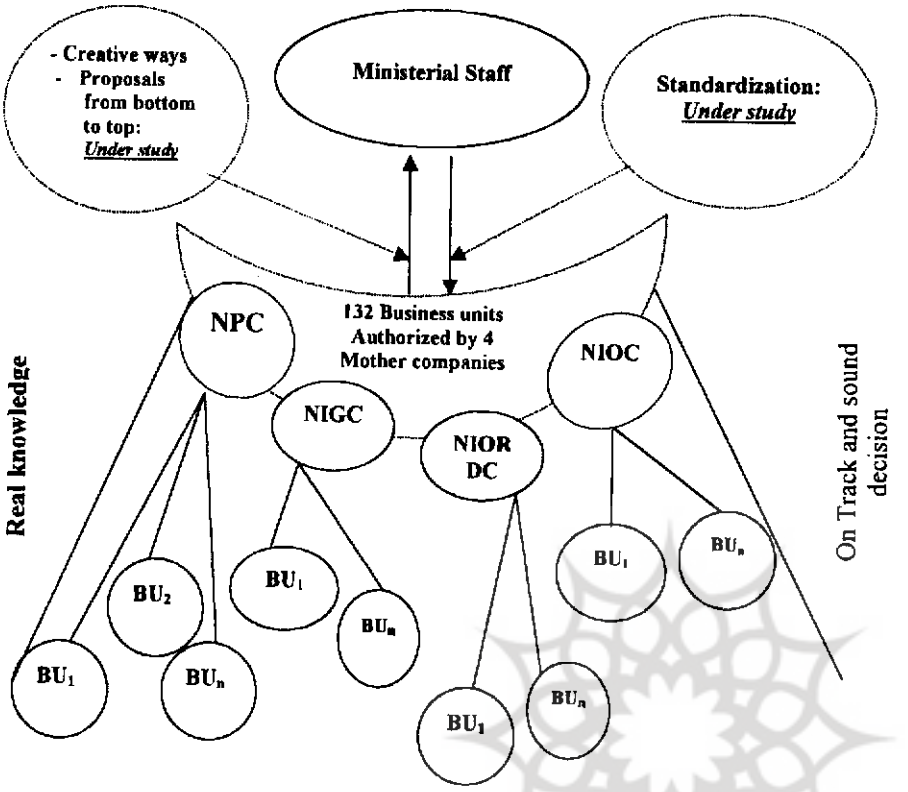
Figure 5: Knowledge based BU model



* Information planning and architecture

* Development of training facilities and assistance in the distribution and implementation of the new strategy and structure to the wider organization

* Assessment of viability for partial privatization

As the first phase, the restructuring of organization has been done according to "commercialization methodology". In this way the centralized bureaucratic system of management has been converted to the management of independent entities. This is actually a "business unit" model in which business units are responsible for their efficiency and the profit margin. This type of organization counteracts the potential negative consequences of largeness.

BP has used the business unit model since 1995 and has 126 BUs (BP, 1999). Within the BP the standardization and a creative diversity of approach is blended. Standardization such as a single, totally integrated, common operating system for their computer network is blended with the innovative ways to meet particular challenges.

In the business unit model, the decision-making is generally pushed down to a level in the company where real knowledge exists. The most important thing in such a model is determination of the optimal level of decision-making between the group executive management and the BUs. Iranian oil industry is running with 132 BUs in the context of oil, natural gas and petrochemical. The most crucial and challenging issue at the current situation is optimal determination of decision-making authority between the executive management of the petroleum ministry, major companies, and BUs. Also some inconsistencies of the overall process such as salary and wage system, human resource management system, financial and training systems with the current structure should be removed. If these inconsistencies persist, the new structure would surely increase the average cost of output.

Relied on the advantages of the new structure, oil industry's authorities expect better performance of the domestic companies and their higher capability to cooperate with IOC's for developing oil and natural gas reserves.

4. Concluding remarks

In order to increase the efficiency and getting better performance within the great companies, the ministry of petroleum of Iran has re-structured itself based on commercialization strategy. The oil industry is running based on 132 business units now. The determination of optimal level of decision-making in three levels of small companies, parent companies and the ministerial level is a crucial part of the restructuring program that is under study.

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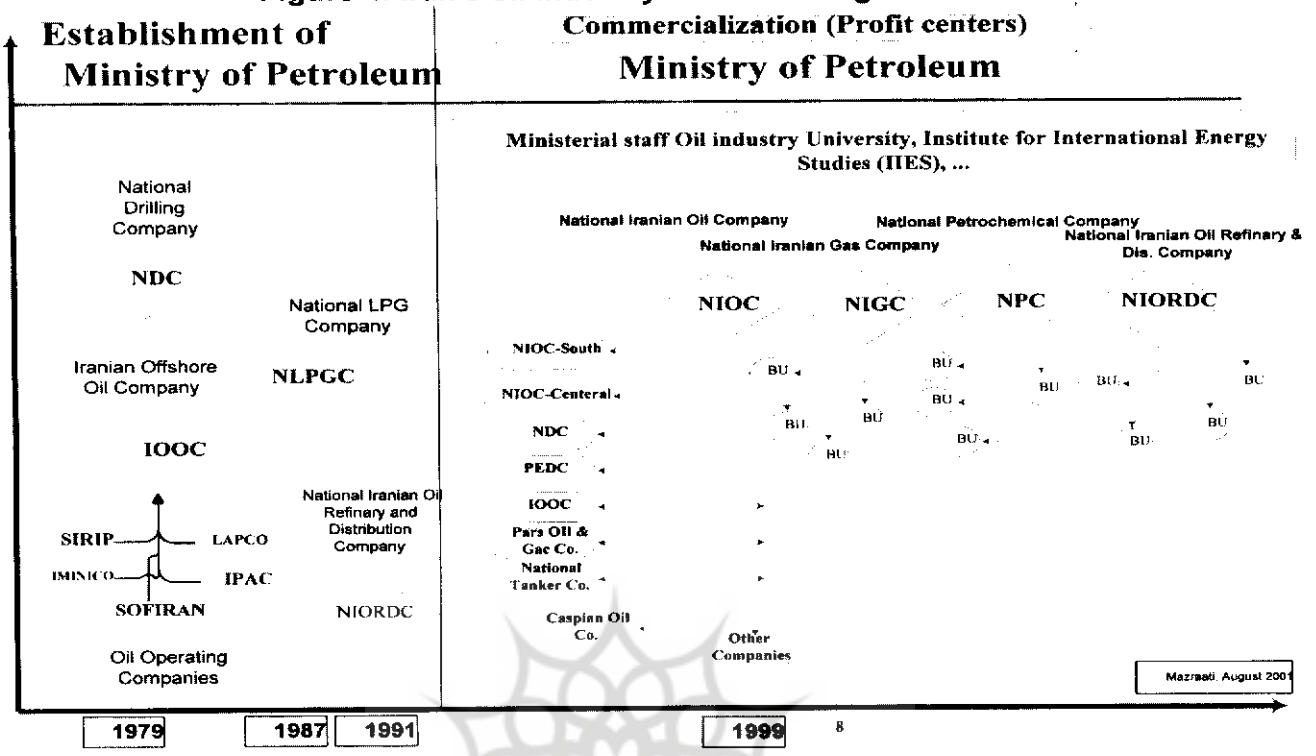
Figure 4: Iran's oil Industry re-structuring after 1979 revolution



expansion (see Figure 3).

3. Commercialization and improving efficiency

With all difficulties mentioned above, Iran's oil industry management should practice a new structure in which it could be able to resolve those problems. Some steps have been taken in the recent years:

* De-linking of dollar inflow of oil export with the whole economy via setting up of "excess oil revenue fund". A specific amount of oil revenue goes to the government budget. Therefore the oscillation in oil prices does not affect the economy. In this case the resource curse could be controlled.

* Managing the oil industry with higher efficiency via re-structuring oil industry.

As the country and the world in which NIOC operates continue to change, it is essential to recognize the importance of maintaining an effective organization to face the challenges of the future while maintaining the primary goals of the parent company and its subsidiaries. In view of this overall strategy, the restructuring of NIOC and the Iranian petroleum industry as a whole, have one overriding goal: to create value for the Iranian nation.

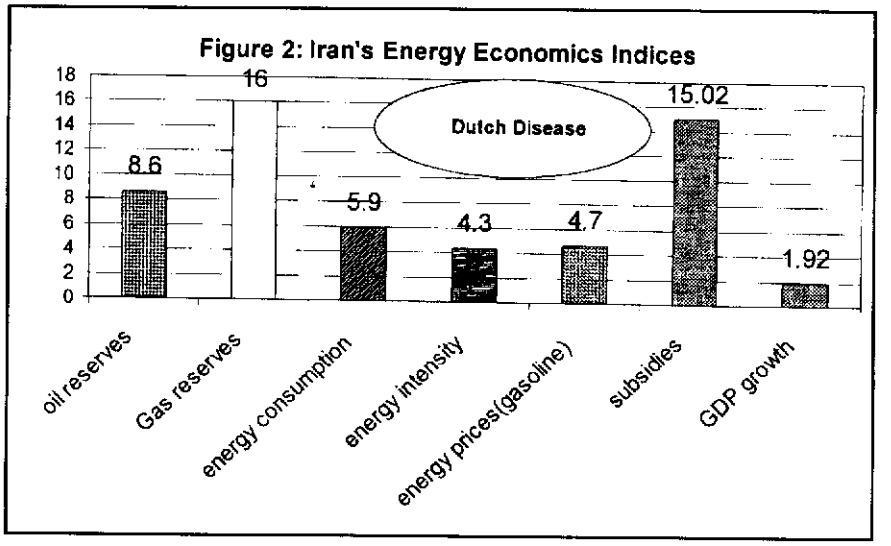
As the country and the world in which NIOC operates continue to change, it is essential to recognize the importance of maintaining an effective organization to face the challenges of the future while maintaining the primary goals of the parent company and its subsidiaries

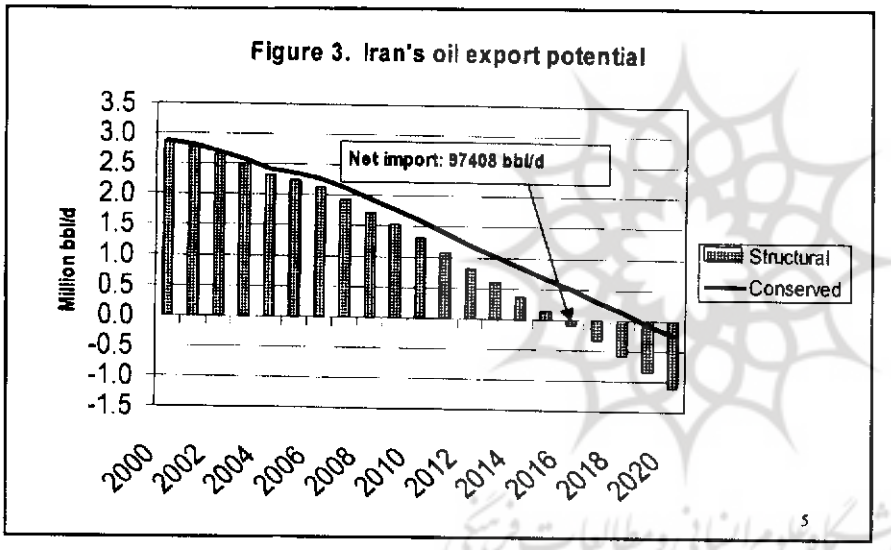
The greatest potential in the petroleum industry is to capture the value of indigenous petroleum resources using the most modern technologies, the best organizational methods and the most skilled people available. NIOC faces challenges unique in its history. Making change happen on an integrated and value-driven basis across the organization will be a complex task. The benefits that accrue will be in the transformation of NIOC into an efficient global oil player, balancing upstream and downstream interests, driven by the search for value and credit and full accountability to interested parties.

The re-structuring of oil industry in Iran needs organizational review efforts in the following areas:

* Organization restructuring: the development of an effective strategy for the NIOC and its inter-relationships with the Ministry of Petroleum and its subsidiary companies

* Process redesign including structural changes and reporting system requirements





Russia hold about 50% of world natural gas reserves.

* The average annual growth rate of primary energy was about 5.9 percent within 1977-1998. The oil and natural gas provide more than 97 percent of Iran's primary energy supply.

* The annual average growth rate of primary energy intensity was 4.3% within 1977-1998. Despite some fluctuations in recent years, the trend of energy intensity has been increasing.

* Although Iran's economy has practiced a pseudo market mechanism but the government intervention has been rising especially after revolution of 1979. This makes a great distortion in pricing and in turn misallocation of resources.

* The domestic price of gasoline, kerosene, gas oil, and fuel oil was 4.7, 1.3, 1.3, 0.7, US cents in 2000. By comparison the price of premium leaded gasoline in OECD Europe was 89.7 US$-cent in 1999. For Norway it has been 1.065 US$ in the same year (IEA, 2000). Furthermore the international price of gasoline, in Rotterdam market was 13.6 US$ in 1999 (ASB, 1999). The prices are at very low level.

* Energy subsidies based on market exchange rates have been estimated at about 15.02, billions of US Dollars in 1997. Supposing the market exchange rate as a realistic rate, total implicit energy subsidies in Iran has amounted to 106.2 billions of US Dollars within 1990-1997.

* Iran suffers from Dutch Disease.Dutch Disease (the Netherlands 1960) in Minerals (oil, copper, etc.) extraction leads to lower economic growth.

* In other words Iran suffers from Resource Curse, where many mineral economies perform badly, government sector expands, subsidies go to sectors that don't perform well and incomes are from mineral exports instead of taxes. The borrowing is high, government becomes investor, and finally mineral sector has large influence on government (see figure 2).

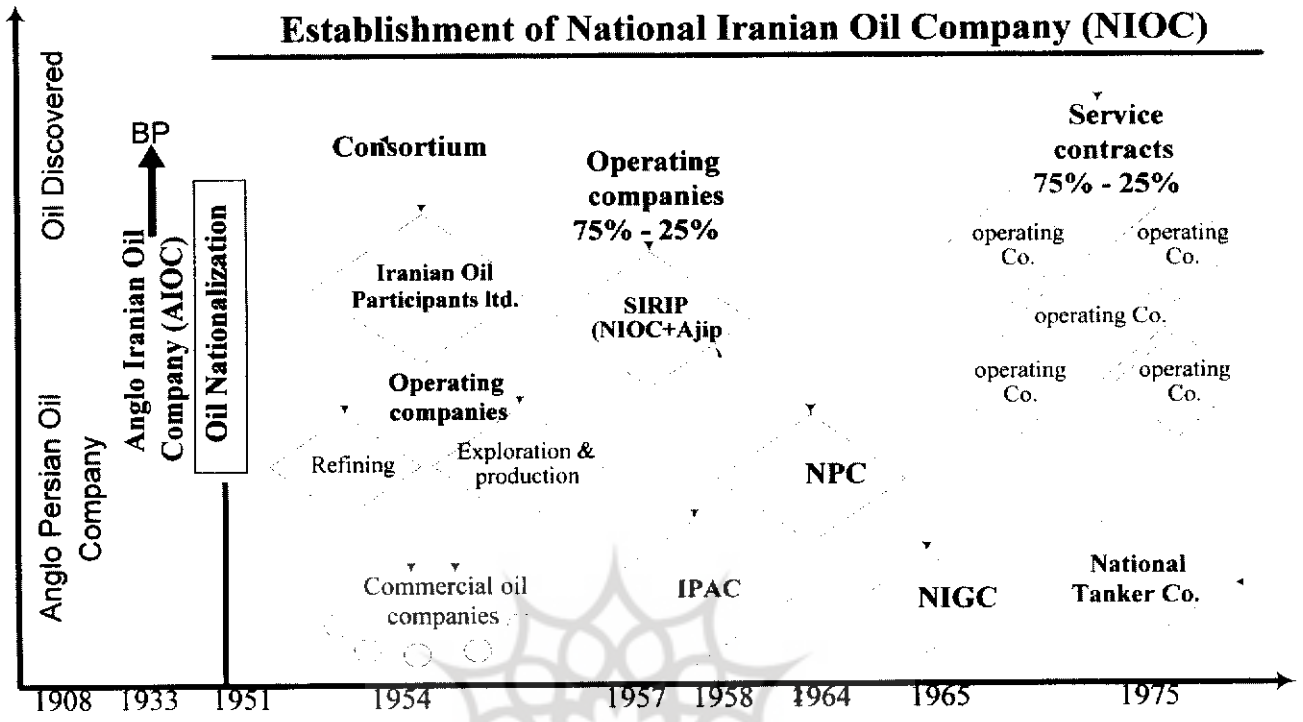
* In the 'no-change scenario", given a GDP growth rate of 3.6 percent per annum, total primary energy demand will reach the level of 13.2 MBOE per day in 2020 from a level of 2.2 MBOE in 1998 indicating an annual growth rate of 8.6 percent.

* Despite natural gas substitution, the demand of oil will reach the level of 3.4 million barrel per day in 2020 from 1.3 million barrel per day in 1998, indicating a growth rate of 4.6 percent per annum.

* At the time being, Iran's production capacity of crude oil is about 4 million bbl/d. Regarding the reduction of reservoirs pressure, the oil production in 2010 is expected to be less than 3 million bbl/Day.

* Based on the current structure, Iran would be a net oil importer in and after 2016. Achieving the potential of energy conservation would delay the alteration point. Still Iran would be a net oil importer after 2020 in conservation option. For remaining an oil exporter, Iran should put stress on natural gas substitution policy for current conservation and future programs as well as oil production

Figure 1: Oil industry structure before 1979 revolution



After protracted negotiations, the Iranian Oil Consortium was formed in 1954 consisting of the Seven Sisters, with 40% percent of shares going to AIOC, 14% to Royal Dutch, 40% to the five major American oil companies, and 6% to French oil company CFP and was ratified by parliament and Senate. (see figure 1).

In October 1979, along with the revolution, the Consortium agreement came to an end. Consequently, after a quarter of century of calm on the oil front, this crucial national factor made a comeback into the limelight.

After revolution in 1979 the structure of oil industry was changed. The ministry of petroleum was formed and the NIOC and other affiliated companies were laid under authority of the petroleum ministry. The oil industry was managed centrally, full integrated with a deep bureaucratic procedure during 20 years.

In the next sections the situation of energy demand, supply, reserves and other energy economics indices are briefly addressed. Then the management of oil industries after revolution is summarized. On the basis of the current situation and future prospects the necessity of re-structuring Iranian oil industry along with the related current strategy is explained. Last section is the conclusion.

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2. Energy Economics Indicators and Prospects

Energy prices, subsidies, energy demand and production, energy intensity, the oil available for export, and the relevant dollar inflow, Dutch Disease and other technical indicators can depict the current situation, prospects and the strategy policy makers should take into account. In the following some energy indicators are briefly addressed

* In situ reserves of oil in Iran are about 521.4 billion barrels, of which 86.4 billion barrels are recoverable in primary and secondary production. This is 8.6 % and 10% of world proven oil reserves and OPEC's respectively. The reserve-production, R/P ratio is about 60 years.

* Reserve of natural gas in Iran is about 24.3 trillion Cubic Meter (TCM) or 857 Trillion Cubic Feet (TCF), which is equivalent to 148 billion bbl of crude oil. With the current level of production and technology, Iran's production-reserve ratio is about 160 years. Iran is the second holder of natural gas after Russian Federation with about 16% of world proven gas reserves. Iran and

ARTICLE

Structure Evolution and Commercialization in the Iranian Oil Industry

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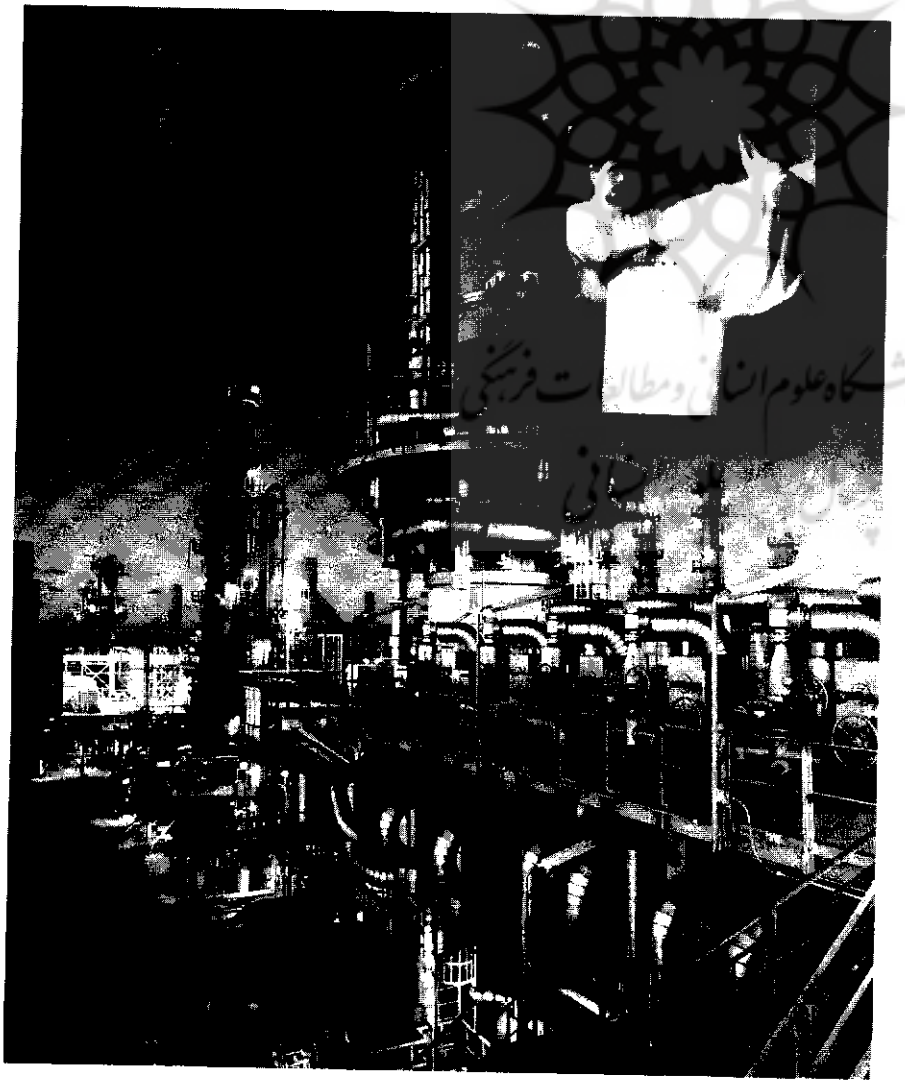

Abstract

The oil industry as a whole has had practiced a continuos trend of restructuring in the shape of integration, consolidation, merger as well as internal restructuring in the major oil companies all over the world. While Iran's oil industry is faced with political pressures to be managed by government. This in turn along with the traditional way of thinking and the market structure has prevented any restructuring in the industry. This paper summarizes the structure evolution of oil and gas industry in Iran. The recent changes, which is based on Business Unit (BU) model is criticized and further efforts in the shape of re-engineering the integrated process such as salary system is suggested.

1. Introduction

Iran is located in the Middle East and possesses rich energy resources especially oil and natural gas. In 1908 oil was discovered in the country and the Anglo Persian Oil Company was formed. In 1914 the UK government purchased a considerable part of the company with 50 percent of voting rights.

After oil nationalization in Iran in 1951, the company's contract was canceled. Based on a law ratified in the Iranian parliament wholesale transfer of the whole southern oil industry from the Anglo-Iranian Oil company (AIOC) to the newly-created National Iranian Oil Company (NIOC) was approved. A new era was dawning for Iran's oil, almost half a century after the granting of D'Arcy's concession. In the driver's seat was the man who had brought the train so far against all odds, the 72 year old Dr. Mohammad Musaddiq.