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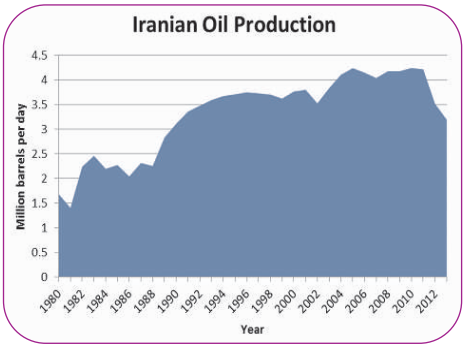
Review Of Research

# STUDY ON PRODUCTION AND CONSUMPTION OF ENERGY IN IRANIAN INDUSTRIES

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ABSTRACT :

*During the last decade, petrol consumption has increased from 5% to 13% per year; the average growth was 9%; while the production growth rate was between 4 to 7 percent and its average was 5%. Iranians, who live on the third largest oil reserves, presently spend about 6 billion dollars of national resources on importing petrol and burning it in the cars and different sectors.*

*Sudden increase in the petrol price to the extent that it reaches import prices worldwide during a medium-term period, helps its consumption reform and will have less impacts on prices' general level by sufficient control over liquidity volume (along with other necessary preparations). Petrol price increase has increased the price of other goods; even when the price stabilization policy has been implemented for energy carriers in the past years, the price of the goods has been increased, too.*

KEYWORDS : *Energy, Production, Consumption, Industries, Iran.*

## 1. INTRODUCTION

Existence of rich and cheap energy resources in Iran has caused the energy to be not considered as production input. In other words, energy share is so impalpable and negligible in Iran's industrial sector cost, that it is not logical to consider it as one of the production inputs by subsidized price.

Inexpensive share of energy in the costs has led to the increasing growth of energy consumption in the mentioned sector of Iran. Continuation of this growing consumption process will change Iran to the oil and gas importer during the future years (Iran's Oil Ministry). Importing oil and gas to provide energy for unproductive sectors such as transportation and household sectors, which always confront wastage and low productivity, means losing the greatest relative advantage, national insecurity, losing Iran's strategic position in the energy market and not achieving the twenty-year perspective document of Islamic Republic of Iran( Iran's Oil Ministry).

Another problem caused by the energy low price is industrial inefficiency. By subsidized price of energy carriers, industries feel no need to change their equipments in order to save energy or utilize efficient energy technologies. It seems despite everybody acknowledges rationalization of energy carrier prices, however, few studies have focused on the comprehensive review of the energy situation in the industry and is the result of hasty and wrong decisions and policies. Pricing methods and consequently rationalizing the prices seems to be one way of preventing the increasing trend of energy consumption in the country, but it should be noted that this issue has complicated and various dimensions that neglecting some of them not only keeps country from achieving goals, but also creates new and numerous problems.

## 2. ENERGY CONSUMPTION IN INDUSTRIAL SECTOR

According to energy balance sheet statistics, total energy consumption has increased from 15.9 million crude oil barrels in 1967 to 1057.2 million in 2007 by annual growth of 7.83%, which has increased 20-fold during these 41 years.

Industrial sector is also considered as one of the most important Iranian sectors and a productive one, the boom and stagnation of which has a direct impact on country's economic boom and stagnation. Considering the statistics, industrial sector share of energy consumption averagely is 24% during 1967 to 2007. This share was in third place in 2007 after "household, public, commercial" and "transportation" sectors.

Considering the importance of industry role in economy, it is expected that its share of energy consumption to be higher than that of other sectors, too. The reason of industrial sector's lower energy consumption to the total energy consumption should be found in low share of this sector's added value in Gross Domestic Product. Although mines and industries sector's added values share in GDP is facing with ascending trend, however, a simple comparison of developing and developed countries, we still need to increase the share of value added in this sector.

According to statistics, the share of industrial value added based on constant prices in 1959 was only 7.22%. The Industrial Policy of 2008, this share has increased to 26.6.

In other words, despite the increase in industrial sector's added value in the mentioned period, energy consumption's rate of increase was greater than that of value added. Industrial sector's energy consumption has increased 18.4-fold during these years, whereas its added value has increased to 16.8-fold which is indicative of a massive waste of energy in Iran's industry. One of its causes is cheapness of energy carriers, though it could not be the only cause; because generally several causes lead to the occurrence of a phenomenon, it is also one of the concerns of subsidy removal plan that considers exclusion of cost factors as the solution of all the problems.

## 3. CAUSES OF ENERGY CONSUMPTION GROWTH:

During the mentioned period in industrial sector, decrease in energy carriers' price has always led to increase in energy consumption, so that even change of energy carriers ratio in energy consumption basket has also intensified it. The following table shows the energy consumption changes from 1968 to 2008. Table.3.1: The share each carrier energy of the total energy consumption in industry of Iran (percent)

| Years | Petrol and Oil | Natural Gas | Coal | Electricity |
|---|---|---|---|---|
| 1968 | 88.4 | 1.6 | 9 | Not available |
| 1969 | 89 | 2 | 9.4 | Not available |
| 1970 | 88 | 2.5 | 10.9 | Not available |
| 1971 | 86.2 | 2,9 | 11.7 | Not available |
| 1972 | 85.3 | 3 | 12.1 | Not available |
| 1973 | 80.8 | 7.1 | 12.5 | Not available |
| 1974 | 74 | 13.6 | 12.4 | Not available |
| 1975 | 74 | 14.5 | 11.5 | Not available |
| 1976 | 73.3 | 16.2 | 10.5 | Not available |
| 1977 | 76.9 | 12.9 | 10.2 | Not available |
| 1978 | 83.2 | 6.9 | 9.9 | Not available |
| 1979 | 86.6 | 3.2 | 10.9 | Not available |
| 1980 | 83.7 | 6.7 | 9.6 | Not available |
| 1981 | 80.8 | 10.6 | 8.6 | Not available |
| 1982 | 76.7 | 15.4 | 7.9 | Not available |
| 1983 | 77.7 | 14.3 | 8 | Not available |
| 1984 | 77.3 | 14.5 | 8.1 | Not available |
| 1985 | 79.9 | 11.9 | 8.1 | Not available |
| 1986 | 79 | 9.9 | 8.3 | 2.8 |
| 1987 | 72.5 | 18 | 7.3 | 2.1 |
| 1988 | 72 | 20.5 | 7.6 | 7.6 |

| | | | | |
|---|---|---|---|---|
| 1989 | 61.1 | 30.2 | 6.6 | 6.6 |
| 1990 | 57.3 | 33.5 | 7 | 7 |
| 1991 | 55.3 | 38.2 | 6.6 | 6.6 |
| 1992 | 54 | 36.1 | 7.2 | 7.2 |
| 1993 | 45.5 | 43.3 | 9.4 | 9.4 |
| 1994 | 41.2 | 45.7 | 10.4 | 10.4 |
| 1995 | 34.9 | 54.7 | 1o.3 | 10.3 |
| 1996 | 30.4 | 59.4 | 10.4 | 10.1 |
| 1997 | 33.5 | 57 | 9.4 | 9.4 |
| 1998 | 32.8 | 57.2 | 9.8 | 9.8 |
| 1999 | 27.8 | 62.4 | 9.6 | 9.6 |
| 2000 | 39 | 46.4 | 13.7 | 13.7 |
| 2001 | 40.7 | 44.1 | 15.1 | 15.1 |
| 2002 | 39.7 | 44.5 | 15.6 | 15.6 |
| 2003 | 36.7 | 47.2 | 15.8 | 15.8 |
| 2004 | 32.9 | 50.6 | 15.9 | 15.9 |
| 2005 | 32.8 | 51.9 | 14.6 | 14.6 |
| 2006 | 32.5 | 56.9 | 15.4 | 15.4 |
| 2007 | 27.4 | 59.3 | 12.9 | 12.9 |
| 2008 | 26.9 | 59.7 | 12.1 | 12.3 |
| 2009 | 26.2 | 59.9 | 11.9 | 12 |

Source: Iran's energy balance sheet 2010

According to the above table, energy consumption pattern of Iranian industrial sector is changing from oil products to gas and the greatest change intensity of energy consumption pattern is intense increase in industrial sector's share of gas. So that share of natural gas fuel in industrial sector's total energy consumption was less than 3% in 1950s. It was increased to 15% in the mid 1960s and after a temporary decrease in years 1978, 1979, 1980 it was increased again in 1970s. Share of this carrier reached 33.5% in 1990 and continued its ascending trend in 1980s and 1990s and reached nearly 60% in 2007.

Approximately, the above trend is reverse for oil products. Share of oil products in industrial sector's energy consumption basket was close to 90% in 1950s and this share reached less than 30% in 2007. This trend indicates that cheaper price of natural gas than oil products has led to the increase in tendency toward using natural gas in industrial sector. In better words, natural gas has increased its share in Iranian industrial sector's energy consumption basket because its price is cheaper than oil products' price.

Despite the fluctuations in consumption of these two kinds of energy, electricity and coal consumption has been relatively stable in industrial sector. Share of electricity consumption was 10% in 1962 which was increase to 12.9% in 2007. Share of coal in industrial sector's energy consumption during 1967 to 1985 is not available, but it was 2.8% in 1986 which decreased to 0.4% in 2007. Iran's share of energy consumption in industrial sector is less than other countries. For example, industrial sector's energy consumption to total energy consumptions is 27.5% in the world and 21.5% in Iran; this figure is 44% and 41% in China and Malaysia respectively as two booming economy.

Industrial sector's energy consumption pattern of Iran only conforms to that of Middle East. The considerable point is that more than 80% of Iranian industrial sector is dependent to gas-oil sector which leads to the industrial sector's vulnerability. In fact, after oil crisis and supply insecurity in the world's oil-gas sector, the developed countries and especially OECD countries try to reduce industrial sector's dependence to oil-gas energy, so that average world consumption of crude oil and oil-gas products is 34.5% in the world's industrial sector which is not comparable to 81.56% of Iran in any way.

As the engine of Iran's economy, industrial sector has consumed nearly 237.5 million barrels of crude oil in 2007, which is in third place comparing to other sectors. It indicates that major part of energy is consumed in unproductive activities and energy dissipation; whereas, the above sector is encountering some problems in the field of energy such as high and non-standard consumption, lack of transparency in determining the price of industries' feed, inappropriate selection in creating energy taking industries in Iran. All of these problems have

caused disruption in industrial sector's energy supply, additionally made energy intensity of that sector unusual and Iran's industrial sector seems to be inefficient.

## 4. NON-PRICE RELATED CAUSES

It is short-sighted to consider the price cause as the only reason of high energy intensity' because if the problem of determining the energy carriers price is solved, the industrial sector will be encounter other problems again.

When the price of petrol is 7000 Rials per liter and regarding the economic justification of an industrial project's price e.g. during 2 years, it could not be concluded that the mentioned project always remains economic. It means the industrial projects' state of being economic or non-economic changes by different prices of energy carriers and various technological, structural and management conditions. As Iran's industrial sector has been accustomed to the low prices of energy carriers, no need to investigate different scenarios of energy price has been felt; it increasingly leads to dangerous consequences for the industries when the subsidies are removed (shock therapy). Indeed, these scenarios inherently exist within the industry, but since they are not known, the industries encounter many problems while facing price shock in an important input such as energy.

Another issue is the structural and institutional problems with which Iran's industry structure has been faced. For example, "Iran's energy management" bill was reviewed and approved during long years, so the problems caused by energy consumption could not be expected to be solved by solving the problem of energy carriers price. Indeed, price solution could be effective in an appropriate combination with other factors and is not trouble-shooter alone and causes many problems in the industrial sector of a country such as Iran regarding its economic condition with stagflation feature.

Thus, using price tools does not merely help the increasing energy consumption problem, but creates other problems. The experiences of world's successful countries such as Japan in energy optimization are indicative of observing four points:

- Price reform
- Technology development
- Standardization
- Training

Lack of efficient infrastructures and standards and weakness in laws and regulations are among the other price factors. Therefore, separate solutions which are of course proportional to the price polices, should also be found for non-price factors which lead to energy dissipation.

Another point which must be mentioned is government help after implementing energy subsidy reform plan. After freeing the price of energy carriers in this plan, government pays industries some of price increase to help them, then reduces it gradually and stops it finally. In such a way, industries become dependent on this help without taking any action to optimize energy consumption and finally no progress occurs. To make this help effective and also prevent industries to be dependent on government helps, those industries should be helped which have taken a significant action to decrease their energy consumption.

## 5. PETROL RATIONING IN IRAN

Petrol rationing started on June 2007 by allocating 360 liter per season (120 liter per month) and monthly ration gradually decreased during four years, until it decreased from 80 liter to 60 liter per month from the beginning of 2010 and as its result, petrol daily consumption declined from nearly 73.6 million liter a year to 61.3 million liter in 2010. Before implementation of petrol rationing plan (2007), the record of Iran's petrol import was 223 thousand barrels per day. Although implementation of petrol rationing plan created many problem for the Iranian people, but it resulted in considerable decrease in import.

As the result of this plan, Iran's petrol import decreased from 204 thousand barrels per day to less than 94 thousands per day. Price of subsidized petrol, diesel, Kerosene, avgas and furnace oil is 11, 1.8, 8, 15.4 and 1 cent per liter respectively. Considering the resulted inflation of extreme petrol price increase, Iranian

government selected implementation of rationing plan and converting the petro vehicles into natural gas vehicles as two solutions to curb the increasing cost of this sector. Sudden increase in petrol price had many effects on the increasing growth of inflation in Iranian economy and caused the inflation rate to increase 15 to20 percent.

The most important effects of petrol rationing are Reduce fuel consumption and reduce fuel smuggling. By implementing this plan, petrol consumption decreased from 491 thousand barrels per day to less than 358-371 thousand barrels per day in Iran. According to the estimations, fuel trafficking also decreased to 30-40 thousand barrels per day after implementing rationing plan. Additionally, government intends to increase the number of bi-fuel cars to more than several millions. The number of CNG stations has increased from 377 in December 2007 to more than 550 in October 2007 and this figure will reach more than 1000 stations.

## 6. TREND AND PREDICTION OF PETROL AND DIESEL CONSUMPTION IN IRAN

The government predicted diesel consumption in Iran from 2007 to 2015 during the annual 3.9% percent of the diesel consumed in over 3.4% percent is expected to grow. During 2000 and 2006 respectively, compared with more than 9.7% and 3.9% percent.

Government spent about 5.5 billion dollars in 2005 and 6.5 billion dollars in 2006 on petrol import. Petrol subsidy has caused petrol consumption to be placed after diesel among the energy carriers. Petrol consumption increased from 7 billion liters in 1989 to 13.7 billion liters in 2001 and production and consumption increase had ascending trend; petrol consumption was 70 to 76 million liters per day in 2005 and 2006 respectively. In spite of it, petrol consumption trend has surpassed its production trend; in a way that petrol consumption was 7.7 billion liters in 1989 which indicates 92%self-reliance in petrol production and consumption; this figure reached 16.7 billion liters in 2001, i.e. 82.8% self-reliance. Current trend of petrol consumption in Iran is indicative of more dependence to import in the present and future. Implementation of subsidies reform rule and then reforming the petrol price were other effective factors led to the decrease in average daily consumption of petrol to 60 million liters in 2012. Now petro production is about 65 million liters per day in Iran. By completion of projects under construction in the field of refineries, petrol production, refineries development and optimization projects, Iran's petrol production will increase to 130 million liters per day by the end of fifth development plan and more than 190 million liters per day by the end of perspective horizon 2025.

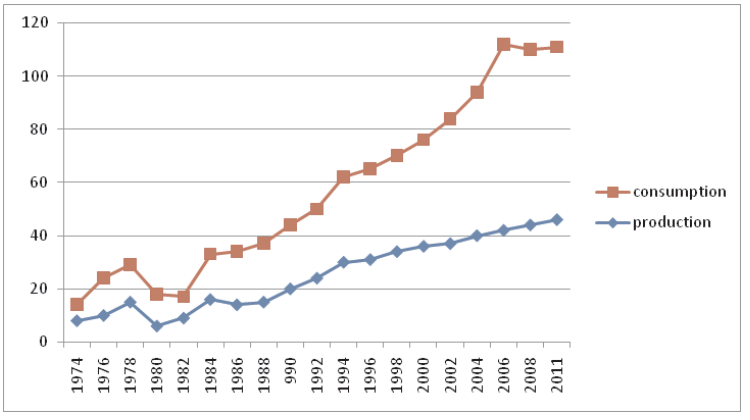
The amount of petrol consumption in Iran indicates that petrol subsidy reduction was not significant during the years of Iran's first to fourth development plans according to the programs which were based on the gradual increase in energy carriers price by reducing protection of consumer price to use energy carriers more efficiently in different economic sectors; because the primary price was so low that its increase could have not covered the gap between domestic prices and foreign prices; so that the paid subsidy in 1989, i.e. beginning of the first development plan, was based on free exchange of 80% and the consumers has paid just 20% of border prices. By petrol price increase in 2007, domestic prices were less than border prices in this period. So it seems that petrol price adjustment could have not covered production costs and Iran still pays high cost for subsidy.

Another point about petrol consumption which should be referred to is that petrol production and import are more than its consumption; because it is a volatile substance and its inappropriate maintenance leads to its dissipation. Although there is no exact figure of this dissipation in Iran, but the difference between total production and import cost could give us a considerable estimated figure of petrol annual dissipation.

## 7. PETROL CONSUMPTION IN IRANIAN TRANSPORTATION SECTOR

Studying the status of petro production, import and consumption in Iran reveals that just 17% of oil products in Iranian refineries were related to the petrol production in 2009. The amount of petrol production and consumption during 1974 to 2010 reveals that Iran's petrol consumption surpassed its production in 1982 and this trend continued to the end of this period. Of course, petrol consumption surplus was very different in the years after 1982 and a very rapid increase in petrol consumption and also in gap between its production and consumption is seen in 2000.

Fig. 3.1: The amount of petrol production and consumption during 1974-2011 in Iran (Million Liters per Day)



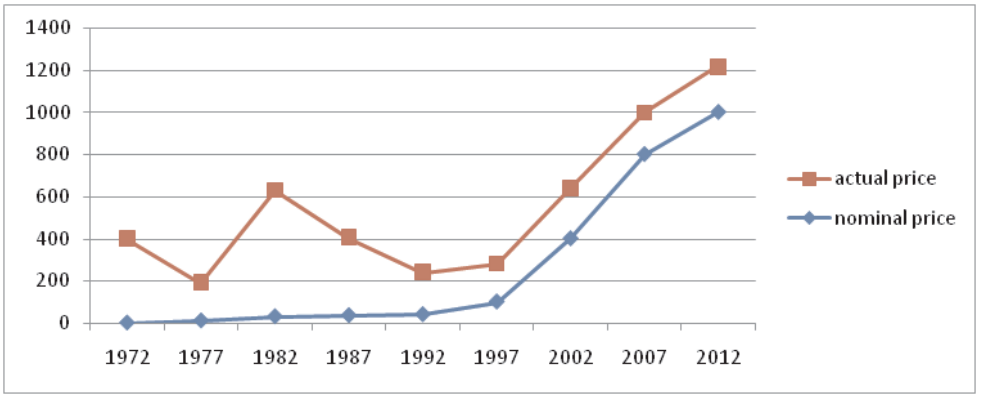

Source: Statistical data of National Iranian Oil Refining and Distribution Company

Average growth rate of petrol production, consumption and import is 4.35%, 7.97% and 30.24% respectively during 1996-2006.

Looking at Iran's petrol import indicates that its import has increased 4-fold approximately during five years (2001-2006), of course by implementation of petrol rationing its import has partially decreased during 2007-2008; but considering this condition, petrol import has nearly increased 30-fold in 2009 comparing to 2001. Petro import has increased while its production has been always increasing in domestic refineries according to the existing information on its production in domestic refineries; so that the amount of petrol production in Iranian refineries has averagely increased to 5.4% during these years. On the other hand, Iranian refineries have used their maximum capacity to produce oil productions during the mentioned years, for example the average of refineries' scientific capacity to their theoretical capacity was equal to 128.5%. This figure is indicative of the fact that Iranian refineries are presently producing more than their capacity and they are not expected to produce more in short-term and without exercising basic changes.

Nominal and actual price of petrol during the years 1971-2007 are shown in the figer.3.2. In this figure.3.2, nominal price of petrol has increased till 1993 so little that petrol prices has increased 12-fold in 1993 comparing to 1971. On the other hand, the gap between nominal and actual price of petrol has considerably increased during 2001 -2011. Of course, by implementing price stabilization plan in 2004, this gap has considerably increased. Actual price of petrol was also decreasing during 1981-1991. The highest actual price is 600 Rials and is related to the year 1981.

Fig.3.2: The petrol nominal price and actual price in Iran (1972-2012) Rial

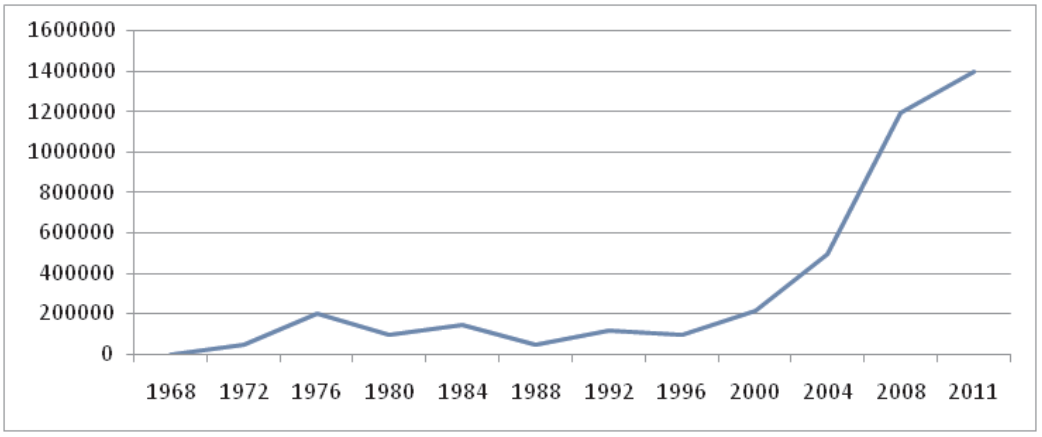



Source: statistical data of National Iranian Oil Refining and Distribution Company

Volume - 6 | Issue - 11 | august - 2017

The figure (3.3) figure shows the number of plate registered cars during 1968-2011. Considerable increase in car number from 1994 in Iran could be observed well.

Fig.3.3: The number of petrol cars during 1968-2011 in Iran




Source: the extracted data of transportation statistics

Looking at Iran's condition in terms of private car ownership in the world shows that there are 113 cars per thousand people in Iran; while this figure equals 765 in America, 619 in Australia, 566 in Italy and 235 in Turkey and global average of car number equals 280 cars per thousand people; thus, despite the considerable increase in car production, Iran's per capita car is much lower than that of developed countries and less than half of world's per capita car.

Comparing per capita consumption of petrol in Iran to other countries shows that per capita consumption of petrol in Iran is higher than global average. One of its reasons is lack of petrol productivity in the used cars in Iran. For example, the number of cars in countries such as South Korea is nearly twofold to Iran; whereas, oil products consumption in South Korea is less than Iran. This is true about other developing and developed countries of the world. For example, despite the fact that the number of cars in Italy is much more than Iran (nearly 4.5 fold), but oil products consumption in Italian transportation sector is just 1.2 fold comparing to Iran. This issue is indicative of inappropriate productivity of petrol use and extreme weakness of Iranian public transportation system.

Another important point in this field is supporting domestically produced cars' non-optimal consumption of petrol using tariff tool by government as domestic productions' support policy. Existence of different tariffs on car imports has caused the price of these cars to rise more than several-fold comparing to global price. This causes the cars imported to Iran are considered luxury goods and demanded by the group who do not select the car by its price (for this group, price is not a determining factor in selecting the car). Therefore, by assuming the other conditions such as problems of domestic productions monopoly and unemployment to be constant, it could be said that decreasing or removing the tariff of car import, the people who have average income will demand these cars which have higher quality and lower petrol consumption. Therefore, current imposition of tariff on the foreign cars, which optimally consume petrol, actually is receiving tax from the more efficient cars which consume lower petrol. But domestic cars impose high costs on government to import petrol, because of inefficiency and non-optimal petrol consumption. It is obvious that petrol consumption growth in the recent years, continuous rise of petrol import and its price increase in the global markets on the other hand, will create more pressure on Iran's economy for supplying petrol.

Indiscriminate increase in petrol consumption not only has led to the increase in petrol import, but also created other problems in Iran such as petrol trafficking, abnormal traffic condition and environmental pollution.

Lower price of petrol in Iran than the neighbouring countries has led to the creation of petrol trafficking

phenomenon and its growth in the recent years. Considering the nature of trafficking and its method, there are no exact statistics in this field; but unofficial statistics are indicative of the fact that about one million liters petrol are daily poured into the neighbouring countries such as Afghanistan, Pakistan, Turkey, and northern Iraq in the recent years. It means based on this statistics, more than 2000 billion Rials are annually sent out of Iran due to the subsidy of smuggled petrol.

Rapid increase in the number of produced and plate registered cars in Iran in the recent years, existence of old, worn, non-standard and high-consuming cars, and lack of adequate public transportation will cause great social effects in addition to the loss of opportunities in urban traffic and depreciation of vehicles.

According to the statistics, more than 30% of Iran's cars are older than 20 years and nearly 50% of Iran's petrol is consumed by these cars. Low technology used in the production of most of domestic cars has caused private cars petrol consumption equals 15 liters per 100 kilometers. This figure equals 18 liters per 100 kilometers for taxicabs and passenger cars; whereas, the average of cars' fuel consumption are equal to 8 liters per 100 kilometers in the world. This will lead to the emissions of more greenhouse gases which have harmful impacts on the environment, weather and human health.

A series of factors has caused energy intensity of Iranian transportation sector to be placed in a higher level than the other countries. Below table (3.4) shows the energy intensity in Iran and other countries. As the table shows, Iran has the highest amount of energy intensity of transportation sector and Japan has the lowest one among the mentioned countries and regions.

## 8. EFFECTS OF ENERGY PRICE STABILIZATION ON PETROL CONSUMPTION:

Only 17% of Iranian refineries' production was elated to petrol in 2009. Petrol consumption has surpassed its production in Iran since 1982 and this trend has continued to the end of the period. Of course, petrol consumption surplus has been so different after 1982 and there is a rapid growth of petrol consumption and an increase in the gap between petrol production and consumption in Iran.

Assuming all other things constant, changes in of petrol prices, the consumption of this product alone will not reduce diesel prices in the country's policies is not enough (diesel price increase).

Partially decreasing trend of petrol actual price along with other factors such as economic growth and car number increase has caused high increase in petrol consumption in Iran. Average of petrol consumption annual growth rate was about 9% in the recent decade. On the other hand, growth rate of hidden paid subsidy for this good had an increasing trend in the past years and its growth rate average was 8.5% during the last decade; whereas, the volume of paid subsidy for petrol consumption has been always more than tax incomes. In addition to increasing financial load of paying subsidy for the government, environmental effects of high petrol consumption and petrol import problems, make the subsidy removal necessary.

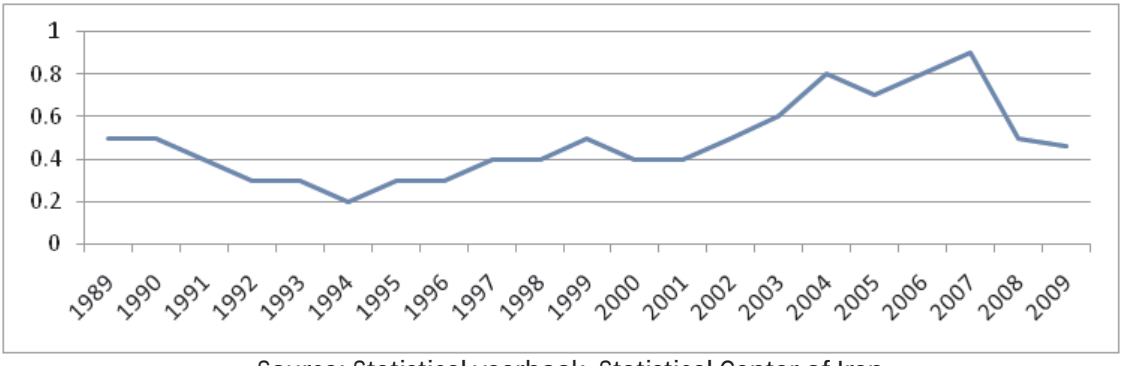
In the recent years, governmental paid subsidy to energy sector have had ascending trend, so that government costs in energy sectors has increased from 1427 Rials per year in 2000 to 21444.9 billion Rials per year in 2001, which equals the total subsidy payments for basic goods. 30.9% of total energy subsidy was for household sector, 33.3% for transportation sector, 17.8% for industrial sector, and 18% for other ones; 15.9% of total energy is related to petrol. In the recent years, Rial volume of paid subsidy for the consumed petrol has increased from 16272.2 billion Rials in 2001 to 92643.1 billion Rials in 2007 with growth rate of 36%. Government's non-oil financial resources have always had low growth and its growth was equal to 29% in an interval during this period.

Subsidized petrol price has caused rise in its demand and itself increases financial load on public budget (and more prices inflation) in the next periods. Stabilization and petrol's command price has caused petrol consumption rise from 16724.3 thousand of cubic meters in 2001 to 26864 thousand cubic meters in 2006, increase in the gap between petrol domestic production and its consumption and import increase in one hand and has led to the irregularities in price signaling for allocating production resources to other economic sectors, on the other hand. Additionally, low price of petrol is one of the factors of utilizing low technology in producing and using transportation vehicle which have had its own tangible and harmful environmental impacts and consequences. If resources efficiency allocation is the purpose of economic policy maker, oil products price

should have correct signaling for the consumers. It is clear that low command price results in price signaling for more consuming and using old technology which is highly energy taking.

In the figure (3.5) of petrol actual price trend, which is resulted from dividing stabilized nominal price of petrol to the retail price index, is shown during 1988 to 2008. Petrol actual price trend could be drawn by two scenarios during the years 1988 to 1994: nominal price (1000 Rials) to retail price index, free market price (4000 Rials) to retail price index. These figure simply show to what extent prices stabilization could decrease the actual price and consequently increase the demand. The interesting point is that even after petrol consumption rationing and its supply in free market for the price of 4000 Rials first and 7000 Rials presently, its actual price has re-declined after 2006 and its annual demand have had an ascending trend.

Fig.3.5: Petrol actual price trend (nominal price divided by urban areas' retail price index- base year 1990)




Source: Statistical yearbook, Statistical Center of Iran

## 9. MAIN REASONS OF HIGH PETROL CONSUMPTION IN IRAN

- Low price of petrol as a result of paying subsidy
- Lack of a correct consumption pattern
- Using old public transportation vehicles in urban and intercity transportation
- Production of non-standard and high-consuming cars by car producers
- Incorrect structure of urban traffic management
- Incompatible structure of urban transportation in large cities
- Non-technological structure of industries, streets and highways

## 10. POLICIES OF PETROL CONSUMPTION DECREASE:

It is necessary to provide the required conditions for moving toward petrol optimal consumption concurrent with implementing the pricing policies. Therefore, considering the relationship between car number and petrol consumption, car production increase and the standard number of private car per thousand people in the world, following solutions could be used as short solutions to decrease petrol consumption in Iran.

Increasing and improving public transportation system, increasing the number of inter-city buses, complete controlling of and restricting non-public vehicles traffic in the large cities, registering the number plate of the new style cars which are simply CNG- based, registering the number plate of the new style cars which are bi-fuel or petrol-consuming, sending the worn cars out of transportation cycle, developing CNG stations rapidly and decreasing the tariff of imported cars which are bi-fuel or CNG-based.

Increasing the production capacity and constant refineries reform aimed to export and meet domestic needs, granting license to private sector to import and sell petrol, forcing banks, insurance companies, air and ground transportation companies and customs to establish and complete electronic systems rapidly and reliably, providing services to decrease the trips within city through actual and scheduled programs, public notification on the factors which increase fuel consumption, precise implementation of rules of vehicle technical examination and pervasive development of inter-city and urban rail transportation are the long-term and

medium-term solutions of decreasing petrol consumption.

Considering the positive relationship between the number of cars and petrol demand in Iran, there are other significant points which should be considered by policy makers.

First, converting petrol-consuming vehicles to natural gas vehicles should be continued more rapidly. Providing the required gas for natural gas vehicles should be taken into consideration all year long. It is obvious that problems could make the project fail. Second, government could lead high-income groups of the country toward using low-consuming cars by facilitating the required condition of importing high-tech cars with low fuel consumption standard.

Developing the required infrastructures to decrease traffic jam, e.g. highways construction, could encourage the consumer to use public transportation vehicles in one hand and decrease petrol consumption by declining traffic jam on the other hand.

Creating E-government and providing the required condition of in which personal referring to governmental organizations is not needed, will decline unessential trips which will lead to the decrease in petrol consumption.

Providing the required infrastructures for ease of access and proper use of public facilities should be taken into consideration.

Utilizing modern technologies in transportation sectors, which have increasing efficiency and are spread in everywhere, could result in the efficiency of paying subsidy for transportation and decrease in urban density.

## 11. CONCLUSION

Sudden increase in the petrol price to the extent that it reaches import prices worldwide during a medium-term period, helps its consumption reform and will have less impacts on prices' general level by sufficient control over liquidity volume (along with other necessary preparations). Petrol price increase has increased the price of other goods; even when the price stabilization policy has been implemented for energy carriers in the past years, the price of the goods has been increased, too. Other goods' suppliers rarely determine their goods price by accurate calculation of petrol price impact on production cost and especially services; psychological factors are more effective. So, petrol price increase in medium-term has less impact on services and goods' suppliers than constant petrol price. There are no empirical evidences based on alignment of petrol import price and prices general level. It should be said that the amount of subsidies belong to consumer, presently are hidden in the industries placed in energy carriers group especially petrol and there is no information about official cost of these goods, therefore, economic officials should determine the actual cost of petrol in Iran.

By fulfilment of this important action, approximate amount of petrol consumption hidden subsidy and the difference between its cost and subsidized price paid by the consumers is specified and petrol is supplied based on an accurate economic policy. To support vulnerable people against inflation due to petrol price increase, a major part of its actual price difference is paid to all the families who are eligible to receive subsidy.

Another part of this income should be allocated to the development of public transportation to meet the new demands for using public transportation vehicles. The statistics show about 20 billion dollars has been spent on different subsidies in 2005 of which 5 billion dollars has been only allocated to petrol import; whereas, total development budget of Iran was less than 10 billion dollars in 2005.

To solve this problem, there is no better way than rationalizing the prices of different fuels especially petrol in Iran. Petrol must be sold by import price concurrent to this process, the structure of industry and transportation system should be basically changed and on the other hand, saving in consumption should be taken into consideration in different ways. Change the prices will decrease the motive of petrol trafficking. Although holding the prices down, is soothing in short-term, but has negative effects on economy in long-term. If giving subsidy to petrol continued, government should have spent so many resources on it. Incorrect policy of selling subsidized petrol imposed many disadvantages on Iranian economy and finally continued to where Iranian economy could not tolerate it and economic planners had to reform the subsidies. Thus, reforming the petrol's current subsidy should be considered as a serious action during the implementation of the fifth

economic development plan, because government will not be able to afford the petrol subsidies costs in the future years. Studying the changes of petrol selling in the last two decades indicates that its price increase was not in accordance with prices general level increase; this is itself the reason of lack of petrol saving and its optimal use. Low prices of petrol in Iran have caused its consumption to be much higher than global standard. If the current consumption pattern continues, Iran will definitely face this good's crisis and decrease in the near future.

## REFERENCES:

1.Abounoori, A., 2009,"Microeconomics", TextBook, Azad University press, Vol (1).
2.Anderson, K., McKibbin, W.J., 1997. "Reducing coal subsidies and trade barriers: their contribution to greenhouse gas abatement". Seminar Paper 97-07, University of Adelaide, Center for International Economic Studies (CIES).
3.Amini, GH., 2009. "Estimation of Labor Demand patterns in Iran's economy, barnameh budjehmagazine, 33-34, Tehran, Iran.
4.Burniaux, J.M., Martin, J.P., Oliveira-Martins, J., 1992."The effects of existing distortions in energy markets on the costs of policies to reduce CO2 emissions: evidence from GREEN. OECD Economic Studies 19, 142–164.
5.Burniaux, J.M., Chanteau, J., Dellink, R., Duval, R., Jamet, S., 2009. "The economics of climate change mitigation: how to build the necessary global action in a cost-effectivemanner". Economics Department Working Papers No. 701.
6.Abounoori, A., 2009,"Microeconomics", TextBook, Azad University press, Vol (1).
7.Anderson, K., McKibbin, W.J., 1997. "Reducing coal subsidies and trade barriers: their contribution to greenhouse gas abatement". Seminar Paper 97-07, University of Adelaide, Center for International Economic Studies (CIES).
8.Amini, GH., 2009. "Estimation of Labor Demand patterns in Iran's economy, barnameh budjehmagazine, 33-34, Tehran, Iran.
9.Burniaux, J.M., Martin, J.P., Oliveira-Martins, J., 1992."The effects of existing distortions in energy markets on the costs of policies to reduce CO2 emissions: evidence from GREEN. OECD Economic Studies 19, 142–164.
10.Burniaux, J.M., Chanteau, J., Dellink, R., Duval, R., Jamet, S., 2009. "The economics of climate change mitigation: how to build the necessary global action in a cost-effectivemanner". Economics Department Working Papers No. 701.
11.Chattopadhyay, P., 2004. "Cross-subsidy in electricity tariffs: evidence from India". Energy Policy 32 (5), 673–684.
12.Chattopadhyay, P., 2007. "Testing viability of cross subsidy using time-variant price elasticities of industrial demand for electricity: Indian experience". Energy Policy 35 (1), 487–496.
13.Christopoulose, D. K., 2000. "The Demand For Energy in Greek Manufacturing", Energy Economic, 22, p, 569-586.
14.DEO, 1999.United States Department of Energy (DOE)/Energy Information Administration (EIA, 1999. Federal Energy Market Interventions: Primary Energy). Washington D.C.
15.De Moor, A., 2001. "Towards a grand deal on subsidies and climate change". Natural Resources Forum 25 (2), 167–176.
16.Deputy for Power & Energy Affairs-Power & Energy Planning Department, 2008, "Iran and World Energy Facts and Figures".
17.Deutsche GesellschaftfürTechnischeZusammenarbeit (GTZ, 2007."International FuelPrices 2007".Federal Energy Ministry for Economic Cooperation and Development.
18.European Environment Agency (EEA), 2004. "Energy Subsidies in the European Union: A Brief Overview". EEA, Copenhagen.
19.Global Subsidies Initiative, 2009."Achieving the G-20 Call to Phase out Subsidies to Fossil Fuels".International Institute for Sustainable Development, Geneva.
20.Greenpeace International, 1997."Energy Subsidies in Europe".
21.International Energy Agency (IEA), 1999. "World Energy Outlook Insights, Looking at Energy Subsidies:

Getting the Prices Right". OECD, Paris.
22.IEA, 2002.Coal Information. OECD, Paris.
23.IEA, 2006."World Energy Outlook". OECD, Paris. IEA, 2008."World Energy Outlook". OECD, Paris.
24.Green,W., (2001),"Econometrics Analysis", New York University,Fifth Edition.
25.Zellner,A., and Theil,H., 1962. "Three simultaneous estimation of simultaneous equations",Econometrica,30,63-68.
26.Johnston, J. and Dinardo, J., 2000. "Econometrics Method, Mcgraw_Hill,4th . edition.
27.Kiyavar, M. and Nahidy, F., 2010."investigation the relation between energy price and energy consumption in industry sector", oil, gas and energy monthly, 5, p.41.
28.Lin, B.Q., Jiang, Z.J., Lin, J., 2009. "The analysis and design of China's residential electricity tariff subsidies (in Chinese)". Financial Research Journal 11, 48–58.
29.Moradi Poor,T.,2009. "Investigating the Policies Decreasing Energy Subsidy using Dyna- mic System"Tehran University, Iran.
30.Meh Abadi,M.,1994. "Investigating The Effects Imposing and Removing Subsidy Policy of Stabilization Oil Products Prices",Tehran University,Iran.
31.MehnatFar,Y., AsnaAshari, A., JafariSamimi, A., Karimi, S., 2007. "Investigating the Economic Impact of Gasoline Subsidy On Main Macroeconomic Variable in Iran:An Empirical Analysis(1971-2003)",University of Mazandaran,Iran.
32.Myers, N., Kent, J., 2001. "Perverse Subsidies: How Tax Dollars can undercut the Environment and the Economy", Island Press, International Institute for Sustainable Development.
33.Morgan, T., 2007."Energy subsidies: their magnitude, how they affect energy Investment and greenhouse gas emissions, and prospects for reform", UNFCCC Secretariat Financial and Technical Support Program.
34.OECD, 2000. "Environmental Effects of Liberalizing Fossil Fuels Trade: Results from the OECD Green Model". OECD, Paris.
35.Riedy, C., Diesendorf, M.O., 2003. "Financial subsidies to the Australian fossil fuel Industry". Energy Policy 31 (2), 125–137.
36.Saunders, M., Schneider, K., 2000."Removing energy subsidies in developing and transition economics".ABARE Conference Paper.23rd Annual IAEE International Conference, International Association of Energy Economics, Sydney.
37.Stern, N., 2006. "The economics of climate change: the Stern review". Report to the Cabinet Office, HM Treasury. Cambridge University Press, Cambridge.
38.Von Moltke, A., Colin M. and T. Morgan (ed.)., 2004. "Energy Subsidies: Lessons Learned in Assessing their Impact and Designing Policy Reforms", UNEP.
39.World Bank, 1997."Expanding the Measure of Wealth: Indicators of Environmentally Sustainable Development". Washington D.C.
40.Wooldridge, J. M., (2000), "Econometrics: A Modern Approach",1th edition Michigan State University.

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