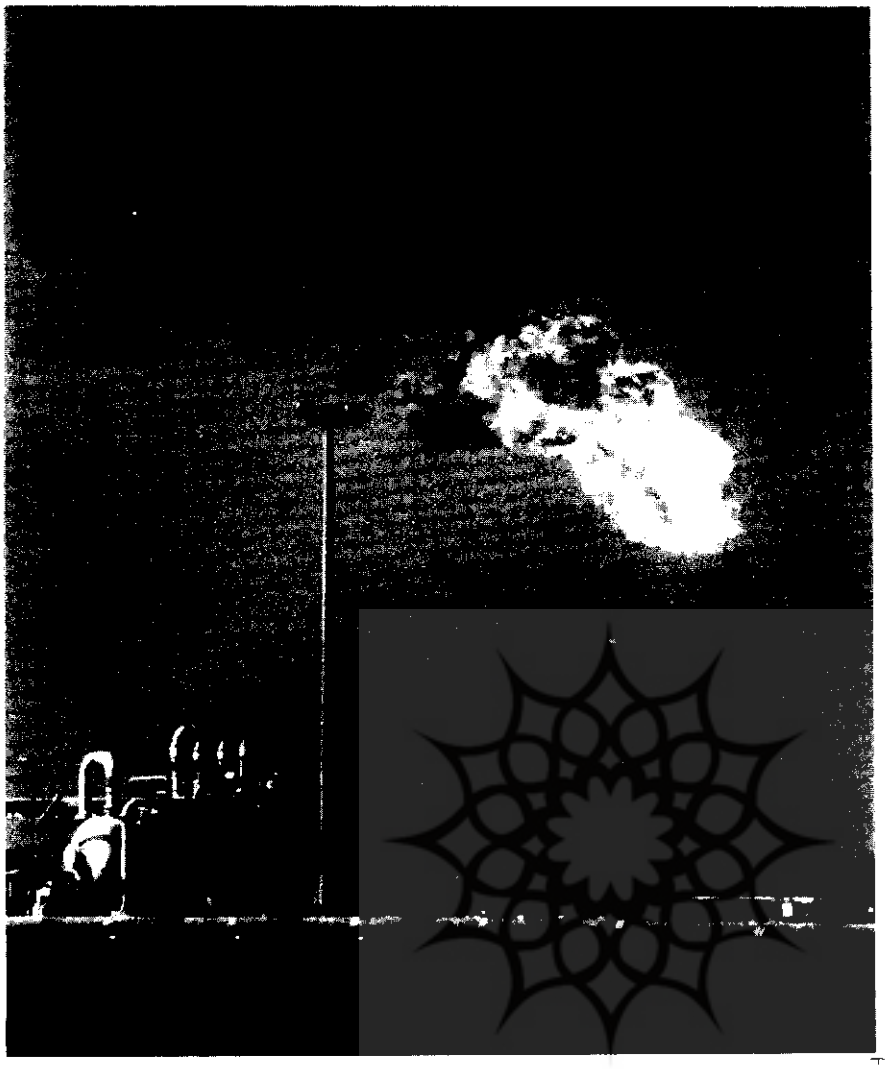


a sustainable 6MBD by the year 2010.

The Outlook for Oil Buy-back Contracts

The following is what Iran's Oil Ministry (Public Relations Affairs) has suggested in March about the outlook of the country's oil and gas Buy-back contracts.

"The Buy-back contracts which have so far been approved and signed shall increase the daily production of oil by about 300,000 barrels; gas by around 265 million cubic feet and gas condensates by almost 120,000 barrels. However, if Iran is to keep its 13% oil share within OPEC's Quota system for the next 5 years, it has no choice but to increase its production capacity by 2MBD. Because, due to the old age of the present oil reserves and as a consequence, their loss of pressure, there will be a yearly oil reduction in production of around 200-300 thousand barrels per day which within the next 5 years, it will amount to about 1.3 MBD.

Moreover, in view of the fact that, the trend of world oil demand is upward and non-OPEC has no excess production capacity, in the next few years, the greater portion of increase in world demand for oil has to be met by OPEC, out of which, Iran's share will be nearly 700,000 b/d.

Gas

Although Iran's gas Production has doubled since 10 years ago, its world share of gas export is nil. Actually, Iran by holding 15% of world gas reserves is the 2ed largest in the world. But, it is responsible for only 9.1% of total world gas production, and hence it is placed in the 8th position among world largest producers. In the last two decades, gas export worldwide has increased more than five-fold by reaching 450 billion cubic meters. Furthermore, based on forecasts made by most international institutes, demand for gas within the next two decades will continue to be more than other renewable and non renewable types of energy.

Insufficient Investment

Insufficient investment in Iran's oil and gas industry particularly after the Islamic Revolution of Iran, not only has reduced the country's share in the oil and gas market throughout the world, but it also has had other consequences namely:

1. Reduction in economic growth and development due to shrinking of oil income.

2. Lack of exploitation of joint oil and gas fields with other countries, and the swift development of those fields by neighbor countries, such as the south pars gas field shared with Qatar in which, Iran's loss is assessed at 10 million dollars per day.

3. Missing out on the East Asian growing demand for fossil energy.

4. Dependency on the fields already explored before the revolution and thus not carrying out new explorations in various provinces throughout the country.

5. Severe growth of Iran's national risk due to downward trend of the country's oil income, and also delays in repayment of foreign financial commitment.

6. Iran's national security is under threat because of the military build up of the neighboring oil rich countries.

7. Lack of 10-15% excess oil production capacity which OPEC has

Table 5. Offshore Oil and Gas Development

Field	Project	Original Oil/Gas	Recoverable Reserves	API Gravity	Current Production	Depletion	Capacity Objective
Esfandiar	IOR			31	NO		6,000-70,000b/d
Foroozan	EOR		890.4mn bbl	29-30	50,000b/d		90,000b/d
Hendijan	IOR/Eor			27-32	8,000b/d		25,000b/d
Nowroz	EOR/production facilities	1.729bn bbl	705 mn bbl	20-21	Interrupted by war		90,000b/d
Salman	EOR		430mn bbl (remaining)		100,000b/d	1,228.5mn bbl	
Sirri: Sirri C	EOR	486mn bbl			14,000b/d	51mn bbl	35,000b/d
Sirri D	EOR	693mn bbl					
Soroush	EOR/production facilities	9.1bn bbl		19			90,000-150,000b/d
South Pars Gas	Further development	280 TCF			3bn cfd		5bn cfd
South Pars Oil	NO DATA RELEASED						

Source: Kirsten Bindemann "PSC: An Economic Analysis", OXFORD INSTITUTE FOR ENERGY STUDIES. Oct. 1999.

Table 6. IRAN NATURAL GAS EXPORTS PROJECTS

NAME OF PROJECT	EXPLAINE	QUANTITY (BCM)	START	STATUS
IRAN-TURKEY	PIPELINE	3-10	2000	SIGHNED
IRAN-ARMENIA	PIPELINE	1	2000	SIGHNED
IRAN-NAKHCHAVAN	PIPELINE	0.4	2000	SIGHNED
IRAN-PAKISTAN	PIPELINE	8-15	2005	MOU
IRAN-EUROPE	PIPELINE/LNG	4-16	-	STUDY
IRAN-FAR EAST	LNG	6	-	STUDY
IRAN-INDIA	LNG/PIPELINE	3-10	2006	MOU
CHINA	LNG	3	-	MOU

Courtesy: I.I.E.S. data

Table 4. Onshore Oil and Gas Development

Field	Project	Original Oil/Gas	Recoverable Reserves	API Gravity	Current Production	Depletion	Capacity Objective
Agha Jari	Gas injection/pipeline	28bn bbl	9.5bn bbl		200,000b/d	8.7bn bbl	
Ahwaz Area: Ahwaz	Gas injection/pipeline	31.5bn bbl	3.4bn bbl		Yes	520mn bbl	
Abteymur	Gas injection/pipeline	14bn bbl	1.27bn bbl		Yes	85mn bbl	
Mansouri	Gas injection/pipeline	19.3bn bbl	1.16bn bbl		Yes	85mn bbl	
Central Zargos: Rig	Production facilities/pipeline	350mn bbl	110mn bbl	34-36			
Shurom	Production facilities/pipeline	811mn bbl	154mn bbl	21-27			
Dudrou	Production facilities/pipeline	92mn bbl	10mn bbl	46			
Cheshmeh-Khosh	Gas injection	1.513bn bbl	287mn bbl		Yes	120mn bbl	80,000b/d
Darquain	IOR/EOR	2.894bn bbl	289mn bbl	38-39	Testing		30,000b/d
Dahluran	IOR/EOR	3.693bn bbl	555mn bbl	33-40	Yes		20,000b/d
Jufeyr	IOR/EOR	2.727bn bbl	137mn bbl	22.39			
Masjed-e-Suleyman	IOR/EOR/production facilities	6.58bn bbl			1,500b/d	97%	
North Pars	Development/Production facilities	106TCF	47TCF		Appraisal		2.4bn cfd
Paydar	IOR/EOR	816mn bbl		13	910b/d (summer)		10,000b/d
Saadat Abad	IOR/EOR	372mn bbl	41mn bbl	41.5	No		
Sarvestan	IOR/EOR/Production facilities	848mn bbl	136mn bbl	28-31	No		20,000b/d
Tang-e-Bijar	Development/treatment	5TCF					350mn cfd
West Assaluyeh	Development	1.715-5.772TCF					500mn cfd
West Paydar	IOR/EOR	1.9nn bbl	189.7mn bbl		3,000b/d		

Source: Kirsten Bindemann "PSC: An Economic Analysis", OXFORD INSTITUTE FOR ENERGY STUDIES, Oct. 1999.

Table 3

Current and Potential Upstream Buy-back Projects in Iran

Name of Field	Actual or Potential Foreign Parties	Reserves	Production Potential by 2006
Offshore			
Sirri A & E	TotalFina, Petronas		Sirri A started Oct.98 at 7,000 b/d.Sirri E started in Jan.99 at 30,000 b/d.Peak Production of 100000 b/d from late99.
South Pars	Totalfina, Petronas, Gazprom		Gas production. Gas injection project aimed at boosting onshore capacity by 300,000 b/d by 2001 (may be delayed).(Marun,Karanj, and Parsi fields.
Balal	Bow Valley Energy, Elf	80 million bbls recoverable	12-15,000 b/d from H2 2000.40,000 b/d
Doroud	Elf, ENI		Raise output from 130,000 b/d to 220,000 b/d from 2003, up to 290,000 b/d by 2005?
Nowrooz	Shell	70 million bbls recoverable	20,000 b/d in 1999, 90,000 by 2003?
Soroush	Shell	400 million bbls recoverable	100-150.000 b/d by 2003?
Onshore (Potential)			
Darkhovein	ENI,BG,Lasmo	At least 700 million bbls recoverable (assuming 23% recovery factor)	30,000 b/d by end 1999, rising to 60,000 b/d in 2000/1, and 200.000 b/d by 2005/6.
Ahwaz-Bangestan reservoirs	The frontrunners are Shell, Lasmo, TotalFina, Enterprise		160,000 b/d in 1998 rising to 500.000 b/d by 2006
Cheshmeh Kush	CEPSA		Currently 9,000 b/d, rising to 80.000 b/d
Dehloran	SAGA	Up to 100 million bbls recoverable	75.000 b/d?
Mansuri			200,000 b/d by 2004
Total additional capacity			1.8-1.9 million b/d
Source:DKBR			

Courtesy: I.I.E.S. data

In the profit-sharing method,
since there exists a high risk in the exploration and production of oil and gas,
the method of "joint venture" is employed in practice,
and other methods related to profit-sharing such as:
B.O.T., B.O.O.T., B.O.O.S.T., B.O.O. and B.R.T. are actually ignored

6. Soroush and Norooz fields

The contract regarding these two fields was signed in 1999 with Shell for a value of 1455 million dollars. It is observed that the project shall be completed within 45 months from the time the contract is signed. And, it is foreseen that the ultimate production volume of the two fields soroush and Norooz will be 100,000 b/d and 90,000 b/d respectively. His Excellency, the Iranian oil Minister had made the following elaboration on the deal with Shell:

"The actual contract which is valued at 799 million dollars should be tendered. The repayment together with the relevant profit and bonus within a 10 year period will be 4.1 billion dollars. The volume of production will be 190 thousand barrels per day for a period of 25 years, a sum of 1050 million barrels will be extracted at a low cost of 4.1 dollars/barrel."

In tables 2 and 3 the details of Buy-back projects, both, the one being implemented and those which are being considered are presented.

In the third Iranian Economic Development program, it is aimed to increase oil production volume to 5MBD by the year 2005. The next goal is to increase oil production volume to

Table 2

Gas Injection Projects and Investment Requirements 2000-2004

Group	Gas Injection Projects	Secondary Oil Recovery	Incremental Oil Production	Investments
		Million Barrels	Thousand Barrel Per Day	Million Dollars
1	Under construction	8638	604	43
	Buy- Back	6703	320	1692
	Total Group 1	15341	924	1735
2	Investment by NIOC	621	48	318
	Buy- Back	1678	100	588
	Total Group 2.	2299	148	906
3	Investment by NIOC	374	30	210
	Buy- Back	44	4	50
	Total Group 3	418	34	260
4	Investment by NIOC	126	10	50
	Buy-Back	43	4	24
	Total Group 4	170	14	74
Total		18228	1120	2975

"Elements of policy Making in the Development of Iran's Oil & Gas sectors in the New Millennium". Courtesy: IIES data . March 2000

materials.

8. Full supervision right reserved for NIOC.

9. Economical advantages in comparison with other types of oil contracts.

10. Transparency in financial arrangements of the contracts.

11. The involved foreign company shall bear the production risk.

Oil Buy-back contracts in the 2nd Development program

According to part, "M" of amendment "22" of the law for the 2nd development program, the ministries of oil, Road & Transportation, Mines and Ore and Jahad sazandegi were allowed to attract collectively up to 6.5 billion dollars in the form of Buy-back contracts, and up to 3.5 billion dollars in the form of finance, from foreign sources.

In this respect a conference was held in London by NIOC in 1998, through which 43 oil and gas projects were tendered internationally based on Buy-back formula. These projects were comprised of: 11 exploration projects; 14 onshore projects in the south; 8 Abadan Refinery projects and 10 offshore projects with total investment value of 8 billion dollars, each of which to become operational within and average period of 3-5 years from the time the signing of the contract is finalized. Implementing these projects will increase Iran's oil and gas condensates production capacity by 1.4mbd and its natural gas production capacity by 70mm3. These projects when operational, will create an additional yearly income of 8 billion dollars. Before tendering the above projects, there were 2 projects of phases 2 & 3 of the south pars gas field and also siri oil fields A & E signed with the French Total in 1995 and 1997 based on Buy-back formula.

Finalized Upstream Buy-back Contracts

The ministry of Oil of the I.R. of Iran has disclosed the following information and details regarding the oil and gas upstream projects signed so far according to the buy-back formula.

1. South Pars gas field

The field which holds 300 trillion cubic feet of gas and 2 billion barrels of gas condensates is considered as the world largest independent gas field. It is located between Iran and Qatar. Since 1992, the country Qatar has begun production from this field and by the year 2001-the time that Iran's projects on the field might become operational - in a period of almost 10 years, it will have produced around 2 billion dollars worth of gas from the field.

The oil ministry plans to complete the development of this field in 10 phases; the first of which is signed with an Iranian contractor, and the 2ed & 3 rd ones are signed with the French company "Total".

The south Pars total project's cost is 2.12 billion dollars which includes: initial capital funding, bank interest of operational costs and bonuses which shall be repaid within a period of 7 years through supplying gas condensates.

2. Dorood Oil field

The development project of this field was signed in 1999 with the two oil companies "Elf" from France and "Agip" form Italy based on Buy-back formula. The total cost of the project is one billion dollars with the duration of 4 years. It is observed that 19 months after the beginning of drilling operation, an additional 12 thousand barrels of oil per day will come on stream. Water injection will instantly increase this field's production volume from 20% to 32% which translates to a 50% increase in oil recovery. It is also planned to raise production from the field to 90 thousand barrels per day.

3. Balal oil field

The contract for developing this field valued at 230 million dollars was signed in 1999 with the French "Elf" and the Canadian "Bow Valley". The volume of the oil in the field is 80 MBs and production will start in 2001; three years after the signing of the contract. The total repayment process will begin in 3-4 years after the initial production and from the allocated 60% of the field's recovered oil.

4- Siri "A" & "E" fields

The contract for these fields was the first of Buy-back contracts signed in 1995 with the "Total" of France valued at 800 million dollars. The American oil company "Conoco" was originally assigned to handle the relevant project, however, the US government's sanctions against Iran, prevented the company from proceeding with the project. It is foreseen that the production volume from both fields collectively will be about 120 thousand b/d, and around 100m cubic feet of oil condensates will be recovered from the fields.

5. Caspian fields

The Caspian exploration project tenders were not among those offered at the conference in London. The Iranian Company "Caspian Exploration and Production Company" Signed a preliminary Seismic and exploration contract worth 25 million dollars with the companies "Shell" and "Lasmo". All the costs will be paid off through the oil recovered from Caspian southern region provided that the discovered oil reserves are commercial. Otherwise, NIOC will not be held responsible, for the project costs whatsoever.

close cooperations between the countries with major oil reserves and the international companies, with respect to the development of hydrocarbon resources will enter a new phase in 21st century

plays the major role in the state's national economy. Needless to say that improvement, expansion and stability of great industries such as the oil and gas industry and its related industries requires significantly large sums of assets and advanced technology.

Investment in the Iranian oil industry has gone through considerable changes during the past 3 decades and here, we will summarize the trend of the changes.

The trend of investment in Iran's oil industry within the period, 1970s to 1990s faced tremendous ups and downs and may be categorize into three eras:

1. The yearly rate of investment in Iran's oil and gas industry during 1971-1978 was 44% upward.

The Arab oil embargo which had caused a severe oil price hike in the world and gave the way for the then-Iran's regime to co-operate with the consumer countries by providing them security of supply through increasing its production volume from 3.8 to 6 MBD and thus creating additional huge sum of oil income.

2. The average yearly rate of investment in this era, 1979-1989 for Iran's oil and gas industry was around 10%. The reason for the downward trend of investment in the industry was mainly due to the reduction of oil incomes, lack of presence and participation of foreign investors due to high risks involved, changing of Iran's constitution and oil industry's related laws and regulations, and also because of the problems and difficulties the imposed war of Iraq against Iran brought about.

3. The average yearly rate of foreign investment for the third era, 1990-1998 in Iran's oil industry was about 15.5%.

And now, by entering the new century, we shall witness a substantial rise in investment in Iran's oil and gas industry in the first decade which will be due to certain factors such as, the growing domestic dependencies of economic sectors on hydrocarbon products; strategy of expansion of I.R. of Iran's presence and share in export markets of oil and petrochemical products, Iran's commitment to sustain its OPEC Quota and thus proving its continued sound ability and competence in sustaining its production volume to the energy observers throughout the world.

The most important development regarding investment in Iran's oil industry, particularly in its upstream since 1998, has been a surge in foreign funding. In the past, foreign investment was generally considered as the last solution to remedy the lack of cash flow in Iran. However, such viewpoint has gradually faded and the idea of attracting foreign investments in broader scale and in faster pace with respect to various economic sectors, especially the oil and gas industry is being highly regarded.

And now, foreign investments and funding for the downstream projects in the oil and petrochemical industry is observed in Iran's Third Development Program with respect to its economic, social and cultural affairs. For instance, attraction of 2 billion dollars in foreign investments and funding has been foreseen for the country's petrochemical sector. But, regarding the upstream in Iran's oil and gas industry, the Iranian oil ministry has been seeking to attract only foreign funding and has totally disregarded foreign investment. The most important reason in this respect mentioned by his Excellency, the Oil Minister of I.R. of Iran is the denial of concessions to foreign companies, as well as their supervision over the capital and assets involved. Hence, a new method, "Buy-back contracts" has been formulated and implemented by the Ministry. According to this method, once the commodity is produced, the pertinent investor's capital together with the due profit is paid off, and thus, the contractor can have no claim at all over the commodity produced.

The Principals Governing Buy-back Contracts in Iran

Based on Iran's legal, economical and political constraints, the government has considered the following principals with respect to buy-back contracts.

1. Safeguarding the national sovereignty with regard to the state's oil and gas resources.

2. Full co-ordination with rules and regulations of the country, particularly with the laws of oil.

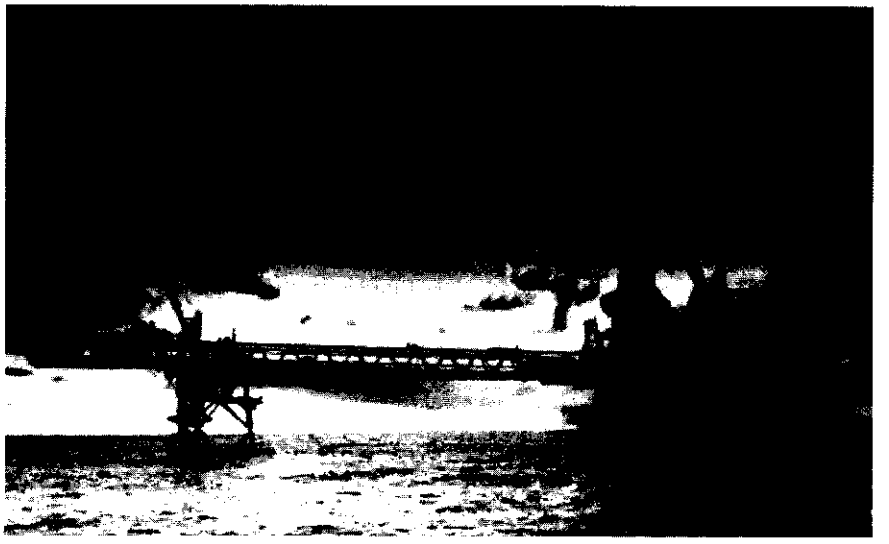
3. Applying modern technology in developing the fields.

4. Training and technology transfer.

5. Joint Iranian-Foreign management and supervision.

6. Production operation 100% by Iranians.

7. Make full use of domestic capacity such as workforce and



and production of oil and gas, the method of "joint venture" is employed in practice, and other methods related to profit-sharing such as: B.O.T., B.O.O.T., B.O.O.S.T., B.O.O. and B.R.T. are actually ignored.

In the contractual systems through which most of the E&P investments are done, there are two major types of contracts:

i) Production-sharing contracts/ Production-Sharing Agreement

ii) Service Contracts / Service Agreements.

Strategies in Funding Large Projects in the Oil Upstream Sector

This article is mainly focused on funding large upstream projects from the host government's perspective. Therefore, the strategies that will be discussed are also those which are based on the host government's viewpoints. Moreover, since the funding for the oil and gas upstream sector is significantly done through the Free-risk methods, the discussions of loans and Financing will be avoided. Before dealing with various strategies, it is necessary to categorize various free-risk methods with respect to the risks involved in "explorations" and "rewards" in the upstream sector. (Table 1)

Although, we have to admit that funding strategies vary among countries due to their exclusive characteristics, there are some common factors and conditions among them as mentioned below which could result in common strategies for funding the upstream in their oil sectors.

1. To be sure of maximization of income or production share for the host government.

2. Determining the desired aspects of motivation regarding proper control of costs.

3. Optimization of costs to prevent needless costs and fraud.

4. Achieving maximum rate of effectiveness in production while safeguarding the oil & gas reserves.

5. Proper definition for sharing achieved profit with the contractor within the framework of the Host Government's national interests.

6.Guaranteed the Host Government's rights and interests upon the contractor's withdrawal and referring the issue to arbitrator.

7. Securing the national sovereignty of the government with respect to its hydrocarbon reserves in the relevant region.

8. Optimization of Risk Taking with regard to E&P and Rewards.

9. Preparing such contracts while observing the above factors for the interest of the Host Government, at the same time making sure that they are attractive and competitive enough to tempt international contractors to participate in funding and implementing projects in the oil and gas upstream sectors.

I.R. Iran; the Trend of Investment in its Oil and Gas Sectors

The oil industry in Iran is one of the country's economic substructures which

Table 1

Categorization of the Host Government Contracts With Respect to E&P; Rewards

Type of Contract	Contractor	Host Government
Concession	Full Risk/Full Production	Income though various taxes and royalties according to production volume
Production-sharing Joint venture	E&P Risk/a share in production share risk and production simultaneously	A share in production Share risk and production simultaneously
Risky SAs	E&P Risk/Compensation based upon production volume	Full Production
Pure SAs	E&P Free-risk/Compensation through production; Cash	Full Risk/Full Production

Strategies in Financing Oil & Gas Upstream Projects

A Case Study: I.R. Iran

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Abstract

In the first part of the article, it is tried to define the non-risky methods of funding for oil and gas upstream industry.

And then, various methods of foreign funding for the I.R. of Iran's oil and gas upstream are examined. In this respect, in addition to the review of Iran's Oil Buy-back formula, supplementary related information is mentioned.

At the end, feasibility of using other sources of foreign funding for Iran's oil and gas upstream projects are assessed.

Introduction

Investing in the international oil & gas industry, by the start of the third millennium, is entering its new era of developments.

A glance at the trend of development in the investments in the industry - following the creation of the famous seven major oil companies - leads us to three exclusive eras:

1. The era of concessions for exploration and production activities until 1960.

2. Nationalization of oil industries in majority of oil and gas producer countries during 1960s and 1970s and hence, the change in the trend of investment in the industry as a result of deterioration relations between foreign oil companies and national oil companies.

3. Improvement of relations among host countries and international oil & gas investing companies, and the two side's cooperation's during 1980s and 1990s.

The 21st Century, we are entering, will witness the actual depletion of oil reserves and the peak of gas reserves development and extraction. Thus, close cooperation's between the countries with major oil reserves and the international companies, with respect to the development of hydrocarbon resources will enter a new phase. There are a number of reasons for above-mentioned developments,the major ones of which may be categorized as below:

i) In most regions, exploration and development of new oil and gas fields require advanced technologies as well as substantial funds which are mainly at the disposal of international oil and gas companies.

ii) Major developments in international affairs, and undermining the domineering attitudes of oil companies especially in less-developed and developing countries have brought about optimistic views of the host countries towards foreign contractors in investing in their oil and gas sectors.

iii) The upward trend of oil and gas demand by the industrial countries and the south-east Asian and South American countries with flourishing economies on the one hand and, the quick exhaustion of most of the world's oil and gas reserves, particularly the oil reserves on the other hand, has increasingly justified the broader presence of international oil companies in the Middle East, central Asia and African regions to enhance oil and gas productions. This is why in order to provide world security supply of oil and gas, and to meet the needs of both, the consumer countries and the oil companies, investment in the host countries' upstream in the aforesaid regions is being treated and stressed upon as an important strategy in the new international arrangements.

Analysis of the Process of Funding of the Upstream Sector

There are various methods of funding for the oil industry, however, with respect to the oil and gas upstream sector, the funding may be categorized as "risky" and "free-risk" funding.

1. Risky Funding

In the oil upstream sector, since making use of great resources of assets for the medium and long term is essential, the following two risky methods may be adopted with respect to funding: a) Financing b) Loan

2. Free-risk Funding

There are three methods for free-risk funding:

i) Concession (Royalty/Tax)

ii) Profit Sharing

iii) Contractual Systems

In the profit-sharing method, since there exists a high risk in the exploration