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Investment Trends in the Iraqi Oil Sector (Upstream – Oil Refining – Gas Treatment - Transportation - Distribution) (2003 – 2020)

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Abstract

The paper deals with the analysis of indicators of changes in investment in the oil sector in Iraq to study the traditional patterns and the current patterns developed for oil investment in the extractive, transformational and distributive fields that were employed in Iraq to redraw the map of the economy in general and the oil industry in particular. The paper proceeds from the premise that the licensing rounds that took place in the Iraqi oil sector did not show their tangible results for internal and external reasons that were diagnosed. The study reached the main conclusion that the real performance and progress in the Iraqi oil sector was unbalanced and slow in some areas and that investment in it would create a balance between the urgent needs for expansion of investment projects and their capital requirements.

Keywords: oil investment, Iraqi Economy, international Economy.

1. Introduction

Iraq has a variety of natural resources; hydrocarbon resources constitute the largest in these resources in terms of the number of proven reserves, geographical distribution, and high production and export capabilities. From the beginning of 2003 until 2020, there were remarkable political and economic events There were major political and economic events not far from the developments of the situation in the world as a whole, especially the conditions of the global Corona epidemic, these events have had a great impact in drawing new directions for the development of the Iraqi economy, especially the development of the oil sector, which forms the backbone of the financing of the economy and the development of society and state power.

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this research comes in a hypothesis that the shift in the philosophy of managing the national economy and encouraging oil investment by reducing the role of the state and expanding the area of the private sector, especially the volume of foreign investment (expanding the opportunities of International Oil Companies IOCs), in line with the intellectual transformations of the state administration towards the transition to a market economy. These actions were reflected in new investments in extraction and other manufacturing and distribution activities (Oil refining, gas treatment, transport, and distribution).

This research aims to analyze the fundamental changes in investment for the oil sector in Iraq. The main purpose of this research is to study the traditional patterns and new patterns of oil investment in the extraction, transfer, and distribution subjects, with the conceptualization of the future expectations of these patterns, also the study covers the changes during the period from 2003 until the end of 2020.

Certainly, the importance of this study comes from the exceptional importance that the oil sector occupies for the Iraqi economy, which necessitates analyzing the transformations in it with high accuracy and in a manner that enables the possible sustainability of the oil sector and its financial resources and the optimal employment of those resources.

2. The General Framework of the Economy, Oil, and Investment

2.1 Trends in the development of the Iraqi economy

Iraq is classified as one of the developing countries, whose economy depends mainly on the revenues of exporting crude oil to international markets and is still in the early stages of economic and social development, and the principles of central management overlap with the principles of market management in the management of the national economy.

Developments in the Iraqi economy before and after 2003 were not systematic for economic, political, and international reasons. During the 1980s, the circumstances of the "Iran-Iraq War" dominated all aspects of life, and because of the long years of war, most resources (including external borrowing) were mobilized towards financing war requirements and sustaining the economy. During the 1990s until the first quarter of 2003 harsh international economic sanctions were imposed on Iraq, reflected in its deep negative effects on the composition of the economy and society, including the level of development

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and performance of the oil sector. Despite the attempts of the state at that time to manage the economy and adapt to the low level of resources, but the wheel of decline was continuous and stopped investment opportunities and slowed the process of building new projects, especially projects in the oil sector [1, pp. 2-3].

2003 was the year of war and political change in Iraq, where the economy and oil industry, in particular, were reformed. The most significant events in 2003 and later years were the liftings of international economic sanctions and the shift towards a market economy philosophy, coinciding with these changes there was an increasing crude oil production and increasing prices in world markets. However, the actual economic indicators during those years reflected the unstable reality in Iraq, where the revenues of exporting crude oil were the only source of government resources, and these resources change with fluctuations in the oil markets conditions and the situation of the global economy, added to this is the weak correlation between total consumption and total investment, as well as the incorrect distribution of roles and the workspace of both public and private sectors, which was evident in the way of allocating allocations and spending levels in the government budget [2].

Economic indicators generally reflected unprecedented conditions for the Iraqi economy, the goal was to contain political changes and control economic transitions, and secure social needs in conjunction with increases in crude oil production and an increase in world oil prices. But these changes have, to some extent, delayed radical economic reforms; especially the re-building of an economy based on the philosophy of the market and a clear investment framework and creates an attractive investment environment [3, p7].

The economic philosophy adopted was based on the principle of diversifying investment to achieve diversification in the productive sectors, to achieve the objectives of the Five-year Economic Plans, and to build a partnership between the public and private sectors [4, p2]. But the depth of the national economy's dependence on oil export revenues led to employing the real efforts, and the financial resources achieved, to develop the oil sector and make it the machine to run the economy and society. In this context, encouraging investment was a central objective and through which the most advanced and open methods can be adopted to accelerate the increase in crude oil production rates and attract international oil companies to

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work in Iraq, and this trend with high sensitivity considerations eased the way to achieve unprecedented financial returns which were necessary to meet urgent and necessary social requirements and to initiate real economic reforms.

2.2 The development of the oil sector in Iraq

During the years since 2003, there have been rapid changes in the oil sector in Iraq (Table 1), where ambitious plans have been adopted to develop oil fields and increase rates of production and export, as well as expand the capacity of refining and modernization of existing refinery complexes and the construction of new refineries, in addition to the development of natural gas fields, construction of gas treatment units and reduction of burning gas, and other plans to expand supporting infrastructure, particularly pipelines, roads, power, and ports [5].

The completion rates in the development of oil fields and the rates of increase of oil production were rapid in the national effort fields and more by international oil companies through the first and second licensing rounds during the period (2009-2010), while the results of third and fourth rounds of exploration and development of oil and gas fields during the period (2011-2012) have not been shown for internal and external reasons. While there was a fifth licensing round for border fields, it was frozen due to security and unknown conditions, during the two years (2019-2020).

Concerning crude oil refining activity, the results were modest in construction and development and increased the production of oil products but with broader proposed investment projects, where Iraq still imports a large proportion of the total consumption in the country, especially gasoline and gas oil to cover the needs of the sectors of family consumption, transport, industry, and electricity.

Table (1) Crude oil production, export, and refinery for selected years (2003-2017)(mb/d)

Indicators	2003	2008	2011	2015	2017	2019	2020
Production	1.53	2.28	2.55	3.74	4.23	4.29	3.67
Export	1.00	1.85	2.16	3.00	3.31	3.53	3.00
Refinery capacity	0.34	0.48	0.57	0.41	0.51	0.40	0.54

Source: [5]

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The gas sector in Iraq also did not achieve tangible results until the end of 2012, as the development of natural gas fields is still in early stages, while good results have been achieved concerning the reduction of burning gas and the utilization of associated gas in southern Iraq, which began in practice at the end of 2013. However, the momentum of the activity has changed since mid-2020 towards the approval of several projects that increase the rates of exploitation of flaring gas and increasing towards power plants.

Besides, limited outcomes were achieved in the infrastructure supporting the oil sector, particularly the extractive sector (Upstream), which included rehabilitation work and construction of new projects related to the pipeline network, export facilities, storage capacities, and various surface installations [6].

2.3 Investment patterns in the world oil industry

World historical tracks of investment in upstream and downstream industries reflect a rapid and compatible development with the development of global demand for energy sources, especially the demand for crude oil and natural gas. In general, many investment objectives are ranging from maximizing benefits and profits to meeting needs, enhancing expertise, technology, efficiency, and modern management.

In the context of oil investment (which includes natural gas), those involved in this investment (governments and companies) seek to achieve a variety of objectives, sometimes going along with each other and sometimes conflicting. For example, governments are seeking to develop extraction activity to achieve multiple goals, at the forefront of which is maximizing financial resources from the exploitation of natural resources (oil and gas) to meet the requirements of economic development and social needs and other areas of growth and progress. International oil companies, in turn, seek to invest mainly in rich fields and promising reserves to maximize their financial returns at the lowest possible cost and enhance their position in the world markets [7, p17-18].

Due to the high value of the output of the oil extraction sector, high costs, advanced technology, high-efficiency expertise, required skills, and specificity of its investment contracts compared to other activities, the extractive sector is the main link in the oil industry in general. In general, the investment patterns of extractive activity expressed in the term (oil contracts and agreements) are divided into three main types; the first type is called Classical Concessions,

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under which International Oil Companies (IOCs) own oil or gas reserves and benefit from the largest proportion of production revenues. Host governments receive cash returns under the designations (taxes, bonuses, royalty).

The second type is called Production Sharing Contracts (PSCs). The government's role in this type of investment expands and the ownership of reserves changes, the state participates in a certain percentage of the production achieved in addition to its share of taxes and other allowances. The third type is called Service Contracts where the ownership and management of reserves and production realized to the governments with resources, while foreign oil companies receive cash or in-kind returns (from realized production) in return for their operations in the exploration, development, and production activities [8, p465].

Transformational changes in the oil industry, which include refining units, gas processing, and pipelines, these activities, are using a variety of investment contracts, especially in large projects that adopt international standards in their commercial activities. There are many types of investment contracts, ranging from wholly government ownership to wholly private ownership, both local and foreign, or public-private partnership, and different forms of ownership, finance, management, operation, and risk tolerance. Table (2) shows a set of models of common investment patterns in the oil industry (Upstream and Downstream) and the parties that play a major role in each of them.

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Table (2) The main types of contracts and parties involved in extractive and transfer activities

Manufacturing activity* (Downstream)	Extraction activity (Upstream)	Main Parties
BOT	Concessions	National companies
BOO	Production Sharing Contracts	International companies
BLOT (build, lease, operate, transfer)	Service Contracts (with risk)	Consortium companies
Joint Venture	Service Contracts (without risk)	Contractors
Buy-back	Buy-back Contracts	Funders
PPP	Joint Ventures	Banks
Lease Contracts	Technical Assistance Contracts	Founders
Management Contracts	Others	Suppliers
Others		Customers
		Others

Source: The table was prepared by researchers.

* Public-Private Partnership (PPP), Build (B), Lease (L), Operate (O), Owned (O), Transfer (T).

3. Oil industry in Iraq

3.1. Organizational structure

The organizational structure of the oil sector in Iraq is characterized by the width and complexity, and the management of this industry is carried out by the Ministry of Oil, through its companies and departments with its various specialties, responsible for the implementation of all oil operations. The Ministry of Oil in Iraq is directly linked to the Council of Ministers and consists of (19) public companies and eight departments and four academic training institutes and one research and development center, and all of these are owned by the State and have specific competencies and tasks and responsibilities [9].

3.2. Institutional and legal framework

3.2.1. Institutional framework

The institutional framework for investment in general and the oil sector, in particular, is wide and varied that including many ministries and governmental departments. On the one hand,

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most oil companies fall under the umbrella of the oil sector in Iraq, Ministry of Oil (MoO) and are wholly state-owned, and all investment plans, strategies, programs, and projects are decided by the leadership of the sector and implemented by those governmental companies or under their management and supervision. On the other hand, the institutional framework for the oil industry is overlapping with other ministries with responsibility and competence in the fields of energy, environment, investment, trade, and finance. Investment projects in the Ministry of Oil are not implemented in isolation from those ministries.

3.2.2. Laws and regulations (legal framework)

The complementary aspect of the institutional framework is the legal framework and associated regulations and instructions. This aspect is also broad and covers in detail all activities and processes related to the oil industry. This framework includes all laws, instructions, and procedures governing the work of governmental and non-governmental institutions related to the organization and management of oil operations. In general, an important aspect of this (legal) framework was fundamentally changed during and after 2003 until 2020, in an attempt to adapt to the new philosophy of managing the economy and investment in general and in the oil industry in particular (Table 3).

Table (3) The main institutional and legal frameworks for the oil sector in Iraq

Related Ministries and institutions	Laws
- MoO	- National Oil Company Law
- Ministry of Finance	- Hydrocarbon Resources Act
- Ministry of Trade	- Public Companies Law
- Ministry of Health and Environment	- Privet Companies Law
- Ministry of Interior	- Investment and Civil Status Laws
- National Investment Committee	- Investment law
- General Commission of Taxes	- Petroleum Products Import Law
- Iraqi Customs Commission	- Taxes law
- Other Ministries and Institutions	- Other laws related to environment, land, import, export, and labor

Source: Prepared by researchers.

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There are several drafts of laws and proposals under preparation now and others have taken their path in legislation, and there are other sets of laws expected to be issued in the coming years to be consistent with each stage of development and transition in the economy and the expansion of oil operations. Most important in this area is the issuance of the Oil and Gas Law, which will regulate in general the extractive operations and the management of hydrocarbon resources. This law is one of a package of laws including the law of the Supreme Council for Oil and Gas, the law of MoO organization, and the law of the National Oil Company (which was enacted at the beginning of 2018 and is currently been activated). Besides, another set of laws under consideration is in its initial stages, covering new management activities and methods that encourage investment and attract capital (see Table 4).

Table (4) Part of the draft laws that are expected to be enacted

Redesigning the oil lands and restricted land
Privatization of Oil and Gas Projects
joined Oil Fields (Border fields in Land and Sea)
Natural Gas Pipelines
Gas Investment
Petroleum Studies University
Amendments to current laws and regulations …

Source: Prepared by researchers

3.3. Asset ownership and financial aspects

Legally, all public oil companies and other institutions that are under the control of the oil sector in Iraq are publicly owned by the state. They were originally established by the state and funded its assets by public finance (public budget). In general, the financial aspects of public oil companies and other oil sector institutions in Iraq are of two kinds, the first is the central financing through the Ministry of Finance (the state budget) to finance capital expenditures in companies, academic institutes, and research and development center, as well as financing the salaries of those formations except the rest of public companies. The second

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kind is self-financing from the budgets of oil companies themselves to finance most of their operating expenses during the fiscal year. The annual capital budgets are designed in coordination with the Ministries of Finance and Planning, and operational budgets are designed in coordination with the Ministry of Finance only by the size and indicators of work expected in the companies during the fiscal year.

The distribution of this number among the organizations of the oil sector is noticeably irregular, companies are employing about 400 while others employ more than 20,000, depending on the nature of the activity. The number of employees increased almost about four times during and after 2003 due to technical considerations related to the expansion of the activity and other social and political reasons [10].

3.4. Pricing systems

The general framework for the internal pricing of petroleum products is broad with a social nature due to the wide subsidies provided to the prices of the main products. Although this framework is traditional and overlapping, substantial reform steps have been taken in previous years to address some of its disadvantages. Pricing systems are generally divided into five levels. The first is the pricing of crude oil supplied from the extraction companies to the refinery companies and power plants belonging to the Ministry of Electricity and some industrial institutions, which are semi-fixed accounting prices to cover operating costs and small amounts of profit margin in the extraction companies and not related to export (world) prices. The second level is the prices between the refining companies and the oil products distribution company OPDC, which are low and semi-fixed prices, designed to hold accounts between companies to cover operating costs (including crude oil) with a profit margin for refineries. As for the third level, it is the system adopted for pricing between the OPDC and the final-consumer (for the public, private, and other consumer sectors), these prices are relatively specified by market mechanisms and include different levels of government subsidies (whether the product is domestic or imported). Kerosene, gas oil, and liquid petroleum gas LPG are approved by the Cabinet while the ministry decides the prices of the remaining products.

The fourth level of pricing concerns remaining products such as fuel oil, naphtha, sulfur, and natural gasoline, all of which are sold to the local market or for exports and at commercial

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prices (based on international bulletins of prices with discounting for the quality and transport). The fifth and final level is the pricing of crude oil exported which is based on the conditions of their prices in world markets [11].

4. Investment Patterns in Challenges and Prospects of the Oil Sector in Iraq

4.1. Investment in Iraqi oil

The patterns of oil investment in Iraq have been varied within its historical patterns. Since 2003, many models have been put forward by the top administrations of this sector and by international companies and consulting offices, including those models mentioned in the previous sectors of the research. Practically, there were many factors behind these changes, including the nature of the prevailing regulatory institutions, the legal governing frameworks, the lack of experience in modern adopted global practices, as well as the strong desire of the sector to achieve a real and tangible change.

On the other hand, there have been continuous efforts to study, evaluate and seek advice on many model proposals and change paths, but they have been relatively slow in favoring which options or decisions should be made and what is the best roadmap, this slowdown, in part, is due to political and social considerations and reasons for poor experience in selection.

In addition, many urgent needs and objectives should be met about new investment patterns, foremost of which are rapid increases in crude oil production, reduction of quantities of flaring gas, exploitation of associated gas, expansion of refining capacities, repair and construction of pipeline networks, as well as the construction of storage capacities. This is along with the new expansion of export facilities, and other objectives of a strategic and logistical nature.

The new economic philosophy in Iraq has opened the door to many options, most of which are common and take the course of application in neighboring countries or nearby, in addition to other options proposed by international oil companies and specialized international consulting offices, which the government was keen not to make any specific choices before assessing and taking their advice. During the search for the appropriate ones, several investment patterns have been applied and others are still under evaluation or negotiation. The following parts of the sector will address this area by discussing investment patterns according to the main activities of the sector.

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4.2. Exploration and oil production

Iraq has huge proven oil reserves of about 150 billion barrels, which constitute more than 12.1% of global reserves, along with relatively large gas reserves. This fact made the Upstream Sector the backbone of the oil industry in particular and the national economy in general. Although the historical course, particularly those related to investment, did not differ significantly in Iraq from the practices and applications of Oil-Rich Developing Countries in the early years of the exploitation of oil wealth by IOC's. however, the conditions of war during the eighties and the economic sanctions starting from the nineties of the last century until the beginning of 2003 represented the nonconventional path of development. These conditions had profound negative effects on that oil sector.

The first quarter of 2003 marked a dramatic turning point for the state in general, here began a new philosophy to manage the oil sector in Iraq, the most important mission is to fast attraction of international oil companies to invest in giant and other large oil fields in addition to gas fields (exploration, development, production). The new investment model is what was called 'standard Service Contracts'. During the period (2009 - 2020) the Iraqi government announced five licensing rounds during which dozens of contracts were signed, which included the development of productive oil fields (large and giant ones), in addition to contracts for three gas fields and other oil and gas exploration contracts, and the last round concerned a range of border fields. In total, these five rounds covered activities (exploration, development, and production) (Table 5).

Table (5): The five licensing rounds for oil and gas contracts in Iraq

Round of contract	Field/ place	Operator	Type of field	Targeted production (kb/d) oil, (bcm/year) gas
2008	Ahdab	Petrochina	Oil	140
First (2009)	Rumiaila	BP	Oil	2850
	West Qurna I	ExxonMobil	Oil	2825
	Zubair	Eni	Oil	1200
	Missan Fields	CNOOC	Oil	450
Second (2010)	West Qurna II	Lukoil	Oil	1800
	Majnoon	Shell	Oil	1800

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	Halfaya	Petrochina	Oil	535
	Gharraf	Petronas	Oil	230
	Badra	Gazprom Neft	Oil	170
	Qaiyarah	Sonangol	Heavy Oil	120
	Najmah	Sonangol	Heavy Oil	110
Third (2010)	Akkas	KOGAS	Gas	4.1
	Mansuriyah	TPAO	Gas	3.1
	Siba	Kuwait Energy	Gas	1.0
Fourth (2012)	Block 8	Pakistan Petroleum	Gas-prone	n/a
	Block 9	Kuwait Energy	Oil – prone	n/a
	Block 10	Lukoil	Oil – prone	n/a
	Block 12	BashNeft	Oil - prone	n/a
Fifth (2018)	Naft Khana	Geojade	Oil & Gas	
	Huwaiza	Geojade	Oil & Gas & LPG	
	Sindbad	UEG	Oil & Gas	
	Khidher Al-Mai	Crescent	Oil & gas	
	Gilabat- Qumar	Crescent	Oil & Gas	
	Injana – Khashm Al-Ahmar	Crescent	Oil & Gas & LPG & Condensate	

Source: [12, p37].

The nature of these signed contracts was very new and differs substantially from those of earlier phases of Iraq's oil industry. First and foremost, oil and gas reserves, as well as the quantities produced, will remain government-owned. Concerning the role of foreign companies was in the development and provision of finance, expertise, management, and providing modern technology to develop oil and gas fields and increase production rates to agreed levels. Regard exploration contracts, foreign companies also undertake several tasks and responsibilities related to exploration, production, and associated infrastructure. Under the terms of the signed service contracts and based on the rate of primary production, base production, and realized production, foreign contracting companies will receive benefits called Service Fees which includes petroleum costs (representing capital and operating costs spent during field development operations) in addition to remuneration Fees (which represent a

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return on each barrel of production increase in addition to the so-called "Supplementary Cost"), and the calculation is quarterly according to the (R-Factor) and the method of Sliding Scale Techniques [13, pp 6-9].

Within this framework, a set of considerations, economic and political, were required to make changes in the philosophy and nature of the concession contracts (the creation of new types of contracts or the modification of existing ones), as well as the patterns of investment in the extraction activity, especially concerning the reduction of the role of national companies and the expansion in the role of foreign companies and the integration of Upstream with Downstream activities, and this was going on in a very critical environment surrounded by several factors, including the agreement on the Oil and Gas Law, the relationship with neighboring oil countries and the requirements of the infrastructure of the oil industry, as well as developments in world oil markets.

With all these considerations, the future vision remains linked to the new form of the oil extracting sector especially with the decisions of the Organization (OPEC +) to cut oil production and after the issuance of the NOC Law with the form to finance and manage extracting companies and management of the implementation of contracts and production plans, as well as the relationship with other government oil companies and the role of the Council of Ministers and the Iraqi Ministry of Oil and the governorates in issuing needed instructions and monitoring implementation Of related issues.

4.3. Crude Oil Refinery

The refining sector in Iraq is generally underdeveloped and unsuitable to the country's oil reserves and production capacity. There are three relatively large crude oil refinery complexes in central, northern, and southern Iraq, linked to a group of small-capacity refineries spread over the country's geographical area (Table 6). In general, the state owns all assets in those refineries (both small and large) with all the supported facilities. Compared to international high-tech refineries, refineries in Iraq operate with classical, low-productivity technologies, and the numbers of workers far exceed the actual need for their operations and produce a large proportion of heavy fuel (about 50% of the total output).

Despite the investment funds spent annually to develop these units and add new ones to increase production and improve their capacities, but many issues remain a big challenge to

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the development of refineries in Iraq, especially the old refineries, technical problems, the absence of integrated plans, lack of capital for development and other challenges related to security conditions and the war against terrorism.

Table (6): Big and small refineries in Iraq as in 2020

companies	The main refineries complexes	No. of small related refineries	Total current filtering energies (Thousand bpd)
North Refineries	Baiji Refinery (Al-Smood)	5	250
Central Refineries	Al-Dura Refinery	3	220
South Refineries	Basra Refinery	2	280

Source: [5]

Commercially, these refineries still operate more for technical and domestic needs than for economic standards. It is generally operating under the principle of (cost plus profit margin) and under the control and management of government plans, where the refining companies buy crude oil from extracting companies at low prices (4 - 6.5 dollars per barrel) and sell their products to the oil products distribution company at low prices, and also achieve the above-mentioned principle to cover their operating costs with a small profit.

Table (7): Accounting prices between the extraction, refineries, and distribution companies

Crude oil	Products	Selling price from refining companies to the distribution company (Cents/liter)	The selling price from the distribution company to the final consumer Cents/liter
Selling prices from extractive companies to refining companies (4 - 6.5) dollars / barrel	benzene	17	30
	kerosene	8	10
	Gas oil	14	27

Source: [5]

Since 2007 there have been significant changes in crude oil refining activity, and in line with the new government philosophy (objectives) at the market economy and private sector

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promotion. A new law has been passed allowing the private sector to establish, own and manage crude oil refineries (Law No. 64 of 2007). In 2010, four new investment opportunities were announced for the construction of large refineries in central, northern, and southern Iraq, as well as investment opportunities for heavy oil refineries and others with integrated projects with productive oil fields. Since these four opportunities did not achieve the desired results, new opportunities were announced during 2017 and at the beginning of 2018 included nine investment opportunities for the establishment of other new refineries. Most of the announced opportunities obliged investing companies on strict environmental and high technical conditions, with the opportunity to expand the activities of those companies in the sale/export of their products, and attractive tax and non-tax benefits and exemptions (Table 8).

Table (8); Announced investment opportunities to establish new refineries

Name of the project	refinery capacity (thousand bpd)	Site of the project
Refinery of Maysan	150	Maysan
Refinery of Al-Faw	300	Basra
Refinery of Basra	150	Basra
Refinery of Kirkuk	70	Kirkuk
Refinery of Al-Nasria Refinery of Dhi Qar	150 100	Thikar
Refinery of Al-kayara	100	Ninwa
Refinery of Alsimawa	70	Al-Muthanna
Refinery of Haditha	70	Anbar
Refinery of Al-Kwit	100	Wasit
Refinery of Al-Diwaniya	70	Al-Diwaniya

Sources: [14]

Despite the diversity in investment patterns in the oil activities, whether proposed by the MoO or provided by foreign companies such as (BOOT, BOO, partnership, refinery fees, etc..), and despite the signing of several investment contracts for refineries such as Maysan refinery

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project and Kirkuk refinery, as well as other investment projects to improve gasoline in the provinces of Muthanna and Kirkuk cities, but in reality, these investments did not achieve actual steps because of lack in the seriousness of investors or the weakness of the invested companies, as well as security and financial considerations and government routine and the social nature of the social - work environment.

4.4. Natural Gas- extraction and processing

There are two trends in dealing with different patterns of natural gas investment in Iraq, the first is the extractive activity in natural gas fields and the second is the activity of utilization of associated gas (flaring) and converting it to dry gas and other products. Currently, there is still no specialized company for gas extracting in the organizational structure of the oil sector in Iraq, where extractive companies exercise their main functions in the production of crude oil, and associated gas produced as a by-product to be flared as an inevitable option with the consequent financial losses as well as the environmental damage, or be delivered to governmental gas companies for treatment and conversion mainly to dry gas for power plants use, and various other industrial and consumer purposes, as well as liquid and condensate gas products. As in the rest of the units in this sector, all stages of the natural gas industry are controlled by the government. Since 2008, the government, through the Ministry of Oil, has been negotiating new licensing rounds to develop natural gas production fields. As well as to use the associated gas, which still large quantities of it is been flared.

Concerning the general patterns of use of natural gas under these situations, there are four types, namely, national investment, joint venture, licensing rounds contracts of oil, and lastly service contracts for natural gas fields. For national investment, the north and south gas companies are responsible for processing associated gas received from oil extracting companies, which is relative to limited quantities due to limited processing facilities, poor infrastructure, and lack of investment allocations for new projects. The ownership of assets in these two companies is state-owned and the management, financing, and decision-making systems are also controlled by the government (represented by the MoO). Even accounting systems, input pricing of associated gas, and output pricing received directly by the companies of MoO (such as the North Oil and Gas filling Companies), Are non-commercial prices and are designed for accounting purposes between government companies and have no relation to

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market prices and their changes. On the profit, these governmental companies are always profitable because of the nature and flexibility of accounting systems and the ministry's intervention in the formulation of price policy for inputs and outputs.

The second investment pattern relates to the single and recent experience of Basra Gas Company (BGC), a joint venture between South Gas Company (SGC) which is a wholly state-owned public company, and international shareholders (Dutch Shell Company and Mitsubishi). The role of this joint venture is to rehabilitate existing gas facilities in southern Iraq and add major units to expand the collection and processing capacity of associated gas from the southern oil fields (where large quantities of it are currently flared) and to reach the production capacity to 2000 MSCF (million standard cubic feet) per day to produce a range of products representing dry gas for government power plants, liquid gas, and condensates (currently directed mainly for export).

BGC has a relatively complex commercial framework and operates according to international standards. The company buys raw gas (associated gas) from the South Gas Company and sells dry gas to this company as well, but the pricing of gas as inputs and outputs is based on non-conventional models of calculation and is generally lower than world prices [15]. The third type of investment relates to the contracts of the second oil licensing rounds, where the contracting company builds the associated gas treatment facilities and recovers their costs with margin.

The fourth type of investment involves the model of service contracts for the investment of gas in the unexplored gas fields and promised gas exploration with strong possible oil reserves (table 5 above). These contracts are designed on the basis that the foreign investor companies pay (signature bonus) to the government and bear the risks of capital expenditure and operational risks in the exploration and development activities; in return, these companies receive service fees covering costs and profit margin. In this framework, three contracts were signed in the southern region of Iraq at the beginning of 2018 for the establishment of plants for the treatment of associated gas in the fields of Artawi, Bin Omar, and Nasiriyah (along with Al Gharaf field), but the formulation of the contract is still not entirely clear whether the ownership of projects for the government or as foreign investment projects. But the main goal is to double the gas invested to reach more than 2000 million standard cubic feet per day.

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4.5. Oil and gas pipelines

The Oil Pipelines Company (state-owned company)) is responsible for the operations and responsibilities related to these activities, which include in addition to pipelines carrying crude oil, gas, and other products, all the complementary and supporting facilities for the transport activity. The commercial aspect of the activity of the pipeline company is based on the framework of operational costs during the year covered by the revenues generated from the transport fees (determined by MoO and paid by the government-owned interested oil companies). These are mainly subject to the government instructions and decisions (represented by the Ministry of Oil), which is generally always profitable company, Table (9) provides some examples of the transport fees currently in effect.

With significant increases in crude oil production and the consumption of petroleum products, there was a need to rehabilitate the existing pipeline networks and establish new ones to support the infrastructure needed to sustain the rate of increase in oil production as well as increases in gas production and petroleum products. This change includes the main and secondary pipelines between the north and south of Iraq with neighboring countries, as well as plans to expand the construction of pipelines to outlets for global markets. Fundamental changes in this sector, the government has begun to adopt the idea of new investment patterns. The unusual action was to allow the private sector to finance, operate, and operate major pipeline projects that run under commercial principles and profitability criteria that take into account real cost and the efficiency of project management.

Table (9): Current transportation charges of oil, gas, and products pipelines

Products	Fees (in USD)	Units
Crude Oil	2	Thousand cubic meters. km
Light Petroleum Products	14.2	Thousand cubic meters. km
Fuel Oil	4.2	Thousand cubic meters. km
Dry Gas	8.3	Million cubic meters. km

Source: [5]

The first type of investment of crude oil pipeline is (BOOT), that is the Iraqi-Jordanian pipeline project, which starts from the city of Basra and extends to the city of Haditha and then through Jordanian territory to the port of Aqaba on the Red Sea with a capacity of one million bpd, the project is still in the early stages of the contract until the end of 2020.

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4.6. Distribution of petroleum products

The petroleum products distribution sector is a very large one and covers most regions of Iraq. Petroleum Products distribution is a state-owned company, is responsible for the management of all parts of this activity. The role of this company is very sensitive as it is the only source in the providing of the primary and secondary petroleum products in the country (gasoline, gas oil, kerosene, and LPG) as well as the needs of the electricity sector and other economic sectors, any failure in the providing operations will have rapid negative economic and social effects.

As regards the development of business, distribution activity continues to operate in a traditional manner concerning management, logistic, pricing of products, and technology. The company's business framework adopts a simplified method through the purchase of petroleum products from refining companies (which are state-owned) at low prices and the receipt of imported products (from the Oil Marketing Company). The company sells its products in local markets at subsidized prices that are below import prices and real refining costs, as can be seen in Table (10).

Table (10): Average prices of main petroleum products (cents per liter) as in 2020

products	Import prices (1)	Amount of subsidies (2)	Costumer prices (1-2)
Gasoline	35	5	30
Kerosene	41	30	11
Gas oil	34	7	27

Source: [5].

Because of the nature of this activity, there are hundreds of distribution outlets, both filling stations, and direct sales yards, all of which receive the products from the distribution company and under its supervision and control and sell its products at government prices. The number of filling stations currently stands at about 1,400 one. The government owns 290 stations; the private sector (both leased and private stations) manages the remaining stations, which is about 80% of the number of stations in Iraq. The wide distribution activity achieves huge financial revenues used by the ministry of oil to finance a set of operations, especially to finance the imports and lending of public oil companies and transfers to the Ministry of Finance (the

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general budget). In general, the main channels covered by these revenues can be divided as follows [16]:

- Cover the annual operating costs of the company
- Annual profits for the employees
- Part of which for the importation of the main petroleum products
- Support of strategic projects (Karbala Refinery)
- Share of the Iraqi Ministry of Finance

Despite the significant changes in understanding the current economic philosophy of the country in general and the oil sector in particular, and the leadership of the company's management in particular, but the changes in the distribution activity were weak or modest, even with the numerous reform and development plans that began originally three decades ago, but commercial and legal reasons as well as current conditions, all of which reduced its speed. Recent changes in this activity can be seen in the following [17, PP.464]:

- Continuation of the traditional governmental style in managing the activity.
- Renting or selling governmental filling stations for the private sector.
- Increasing the number of privately owned stations that are operating under modern standards.
- Preparing plans and designs for establishing new
- Starting new filling stations that sell their products at commercial prices (unsubsidized).
- Allow private sector companies to import petroleum products and sell them in local markets at commercial prices.

In practice, not all of these activities are conducted in one context for legal and security reasons, with the government continuing to dominate import, processing, management, and pricing-related activities.

5. Results Discussion

5.1. A dramatic set of events took place during and after 2003 in Iraq, notably the events of political change, economic transformation, a new philosophy in managing the State, and especially the oil sector, with the creation of new patterns of investment. These events were rather complex, as they included changes in the philosophy of the management with changes in the current frameworks, and this was very clear in the trends of

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development in the oil sector. Investment patterns have been the gateway to transformation despite the variation and delay in making changes and progress of work with some obstacles and challenges that require a real evaluation and critical decisions and sufficient time to achieve the transformation objectives.

5.2. Over time since 2003, based on the performance achieved in the oil sector in Iraq, the main challenges were the unstable security situation, the unclear and incomplete legal framework, the weak interaction between the different ministries and the rest of the government bodies in general, weak procedures of dealing with investment projects, the lack of supporting infrastructure, the weak experience of administrative practices and capabilities of negotiation, and the nature of human behavior by government staff, as well as issues relating to sharing of powers and responsibilities between the central government and the authorities of Iraqi provinces, especially relating to financial matters and nominations for high-level positions, with the events of the collapse of oil prices and the global epidemic of COVID-19.

5.3. These practices, although varying between activities and different sites, reflect the current status of the oil sector in Iraq. Investment in the oil extraction activities remains the focus of the crude oil sector, especially in the chain of exploration, development, and production activities, and is, therefore, the most sensitive one to these challenges. As for the refining sector, the industry still faces difficulties in attracting foreign investment to opportunities of establishing new and sophisticated refineries, especially the difficulties of processing crude oil, product management, and other supporting infrastructure. Gas exploitation activity, whose plans and programs are still unclear due to the focus on crude oil production, the available options still face many obstacles, especially the decision-making process and coordination with the extraction sector and the large capital required, and the absence of exportation plans.

5.4. The transformation process in Iraq, as in the experience of other countries, requires long-term funding and huge multi-faceted efforts, the almost only source of funding and transformation in Iraq is (**crude oil export revenues**), which are supposed to be sustainable and consistent with the (transition plans). This requires a clear and practical mechanism for the implementation of investments in the oil sector, especially the extractive activity to develop the fields and increase crude oil production rates and

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increase exports in parallel with the development programs of other activities such as oil refining and gas exploitation, expansion of the pipeline network and other supporting infrastructure to achieve Compatible progress and control development and maximize benefits.

5.5. Progress in rehabilitation and expansion requires business continually and unusual decisions beyond those that are offered by existing legal frameworks. Although new laws and institutions that were established are important, they will not be enough and there will always be additional efforts necessary to develop the Iraqi oil sector in an overall seen.

5.6. In the current circumstances of Iraq, the magnitude of oil reserves and, to some extent, gas reserves, is the focus of attention at all local, regional and international levels. The fast increases in crude oil production in Iraq are raising many questions and concerns of the global energy markets about the extent of realism and continuity of these increases, and their impact on world oil and energy markets. This gives sufficient reasons to speed up the construction of a sophisticated, complete, and modern oil sector, that interacts with the realities of the world markets more realistically.

6. Conclusion

The political and economic transformations in Iraq have opened the way to achieve important changes in the oil sector, and the issues of these transformations were very complex and require huge funding, long duration, and mobilization of large efforts to realize them in a consistent and balanced way. Although the targets set in the oil sector were very ambitious, the performance and real progress were unbalanced and slow in some areas. In practice, the focus on the development of the extraction sector and the increase in crude oil production and export rates dominated the efforts of the sector from other activities, and this was evident in the amount of money spent on this activity and the results achieved compared with the rest of the activities.

Concerning natural gas extraction, associated gas processing, and crude oil refining, the general progress has been slow and still faces many challenges and complexities. Currently, there is a focus on achieving an appropriate institutional and legal framework for the transformation and development process, creating a suitable business environment for

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international oil companies to invest in Iraq, and continuing the momentum of work in concentrating efforts to accomplish projects of infrastructure that support the development and expansion processes.

The philosophy of attracting investments to the activities of refining crude oil and processing associated gas and expansion of the pipeline and the way of managing the distribution of products and maximizing the benefit from the outputs of these activities, and requires the decision-makers to draw a more reasonable map to encourage and attract investments and make new incentives for foreign investors. Finally, there should be a consideration; that investment will create a balance between the urgent needs for the expansion of investment projects and their capital requirements in return for a long-term deficit in the budget and the inability to provide financial allocations for these projects.

7. Recommendations

Based on research, analysis of the current case of Iraqi oil investments, its challenges, and prospects, a set of guidelines can be proposed to be the basis for building a more sophisticated and realistic investment framework in this sector, as follows:

1. Building a compatible philosophy for oil investment consistent with the philosophy of managing the national economy, and based on the diversification of economic resources and thus the diversification of government resources.
2. Preparation of oil investment plans to achieve the principle of consistency and balance in its preparation and focus on refineries, which achieve greater self-sufficiency of the products, and increase the added value of its products. along with keeping the principle of practicality in building investment plans and projects under the budgets of the government.
3. Putting a legal framework for investment that is independent of overlapping laws and instructions and multiple interpretations, and prepare a practical legal review of the oil contracts for the past rounds, and an assessment of the feasibility achieved by the Iraqi side of them to maximize the national benefits of the coming rounds.
4. Activating the role of law, and the judiciary, to protect investment and prepare an information database for current and future investment projects and formulate several standard contracts for of the oil activities.

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References

[1] Hisham Yas: Iraqi Economy; Present and Future, “Economic and Administrative Reform Conference”, College of Business and Economics, University of Baghdad, Iraq, 2005.

[2] Ministry of Planning, “National Development Plans Reports (2005-2012)”, Iraq, 2005.

[3] Ministry of Planning, “National Development Plan Reports (2013-2017)”, Iraq, 2013.

[4] Ibid. p 2.

[5] Ministry of Oil, “Annual National Plan Reports (2003-2011)”, Iraq, 2013.

[6] Ministry of Oil, Internal Reports, Iraq.

[7] Johnston, Daniel, “International Petroleum Fiscal Systems and Production Sharing Contracts”, USA: PennWell Publishing Company, 1994.

[8] Seba, Richard, “Economics of Worldwide Petroleum Production”, USA: OGCI and PetroSkills Publications, 2003.

[9] Ministry of Oil, “Annual Report of the Inspector General Office (2012)”, Iraq, 2012.

[10] Ministry of Oil, Internal Reports, Iraq

[11] Ministry of Oil, internal instructions and reports, Iraq, 2018.

[12] IEA, Iraq Energy Outlook, Special Report. France. pp.37, 2012.

[13] Ahmad Abrihi Al-Ali, “Financial aspects in oil service contracts and operations management”, Baghdad, 2011.

[14] MoO, “Symposium for the announcement of new investment refineries”, Iraq. MoO website, 2017-2020, https://oil.gov.iq/, 2010.

[15] Ministry of Oil, Basrah Gas Company, Key Indicators, Internal Report, Iraq, 2011.

[16] Seba, Richard, “Economics of Worldwide Petroleum Production”, USA: OGCI and PetroSkills Publications, 2003.

[17] T. Pierre, Prices, Revenues, and Oil Contracts in the Arab Countries and Iran Translated into Arabic by Victor Sahab, Lebanon, 1982.