, institutional coordination, and regulatory precision. In this context, the core innovation of the article lies in proposing the establishment of the Oil Guarantee Fund—a nongovernmental, specialized institution designed to issue credible guarantees against non-traditional forms of collateral. Such a fund would address the current absence of reliable guarantees for upstream projects, facilitate access to finance for private exploration and production (E&P) companies, and play a significant role in mitigating default risk.

The legal structure of the proposed fund is grounded in the provisions of the 2024 Cabinet bylaw, draws from existing guarantee fund models in other sectors, and incorporates lessons from international experiences in countries such as Kenya, Nigeria, and Vietnam. From a public law perspective, the Oil Guarantee Fund could complement the institutional architecture currently emerging in Iran—namely, the National Council for Financing, the Collateral Registry Platform, and the Center for Facilitating Finance. From a private law standpoint, the fund’s proposed corporate structure as a privately held joint-stock company, its diversified shareholder base, and a balanced oversight framework would ensure both operational efficiency and protection against governance failures and conflicts of interest. Moreover, by contributing to project credit rating and risk assessment model design, the Fund could enhance transparency and standardization across the project financing chain.

In sum, this article not only maps the legal and institutional context of upstream project financing in Iran but also goes a step further by offering a practical institutional design rooted in legal reasoning and aligned with modern policy needs. It is hoped that this proposal will serve as a foundation for further academic inquiry, the development of pilot programs, and concrete policy measures—ultimately contributing to the legal and financial infrastructure essential for the sustainable growth of Iran’s oil and gas sector.

Nomenclature

BOO	Build–own–operate
BOT	Build–operate–transfer
E&P	Exploration and production
EPCF	Engineering, procurement, construction, and finance
HIPC	Heavily indebted poor countries
IBRC / IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IEA	International Energy Agency
IFC	International Finance Corporation
IPC	Iran Petroleum Contract
IPP	Independent power producer
MDRI	Multilateral Debt Relief Initiative
MIGA	Multilateral Investment Guarantee Agency
NDF	National Development Fund of Iran
NIOC	National Iranian Oil Company
OECD	Organization for Economic Co-operation and Development
PPA	Power purchase agreement
PPP	Public–private partnership

References

- Abdi, S., & Aminzadeh, E. (2014). A study of financing mechanisms in the energy industry with emphasis on structural problems of EPCF contracts. *Monthly Journal of Oil and Gas Exploration and Production*, 109. [In Persian]
- Asongu, S., Arhin, G. E., Abdulai, A. G., & Bawole, J. (2024). *The political economy of the oil and gas sector in emerging and developing countries*. European Xtramile Centre of African Studies.
- Brandão, L. E., Bastian-Pinto, C., Gomes, L. L., & Labes, M. (2012). Government supports in PPP contracts: The case of the Metro Line 4 of the São Paulo subway system. *Journal of Infrastructure Systems*, 18(2), 101–112.
- Clews, R. (2016). *Project finance for the international petroleum industry*. Academic Press. <https://www.educate.elsevier.com/book/details/9780128001585>
- Daneshi, S. S. (2018). Integrated financial strategies for oil industry projects under sanctions using SWOT. *Proceedings of the 5th Annual Conference on Resistance Economy, Energy as a Development Driver*. [In Persian]
- Ebrahimi, S. N., & Shirjian, M. (2014). Upstream oil and gas contracts in Iran and the legal and contractual requirements of new models. *Energy Economics Research Journal*, 3(10), 1–39. [In Persian]
- Ebrahimi, S. N., Tehrani, R., & Misaghi Farooji, J. (2020). Risk management in upstream oil and gas investment contracts in Iran: Interpretive constructivism and grounded theory. *Energy Law Studies*, 6(2), 265–284. [In Persian]
- Farwa, S., & Chandrasekhar, C. P. (2024). *Guaranteeing the future? The role of guarantees in development and climate finance*. European Network on Debt and Development
- Ferreira, D., Suslick, S., Farley, J., Costanza, R., & Krivov, S. (2004). A decision model for financial assurance instruments in the upstream petroleum sector. *Energy Policy*, 32(10), 1173–1184.
- Gholami, H., & Ebrahimi, N. (2022). Critical review of IPC contract financial regime. *Energy Law Studies*, 8(2), 401–420. [In Persian]
- IEA. (2023). *Financing clean energy transitions in emerging and developing economies*. International Energy Agency. <https://www.iea.org/reports/financing-clean-energy-transitions-in-emerging-and-developing-economies>
- Imani Markid, M., & Darvishi, N. (2021). Financial sources, methods, and contracts in oil and gas projects. *Journal of Contracts and New Technologies Law*, 2(3), 31–58. [In Persian]
- Civil Code of Iran*. (n.d.). [In Persian]
- Commercial Code of Iran*. (n.d.). [In Persian]
- Iranian Ministry of Oil. (2016, August 3). General terms, structure, and model of upstream oil and gas contracts (Cabinet approval No. 49882/T52313H). [In Persian]
- Islamic Parliament of Iran. (2024). Law on financing production and infrastructure. [In Persian]
- Khoshnood, Z., & Esfandiyari, M. (2017). Comparison of collateralized finance structures based on various types of movable assets in Iran's banking system. *3rd Annual Business Management and Economics Conference*. [In Persian]

- Kohan-Houshnezhad, R., & Mahdavi, A. A. (2018). Legal principles governing investment contracts in upstream oil and gas industry. *Islamic Economics and Banking Quarterly*, 22, 95–114. [In Persian]
- Zhengrong, J., Chao, J. J., & Sheppard, J. R. (2019). *Government guarantees for mobilizing private investment in infrastructure*. Global Infrastructure Facility, World Bank Group. <https://www.globalinfrastructure.org/guarantees-report>
- McNair, D. (2016). *Investing in infrastructure: International best legal practice in project and construction agreements*. PwC Australia.
- Mirabile, M., Benn, J., & Sangaré, C. (2013). *Guarantees for development* (OECD Development Cooperation Working Papers No. 11). OECD Publishing. <https://dx.doi.org/10.1787/5k4071x5b8f8-en>
- Mofidian, Sh., & Keshavarzian, M. (2015). The legal-economic implications of sanctions on Iran's oil industry. *Energy Economics Quarterly*, 10(45), 29–50. [In Persian]
- Mohebbi, M. (2015). *Selected topics in oil and gas law in light of international arbitration practice* (3rd ed.). Tehran: Shahr-e-Danesh. [In Persian]
- Nooruzi, M. (2016). *Pathology of upstream oil contracts with emphasis on technology transfer and development with legal and economic considerations* [Unpublished doctoral dissertation]. Imam Sadiq University. [In Persian]
- Parliament Research Center. (2019). *Challenges in corporate financing through sukuk (Islamic bonds)* (Research Report No. 16622). [In Persian]
- Salvati, M. A., & Hoseini-Dolatabadi, S. M. (2019). Challenges of corporate financing through Islamic financial instruments (Sukuk). Parliament Research Center Report No. 16622. [In Persian]
- Schiozer, D. J., & Ligerio, E. L. (2004). Risk assessment for reservoir development under uncertainty. *ABCM*, 26(2), 213–217.
- Sial, F., & Chandrasekhar, C. P. (2024). *Guaranteeing the future? The role of guarantees in development and climate finance*. Eurodad. https://www.eurodad.org/guarantees_report_2024
- Tordo, S., Tracy, B. S., & Arfaa, N. (2011). *National oil companies and value creation*. World Bank. [https://doi: 10.1596/978-0-8213-8831-0](https://doi:10.1596/978-0-8213-8831-0)
- World Bank Group. (2015). *Public-private partnerships briefs: Tika Power Project in Kenya*. World Bank.
- World Bank Group. (2017). *Project-based payment guarantee case study: Azura-Edo Independent Power Plant (Nigeria)*. World Bank.
- Yaeghubi, E., & Fakhr, M. (2014). An analytical review of upstream oil and gas contracts in Iran. *Administrative Law Quarterly*, 10(35), 235–262. [In Persian]

**COPYRIGHTS**

©2025 by the authors. Published by Petroleum University of Technology. This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution 4.0 International. (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)