

بانک خاورمیانه
Middle East Bank



IRANIAN PETROCHEMICAL INDUSTRY

in 1401 and 1402



Economic Research Department, Middle East Bank
Summer 1403 (Sep, 2024)



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Economic Research Department, Middle East Bank , Summer 1403 (Sep, 2024)

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NOTE

The dates in this Report follow the Persian Calendar, a solar calendar based on which years start on the first day of spring and end on the last day of winter. In terms of Gregorian Calendar, except for Leap years, Persian year normally covers the period between March 21 of a Gregorian year and March 20 of its succeeding year. The following table provides an easy reference while reading this Report.

1399 = 20/03/2020 to 20/03/2021 (1399 and 2020 are Leap years)

1400 = 21/03/2021 to 20/03/2022

1401 = 21/03/2022 to 20/03/2023

1402= 21/03/2023 to 19/03/2024 (2024 is Leap year)

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EXECUTIVE SUMMARY

The global sales value of the chemical products that had registered EUR3,033 billion in 2012, grew by annual average rate of 6.0 percent to reach EUR5,434 billion in the year 2022 with China with the highest share in that regard. The share of China in global sales value of chemical products rose to 44.0 percent in 2022, up from the 31.3 percent in 2012. As for the international trade, the global exports of the chemical products that had registered EUR1,386 billion in 2012, expanded by 4.0 percent per annum on average to reach EUR2,058 billion in 2022. In the year 2022, China with EUR343.7 billion and USA with EUR200.8 billion were the top 2 largest exporters of chemical products in terms of value. In the same year, Iran with EUR14.0 billion exports of chemicals (excluding liquefied gases) ranked 26th in the world and 2nd in Middle East, preceded by Saudi Arabia.

Till the end of the year 1400, 68 petrochemical producers were active in the Iranian petrochemical industry with 90.2 million tons of nominal capacity and 65.3 million tons of actual production. An examination of the ownership structure of the Iranian petrochemical industry reveals the dominant role of the Government and public institutions in that industry. For instance, Persian Gulf Petrochemical Industries Company (PGPIC) takes part in the ownership of 31 petrochemical producers directly and indirectly. Hence, 31.5 percent of the nominal production capacity of the Iranian petrochemical industry in total is related to the PGPIC. Till the end of fall 1402, the IRI Government owned 84 percent of the shares of the PGPIC through National Iranian Petrochemical Company (NIPC), Justice Shares as well as the National Iranian Oil Industry Pension Fund. Moreover, the Social Security Organization of Iran (SSO) indirectly owned 8 percent of the shares of PGPIC through its subsidiary, Tamin Petroleum and Petrochemical Investment Company (TAPPICO). Parsian Oil and Gas Development Group (Parsian Group for shorts) is the 2nd largest group in the Iranian petrochemical industry and directly and indirectly takes part in the management of 7 petrochemical companies in the Iranian petrochemical industry. Share of Parsian Group in total nominal production capacity of the Iranian petrochemical industry is estimated 11.6 percent and the Group is mainly owned by Ghadir Investment Group - a subsidiary of the Social Security Organization of Armed Forces. The board members of the Social Security Organization of Armed Forces are appointed by the Supreme Council of that Organization which itself consists of several ministers as well as military commanders. Tamin Petroleum and Petrochemical Investment Company - as a subsidiary of the Social Security Investment

Company (SSIC) - known as TAAPICO is another large investor in the Iranian petrochemical industry. TAAPICO is the shareholder of 25 chemical and petrochemical companies, by controlling interest in 10 of them. The share of TAAPICO in the total nominal production of the Iranian petrochemical industry is estimated 3.2 percent. Moreover, Petrofarhang Holding which is affiliated by the Ministry of Education is another player in the Iranian petrochemical industry. The Ministry of Education owns that holding through Frahangan Savings Fund (FSF). Petrofarhag holding is a major shareholder of 10 petrochemical companies and is known as one of the major suppliers of Methanol. Petrofarhang Holding constitute 3.6 percent of the total nominal production capacity of the Iranian petrochemical industry.

The value of exports of Iran's petrochemicals (including liquefied gases) from USD26.1 billion in 1401 fell by 28.5 percent to USD18.7 billion in 1402. During the period 1390 to 1402, Iran's annual exports of petrochemicals valued USD21.1 billion on average. The average value of exports of Iran's petrochemicals that had registered USD491 per ton in 1401 fell by 19.4 percent to USD396 per ton in 1402, mainly attributed to the fall in the global price of petrochemicals in 1402 and offering price discounts by Iran to its clients. In 1402, Liquefied Petroleum Gas (LPG) and Liquefied Natural Gas (LNG), respectively, had the highest shares of 27.6 percent and 16.6 percent in total exports value of Iran's petrochemicals. China, Iraq and Turkey were the top 3 exports destinations of Iran's petrochemical in 1402 with respective shares of 49.7 percent, 11.2 percent and 10.9 percent in total value of the petrochemical exports of the country.

Much of the domestic sales of the Iranian petrochemical producers takes place in the Iranian Mercantile Exchange

(IME). The value of transactions of petrochemicals in the IME reached IRR2,313 trillion in 1402, up 30.2 percent from IRR1,776 trillion in 1401. The Government decreed USD/IRR exchange rate used for determination of the base price of petrochemicals in Rial is a major challenge of the IME and any change in that rate would considerably affect the sales value and profitability of the Iranian petrochemical industry. However, the wider the gap between the free-market USD/IRR exchange rate and the rate used for determination of petrochemical base prices in Rial, the more room for black market activities, i.e., as for the demand side, more products are purchased to be unofficially exported and on the supply side, the producers tend to produce less products. From 1397 to 1402, the gap between the free-market USD/IRR exchange rate and the rate used for determination of base prices has been highly volatile. The gap registered its high of 142.5 percent in summer 1397 and reached its low of about 1.0 percent in winter 1399. Note that the demand for petrochemicals in IME (especially polymer products) has risen in line with the rise in the gap between the 2 aforementioned exchange rates.

On the basis of the latest official data, in 1400, Iran's petrochemical production totaled 65.3 million tons, of which 35.9 million tons were attributed to the 26 listed Iranian petrochemical companies. The sales value of the 26 listed petrochemical companies that had registered IRR4,200 trillion in 1400, grew by 27.2 percent to IRR5,343 trillion in 1401 and by another 11.8 percent expansion rose to IRR5,974 trillion in 1402. In the years 1401 and 1402, the highest sales value of petrochemical companies belonged to Nouri Petrochemical Company at IRR1,065 trillion and IRR1,188 trillion, respectively. As for the annual growth rate of sales value, among the listed petrochemical companies, in 1401 Bouali Sina Petrochemical Company and in 1402 Urmia Petrochemical Company ranked as first. The value of exports of the listed petrochemical companies totaled IRR2,456 trillion in 1401 and by 6.8 percent rise reached IRR2,622 trillion in 1402. In the year 1402, Nouri Petrochemical Company had the highest share of 19.6 percent in the total exports value of the listed companies under survey at IRR514.8 trillion. The ratio of exports to sales of the listed petrochemical companies in 1401 and 1402 registered 46.0 percent and 43.9 percent, respectively.

The net profit of the 26 listed Iranian petrochemical companies in the TSE that had reached IRR1,277 trillion in 1400, grew by 10.4 percent to IRR1,410 trillion in 1401, but it reversed course and fell by 8.9 percent to IRR1,284

trillion in 1402, causing the real rate of return of the Iranian petrochemical industry to diminish given the inflation rates of those 2 years. Pardis Petrochemical Company enjoyed the highest net profit of IRR273.0 trillion in 1401 among the listed petrochemical companies but in 1402, it was outperformed by Nouri Petrochemical Company with IRR220.8 trillion net profit. The highest growth rate of the net profit of the listed petrochemical companies in 1401 and 1402, respectively, belonged to Bouali Sina Petrochemical Company at 121.4 percent and Esfahan Petrochemical Company at 288.1 percent. On the contrary, Takhte Jamshid Petrochemical Complex incurred the highest contraction of 49.3 percent in its net profit in 1401 which was replaced by Fanavaran Petrochemical Company with 91.5 percent contraction in its net profit in 1402. In 1402, the net profit margin of the 26 listed petrochemical companies averaged 15.7 percent, below the 24.0 percent of 1401 and 28.8 percent of 1400. For the year 1403, the aggregated net profit of the 26 listed petrochemical companies is estimated IRR1,628 trillion, up 26.8 percent from the IRR1,284 trillion of 1402. Moreover, Kermanshah Petrochemical Industries Co. is supposed to incur the highest fall in net annual profit (51.0 percent), while the net annual profit of Fanavaran Petrochemical Company is expected to expand 13-fold. Various factors including the fall in the global price of petrochemicals, rise in cost of production of petrochemicals due to the rise in price of natural gas - as feedstock - and finally the costs emanating from economic sanctions are drivers of the fall in the net profit of the Iranian petrochemical companies (in real terms). Also, some international organizations have forecasted fall in price of some petrochemicals especially Granular Urea as well as Methanol in 2024. Accordingly, should the USD/IRR exchange rate for determination of base prices of petrochemicals in IME remain unchanged in 1403, the profitability of the companies under survey also does not experience much change in the same year. The cash balance of the 26 listed Iranian petrochemical companies totaled IRR670.5 trillion at the end of 1402 and should their investments in fixed-income mutual funds be included, that balance rises to IRR710.8 trillion. Out of the total cash balance of the aforementioned companies, 3.4 percent was deposited with Middle East Bank (MEB) at the same point. As of 06/02/1403, the balance of extended facilities to the listed petrochemical companies registered IRR300.5 trillion and that of the 30 selected unlisted Iranian petrochemical companies registered IRR635.6 trillion. The ratio of the balance of extended facilities to the sales value of the listed

petrochemical companies in the Iranian capital market in 1402 registered 11.3 percent, below that of the other listed industries, indicating lower dependency of the petrochemical industry on the money market. As for the non-performing loans (NPL), that of the listed and unlisted petrochemical companies under survey totaled IRR221.1 trillion on 06/02/1403, equaling 23.6 percent of their balance of extended facilities. On average, the NPL ratio of listed and unlisted petrochemical companies on the same date registered 2.1 percent and 33.8 percent, respectively, and that of the latter stands far above the average NPL ratio of the Iranian banking system.

As of 06/02/1403, the balance of bank guarantees as well as the letters of credit of 26 listed and 30 unlisted petrochemical companies under survey altogether amounted to IRR455 trillion. Out of this figure, IRR298 trillion is attributed to bank guarantees and IRR158 trillion to letters of credit. On 06/02/1403, the unfulfilled overdue foreign exchange obligations of the 26 listed petrochemical companies and 30 unlisted petrochemical companies under survey registered EUR28.4 million and EUR412.5 million, respectively. On the same date, the unfulfilled overdue foreign exchange obligations of the listed petrochemical companies formed 2.3 percent and that of the unlisted companies constituted 11.0 percent of their total foreign exchange obligations.

The Iranian petrochemical industry has faced various challenges in recent years and among them, the natural gas supply crisis has been of high importance. In 1401, in the 3 coldest months of the year and in its coldest month itself, the deficit of natural gas supply respectively, registered 225 cube meters and 315 cube meters. In the second half of 1402, Zagros Petrochemical Company, Shiraz Petrochemical Company and Khorasan Petrochemical Joint Stock Company, respectively, experienced gas cut offs of 63 days, 52 days and 59 days. Lack of investment in natural gas production in conjunction with the continuous decline in gas pressure of South Pars Gas-condensate Field would exacerbate the natural gas supply crisis of Iran in future.

The Carbon Tax could be considered as another hindrance to the Iranian petrochemical industry or other countries worldwide. In order to address their environmental concerns, the EU members devised Emissions Trading System (ETS) that seeks to reduce carbon emission through levying tax on imports of the goods that are drivers of the environment pollution. By the end of 2023, the EU members reached an agreement in that regard named Carbon Border Adjustment Mechanism (CBAM). Currently, the project is only receiving emission data from importers for some products imported into the European Union on a trial basis and it would become effective from 2026 which may lead to decline in the profitability of the petrochemical companies. Another challenge for Iran's petrochemical industry is the significant increase in petrochemical production among its competitors, especially Qatar. In addition to being a competitor to Iran's petrochemical exports especially in LNG products, Qatar's petrochemical industry use of the reserves of the South Pars field, that country indirectly exacerbates the natural gas supply deficit in Iran. The total production capacity of Qatar's petrochemical industry has increased from 7 million tons in 2010 to more than 77 million tons in 2023. The country plans to increase its LNG production capacity from 77 million tons in 2023 to more than 126 million tons by 2028 and to launch the largest petrochemical complex in the Middle East with a production capacity of about 4 million tons by 2026.

It could be concluded that notwithstanding its key role in the Iranian economy, no bright outlook could be imagined for the Iranian petrochemical industry. The natural gas supply deficit could be referred to as the most important threat to the Iranian petrochemical industry. Despite such circumstances, Iran has not been capable of attracting new investments for expansion of natural gas production. As for exports of petrochemicals, carbon tax, regional competitors and finally government ownership and its interventions (such as pricing) are other challenges to the Iranian petrochemical industry.



INTRODUCTION

Preceded by food and automotive industries, the petrochemical industry ranks as the 3rd largest industry worldwide and is also classified as a leading industry in Iran. Bearing the 3rd largest crude oil and 2nd largest natural gas reserves in the world, Iran markedly benefits from comparative advantage in petrochemical industry. Prior to 1390s, the economic sanctions on Iran had only limited investment in the Iranian petrochemical industry, while in the aftermath of the imposition of sanctions in 1390s, the sales of Iranian petrochemical products in the global markets also faced various challenges. Investigation of the Iranian petrochemical industry is of high importance due to its bonds with various industries as well as the foreign proceeds emanating from that. In this Report, the Iranian petrochemical industry has been examined from various aspects including sales, profitability, exports, status in the Iranian banking system, and finally the circumstances affecting that.

1. PETROCHEMICAL INDUSTRY

The petrochemical industry transforms the hydrocarbons of oil and natural gas to new products via a series of chemical interactions. The petrochemical industry plays a pivotal role in other industries worldwide, in a sense that it supplies inputs for various industries including automotive, textiles, home appliances, packaging, colors and resins, adhesives, solvents, detergents, and finally cosmetics. For instance, 28 percent of the raw

materials of the packaging industry is provided by the petrochemical industry, classifying that industry as the most dependent on the petrochemical industry, followed by electronics industry with 19 percent, construction industry with 14 percent, and automotive industry with 12 percent provision of their raw materials from the same industry. All in all, the petrochemical industry is engaged in various levels of industries.

1-1. Upstream

The upstream or the first stage in the petrochemical industry serves as the supplier of methanol, ethylene, propylene, urea, ammoniac, and aromatics as the main

inputs for various industries, derived directly from oil and natural gas hydrocarbons.

1-2. Midstream

The second stage in the petrochemical industry receives its feedstock from the upstream and produces intermediate goods such as polyethylene, polypropylene, PVC, in

conjunction with intermediate chemicals including acetic acid, methyl tert-butyl ether (MTBE), etc.

1-3. Downstream

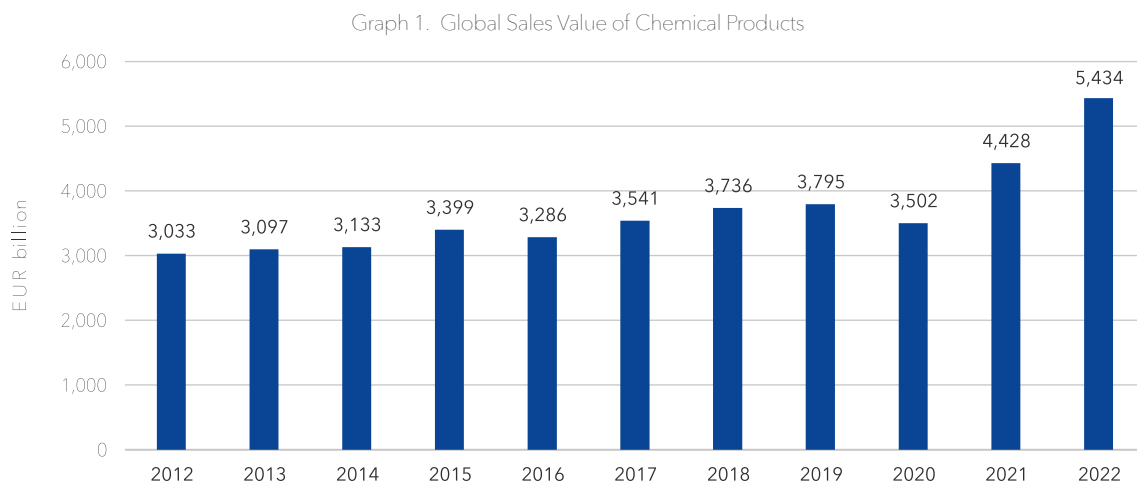
The inputs for production of final petrochemicals are basically provided by the midstream petrochemical

products. Rubber and plastic industries, detergents, colors, and resins are as such.

2. PETROCHEMICAL INDUSTRY WORLDWIDE

The global sales value of the chemical products in 2012 registered EUR3,033 billion and by 6.0 percent annual average growth rate rose to EUR5,434 billion in 2022.

The global sales value of chemical products from 2012 to 2022 is illustrated in Graph 1.

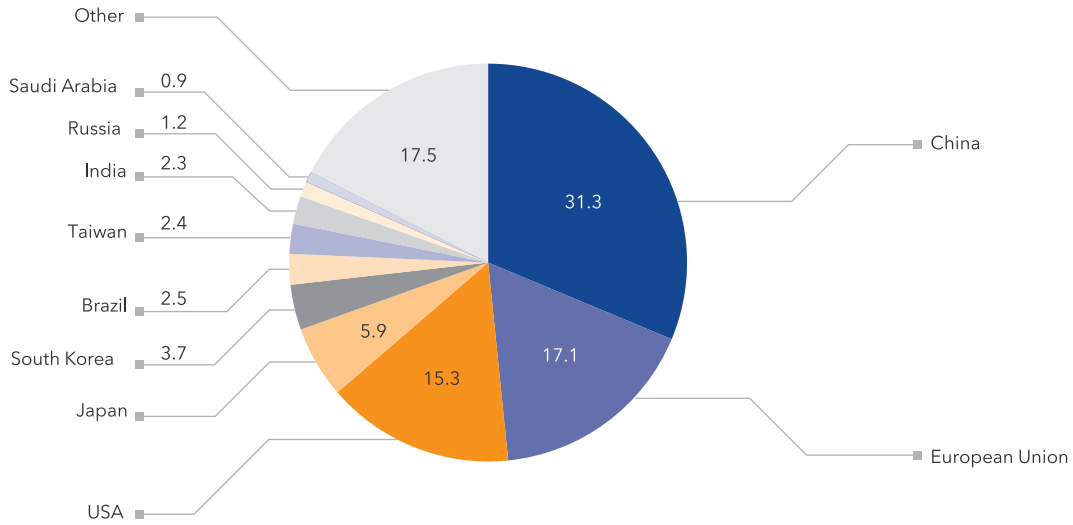


Source: European Chemical Industry Council

The highest share in global sales value of chemical products belongs to China with its share increasing from 31.3 percent in 2012 to 44.0 percent in 2022. Similarly, during the decade under review, Saudi Arabia has also expanded its share in global sales of chemical products, i.e., its share from 0.9 percent in 2012 has surged to 1.6 percent in 2022. The higher share of China in global sales of chemical products in the decade under review

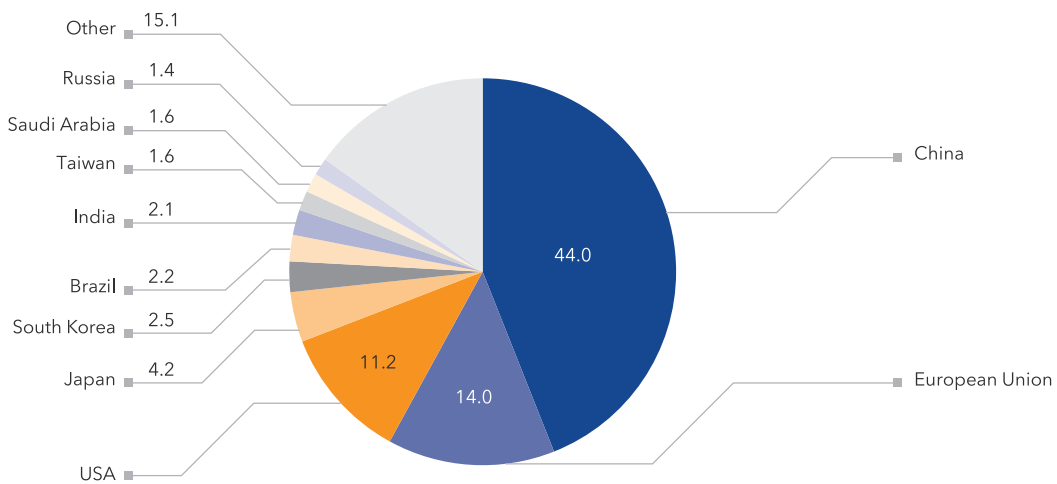
has caused the shares of European Union and the USA to fall. As the top 3 producers, share of China, USA, and European Union as a whole that constituted 63.7 percent of the global sales value of the chemical products in 2012 rose to 69.2 percent in 2022, due to the rise in the share of China. In Graph 2, shares of various countries in global sales value of chemical products in 2012 and in Graph 3 those of 2022 are illustrated.

Graph 2. Share in Global Sales value of Chemical Products in 2012 (percent)



Source: European Chemical Industry Council

Graph 3. Share in Global Sales value of Chemical Products in 2022 (percent)



Source: European Chemical Industry Council

Prior to the 1980s, Saudi Arabia was not a player in the market for petrochemicals, however, as a result of its state's investment in infrastructures for extraction of Associated Petroleum Gas (APG), that country turned to a player in that market. Associated gas collection equipment and pipelines were developed to feed industrial cities as the foundations of Saudi Arabia's current petrochemical industry throughout 1980s. In its roadmap, Saudi Arabia has targeted the share of non-oil exports as 50 percent

of its GDP in 2030, far above its 16 percent share in 2015 through expansion of the petrochemical industry¹. Consequently, the petrochemical industry could be referred to as the main contributor to the non-oil GDP of Saudi Arabia. The exports of chemical products and plastic accounted for 61 percent and 75 percent of the Saudi Arabia non-oil exports in 2015 and 2022, respectively.

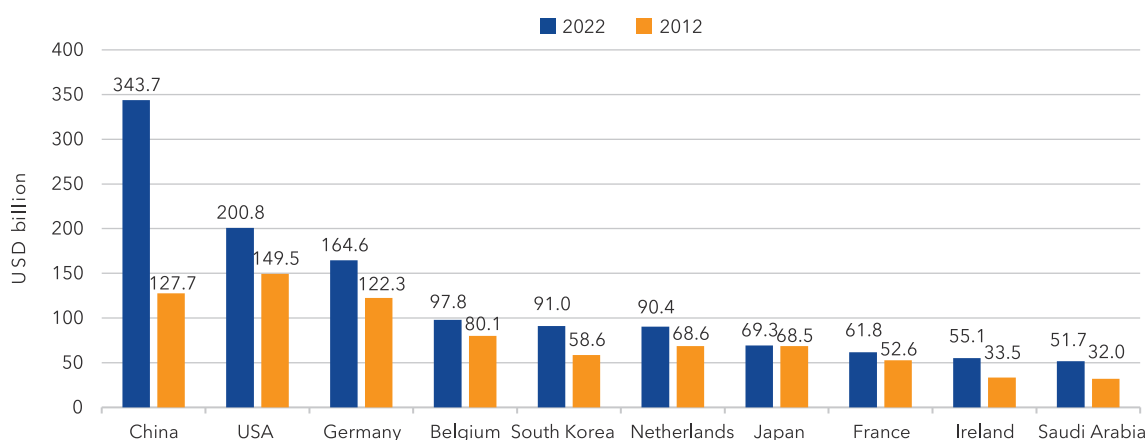
1. Based on IRI Parliament Research Center Report

2-1. Exports of Chemical Products

The exports value of chemical products worldwide that had registered USD1,386 billion in 2012, experienced an annual average expansion of 4.0 percent to reach USD2,058 billion in 2022. In the year 2022, China with USD343.7 billion and USA with USD200.8 billion exports

of chemicals were, respectively, the top 2 in the world. Iran with USD14.0 billion exports of chemicals in the same year, ranked 26th in the world and 2nd in the Middle East region. The value of exports of chemical products of the Top 10 exporters in years 2012 and 2022 are shown in Graph 4.

Graph 4. Exports Value of the Top 10 Exporters of Chemicals in 2012 and 2022

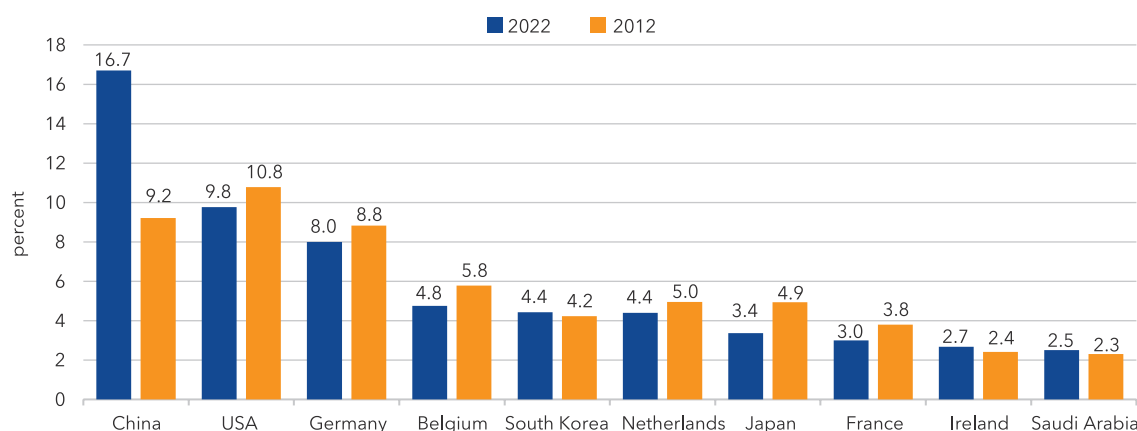


Source: Trade Map

Furthermore, as shown in Graph 5, China accounted for the highest share of exports of chemicals in total exports

of chemicals in the world at 16.7 percent in 2022, up 7.5 percentage points from its share in 2012.

Graph 5. Share of Top 10 Exporters of Chemicals in Total In 2012 and 2022



Source: Trade Map

3. HISTORY OF THE IRANIAN PETROCHEMICAL INDUSTRY

3-1. Prior to The Islamic Revolution

The abundant oil and gas reserves of Iran were much appealing for leading petrochemical-producing countries in a sense that they were tempted to invest in Iran in that regard. This enthusiasm, however, was welcomed by Iran, especially regarding establishment of the first chemical fertilizer plant in the country in 1337. After getting through various challenges, eventually in 1337, Iran signed a contract with "Ensa" and "Entrepose", both based in France and CJB, based in the United Kingdom to establish a chemical fertilizer plant in Shiraz², and in its following year the construction of that plant began. As for the feedstock for the new plant, the natural gas fields located in southern Iran were planned to be used. In that regard, USD5 million was financed via the National Iranian Oil Company (NIOC) aiming for construction of gas pipelines. Due to the recession of the 1340s, the construction of the new plant slowed down but eventually ended in 1342.

In the aftermath of the establishment of the plant in Shiraz, the Supreme Council of Petrochemical Industry was founded in 1342. Establishment and management of petrochemical plants through public or private investment, assessment and confirmation of petrochemical-related studies, and issuance of establishment permits for the private sector were the main responsibilities of the Council. Furthermore, all of the regulations regarding the petrochemical industry were subject to be confirmed via the same Council. Finally, it was concluded that the Council is necessary to be transformed to a company, hence, the National Iranian Petrochemical Company (NIPC) was founded in winter 1343. Since then, the NIPC was responsible for all petrochemical-related activities including management of Shiraz plant. Lack of experience in the petrochemical industry coupled with need for massive investment in that industry made

the cooperation with the international petrochemical producers inevitable. Therefore, in summer 1344, the Petrochemical Industry Development Act was passed. According to the Act, the NIPC was entitled the right to interact with foreign companies. Moreover, establishment of any new petrochemical plant in Iran was subject to minimum 50 percent ownership of the NIPC.

The aforementioned Act prepared the ground for cooperation with foreign petrochemical companies and the first contract for establishment of a plant in south-west Iran in Shahpur port³ was signed with an American party, Allied Chemical. In winter 1344, a contract between Iran and two American parties - B.F. Goodrich and Coats - was signed for establishment of Abadan⁴ petrochemical plant and another was signed between Iran and Amoco for establishment of Kharg⁵ petrochemical plant. About 6 years later in 1350, another 50-50 partnership agreement valued at USD300 million was signed between Iran and a Japanese party, Mitsui Group next to Shahpur petrochemical plant. The Iran-Japan joint venture was the largest investment in the Iranian petrochemical industry in terms of value and the largest plant in the world in terms of size during that era. However, the project was shut down after 85 percent of completion due to the 1979 Islamic Revolution (the late 1357 in Persian calendar) and then the Iran-Iraq War. If the project has not been cancelled, it would not only provide the domestic need for Olefin and Aromatics, but also would become an exporter of those products. Eventually, after the Iran-Iraq war ended, in 1368 Mitsui group disposed its share to the NIPC and quitted the project. The project was completed in cooperation with other parties.

In the aftermath of the establishment of 3 tire manufacturers in cooperation with American and Japanese parties, the NIPC board of directors planned

2. Shiraz is a city in south-central Iran and is capital of Fars province.

3. Bandar-e-Emam Khomeyni, prior to 1979 Islamic Revolution, known as Bandar Shahpur (Shahpur port) is a port city.

4. Abadan is a city in south-west Iran in Khuzestan province.

5. Kharg is an island in Bushehr province in south-west Iran (Persian Gulf).

for establishment of a Carbon Black company to satisfy the domestic needs. In that regard and among various volunteers, eventually the NIPC consented to sign a contract with an American party, Cabot Corporation. In addition to the American party, an Iranian specialized bank also announced readiness to participate in the project. The NIPC, Cabot Corporation, and the Iranian bank, respectively, provided 20 percent, 30 percent, and 50 percent of the capital needed for running the project in 1350. In the early winter 1353 the newly established company, Carbon Black, initiated its production with

the annual capacity of 14,000 tons. In 1351, the NIPC established another petrochemical company - currently known as Farabi Petrochemicals - in cooperation with 2 Japanese parties, Mitsubishi and Nissho Iwai, with investment shares of 74 percent by the NIPC and 26 percent by the Japanese parties. The company annually produced 24,000 tons of Phthalic Anhydride and 40,000 tons of Dioctyl Phthalic. All in all, prior to the 1979 Islamic Revolution (the late 1357 in Persian calendar) the volume of domestic petrochemical products totaled 6.1 million tons per annum.

3-2. Post Islamic Revolution

The Iranian petrochemical industry intensely suffered from the labor strikes during the Islamic Revolution of 1979 (the late 1357 in Persian calendar) and then the Iran-Iraq war that was ignited 2 years after the Revolution. However, shortly after the ceasefire between Iran and Iraq, reconstruction of the damaged petrochemical plants was started in 1368 and till 1373 some of them were

gradually reactivated. Moreover, Isfahan petrochemical company and Shazand petrochemical company started to operate and completion of the Iran-Japan project that was renamed to Bandar-e-Emam petrochemicals started. In the following sections, some pieces of information on petrochemical industry in the Development Plans⁶ after the Islamic Revolution are presented.

• First Development Plan (1368-1373)

The first Plan aimed at expanding the downstream industries, rising the exports of petrochemicals, and seeking for autarky in various economic sectors. Accordingly, the Plan encompassed 10 development projects in petrochemical industry. The new investments in the petrochemical industry during practicing the Plan caused the production of petrochemicals to rise by 42.3 percent per annum on average from 880 thousand tons in 1367 to 7.3 million tons in 1373. The extraordinary 42.3 percent annual growth rate was, however, attributed to the fact that the petrochemical production was below the nominal capacity of the industry due to the Iran-Iraq War in conjunction with the economic sanctions, i.e., in the post War era, the capacity utilization rate rose and from 16.6 percent in 1368 reached 70.9 percent in 1373. Similarly, the exports of petrochemicals escalated to USD271 million in value and 1.9 million tons in weight at the end

of 1373, causing the value of exported petrochemicals to average USD143 per ton.

• Second Development Plan (1374-1378)

In the second Plan, higher profitability, more exports, expansion of privatization, and diversity of products were the targets set for the Iranian petrochemical industry. As the previously launched plants reached their stage of operation during the implementation of the Second Plan, the production capacity of the Iranian petrochemical industry rose to 14 million tons and its actual production from 7.3 million tons in 1373 climbed to 11.0 million tons in 1378, indicating 7.1 percent annual average growth rate during the period under discussion. Furthermore, in 1378, the exports of petrochemicals reached 2.884 million tons in weight and USD579 million in value. The value of exported petrochemicals in the last year of the Second Plan stood up 40.6 percent from that of the last year of the First Plan at USD201. Meanwhile, the price of

6. The Economic and Sociocultural Development Plans of the Islamic Republic of Iran

OPEC crude oil rose by 12 percent. All in all, the value added of the Iran's exports of petrochemicals rose during the Second Development Plan and in the last year of that Plan (1378) the share of Iran's exports of petrochemicals in total customs exports and in total exports of Industry sector of the country, respectively, registered 17.2 percent and 30.7 percent.

- **Third Development Plan (1379-1383)**

Regarding the petrochemical industry, the Third Development Plan main focus was on the expansion of exports of petrochemicals. In addition, producing high value-added products and use of Ethane and Gas Condensates as much as possible were considered. Subsequently, in the last year of the Plan (1383), the maximum production capacity of the petrochemical industry reached 18 million tons. The production of petrochemicals that had registered 11.0 million tons in 1378, grew by 5.4 percent on average per annum to reach 15.1 million tons in 1383. Moreover, the exports of petrochemicals registered 5.2 million tons valued at USD1.726 billion in the last year of the Plan. In other words, the value of exported petrochemicals reached USD332 per ton in the last year of the Third Plan to stand 65.2 percent above that of the last year of the Second Plan. Meanwhile, the OPEC crude oil price surged by 107 percent, translating to the lower value-added of Iran's exported petrochemicals during implementation of the Third Plan. In 1383, the share of petrochemicals in total customs exports reached 25.2 percent and in total exports of the industry sector reached 37.6 percent.

- **Fourth Development Plan (1384-1389)**

The development of the Iranian petrochemical industry through focusing on domestic sources in conjunction with R&D was a major target of the Fourth Plan. In the last year of the Plan (1389), the annual production capacity of the Iranian petrochemical industry reached 51 million tons. Besides, the petrochemical production from 15.5 million tons in 1383 grew by 17.7 percent annual average growth rate to 40.2 million tons in 1389. In the last year of the Plan, Iran's exports of petrochemicals registered 17.283 million tons valued at USD11.2 billion. Hence, the value of Iran's exported petrochemicals at the end of the Plan averaged USD648 per ton to stand 95.2 percent above that of the last year of the Third Plan. Meanwhile, the price of OPEC crude oil grew by 115 percent, translating to further fall in the value added of Iran's exported petrochemicals during the Plan. In 1389, Iran's exports of petrochemicals constituted 42.2 percent of the total customs exports

of Iran and 54.9 percent of the total exports of Industry sector. In the same year, Iran's petrochemical production accounted for 2.4 percent and 24.5 percent of the world and Middle East petrochemical production, respectively.

- **Fifth Development Plan (1390-1395)**

The implementation of the Fifth Plan coincided with the imposition of the new economic sanctions on Iran. During the implementation of the Plan, 26 different plans, mainly ran by the private sector, reached their stage of operation and subsequently the production capacity of the Iranian petrochemical industry increased by 10.5 million tons and by the end of 1395 the annual production capacity of petrochemicals reached 61.9 million tons. The production volume of Iran's petrochemical industry that registered 41.4 million tons in 1389, grew by 3.5 percent on average per annum to close the last year of the Fifth Plan at 50.6 million tons. Taking into account the gas condensates, Iran's exports of petrochemicals rose to 60.8 million tons, valued at USD23.8 billion in 1395. Accordingly, in the last year of the Fifth Plan, the value of Iran's exported petrochemicals fell to USD392 per ton on average, down 39.5 percent from that of the last year of the Fourth Plan. Meanwhile, the price of OPEC crude oil fell by 48.6 percent. Hence, the fall in value of Iran's exported petrochemicals per ton be mainly attributed to the fall in the oil and gas prices. The imposition of economic sanctions in the same period also resulted in lack of investment in the Iranian downstream petrochemical industry and subsequently production of low value-added petrochemicals.

- **Sixth Development Plan (1396-1402)**

The implementation of the Sixth Plan⁷ coincided with the reimposition of economic sanctions on Iran as well as the COVID-19 pandemic. Due to the health concerns, plenty of limitations were put in place that caused many industries to decrease their production or even shut down and the petrochemical producers were as such. The fall in the revenues of the petrochemical producers on the one hand, and the rise in their operational costs on the other hand adversely affected the domestic petrochemical producers. At the end of the year 1402, the annual production capacity of the Iranian petrochemical industry reached 94.3 million tons. Moreover, the actual production of the industry from 50.6 million tons in 1395 grew by 7.8 percent on average per annum throughout the implementation of the Sixth Plan to 79.3 million tons in 1402, translating to capacity utilization ratio of 84.1 percent in the last year of the Plan, above the 70 percent in 1400 and 76 percent in 1401. Given the gas derivatives,

7. The Sixth Development Plan was supposed to finish in 1400 but was extended till 1402.

in 1402 Iran's exports of petrochemicals reached 47.1 million tons valued at USD18.7 billion. Accordingly, the value of each ton of Iran's exported petrochemicals at the end of the Sixth Plan averaged USD396 to stand only 1.0 percent above that of the last year of its preceding

plan. In 1402, value of Iran's exported petrochemicals constituted 37.8 percent of the total value of customs exports. A summary of the performance of the Iranian petrochemical industry during the aforementioned Plans is presented in Table 1.

Table 1. Performance of the Iranian Petrochemical Industry During Various Development Plans

Time Interval	Plan	Production Capacity (million ton - last year of the plan)	Actual Production (million ton - last year of the plan)	Capacity Utilization Rate (percent - last year of the plan)	Average Growth Rate of the Actual Production (percent)	Exports Value (USD billion - last year of the plan)	Value of Exports per Ton (USD - last year of the plan)	Average Price of Iran's Crude Oil (USD per barrel - last year of the plan)
1368-1373	First	10.3	7.3	70.9	42.3	0.3	143	14.6
1374-1378	Second	14.0	11.0	78.6	7.1	0.6	201	16.9
1379-1383	Third	18.0	15.1	83.9	5.4	1.7	332	33.1
1384-1389	Fourth	51.0	40.2	78.8	17.7	11.2	648	76.7
1390-1395	Fifth	61.9	50.6	81.7	3.5	23.8	392	39.6
1396-1402	Sixth	94.3	79.3	84.1	7.8	18.7	396	83.1

Source: IRI Parliament Research Center; Petro Energy Information Network; National Petrochemical Company of Iran; OPEC

4. OWNERSHIP STRUCTURE OF THE IRANIAN PETROCHEMICAL INDUSTRY

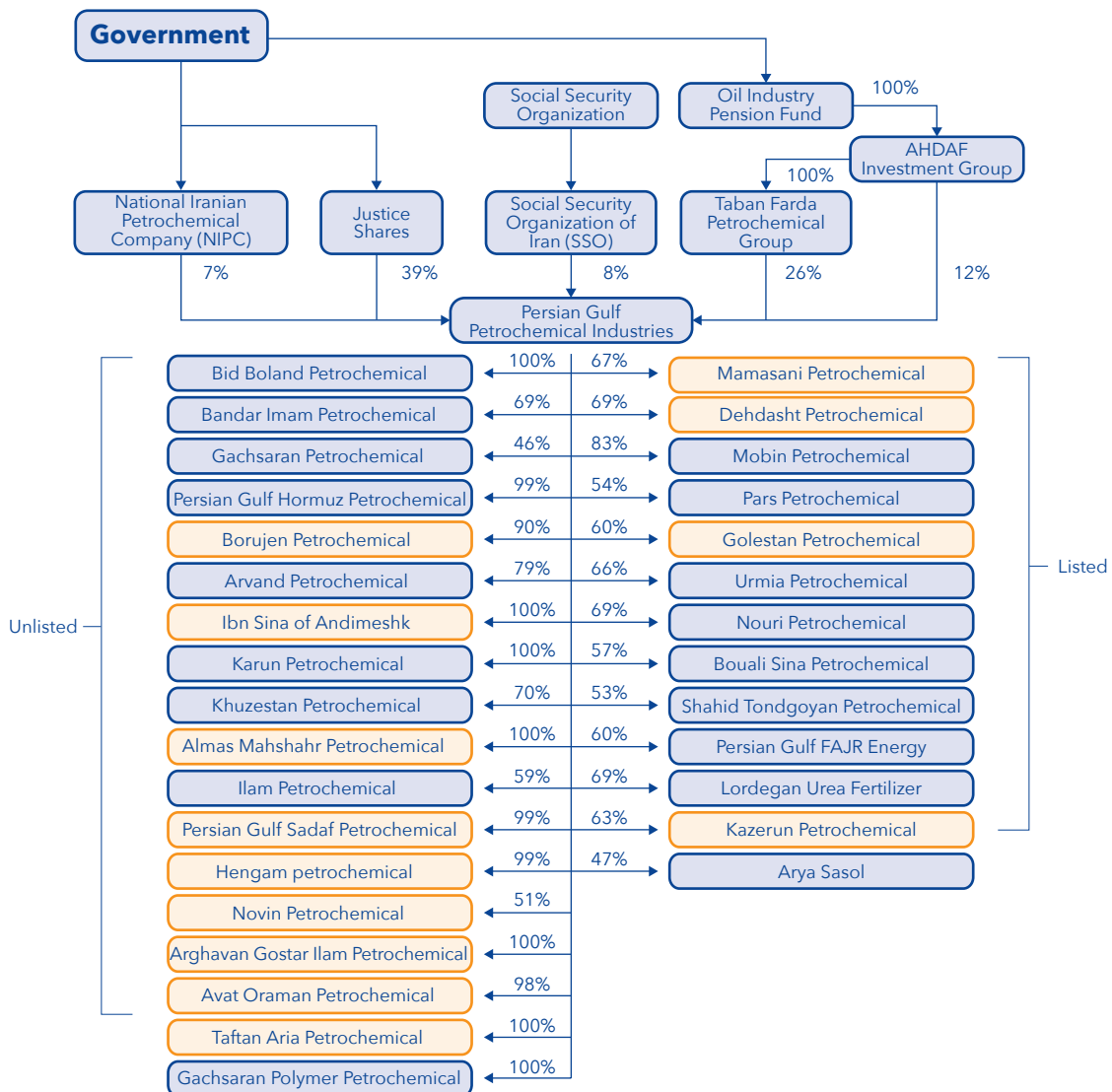
4-1. Persian Gulf Petrochemical Industries Company (PGPIC)

As the largest specialized petrochemical holding in Iran, PGPIC was established in 1389, comprising a broad network of subsidiaries engaged in production, engineering, trade, investment, education, and services. The holding was initially launched as a joint-stock company, while the Government held a majority share capital. In the year 1392 and in line with the Privatization Plan, 40 percent of its shares was allocated to 30 provincial investment companies as the Justice Shares. In the corresponding law for distribution of Justice Shares, establishment of county cooperatives and provincial investment companies were considered. Precisely speaking, one who was entitled to bear Justice Shares was supposed to join a cooperative in his own county. The cooperatives of all counties of a province then, altogether were supposed to form a provincial investment company. In the initial steps, those investment companies were entitled the right to manage the companies whose shares were allocated to the public as Justice Shares (privatized companies), however, due to inefficient performance of those managing companies, the Government again stepped in and continued management of those so-called privatized companies⁸.

The National Iranian Oil Industry Pension Fund is the second largest bearer of the PGPIC shares. According to the article of association of that Fund, 3 members of the board of trustees of the Fund are employed from

the cabinet and the remaining are directly and indirectly selected by the Minister of Petroleum. In addition, the board of trustees is in charge of selecting members of the board of directors. AHDAF Investment Group that itself is owned by the National Iranian Oil Industry Pension Fund holds 38 percent of the shares in PGPIC in total, 12 percentage points directly and 26 percentage points indirectly through Taban Farda Petrochemical Group which is also fully owned by AHDAF Investment Group. The National Iranian Petrochemical Company (NIPC) holds 7 percent of the share of PGPIC. All in all, till the end of fall 1402, in fact the IRI Government indirectly owned 84 percent of the shares in PGPIC through possession of NIPC, Justice Shares and the National Iranian Oil Industry Pension Fund. Moreover, the Social Security Organization of Iran (SSO) indirectly owns 8 percent of the shares in PGPIC through its subsidiary, Tamin Petroleum and Petrochemical Investment Company (TAPPICO). In addition, the retail investors in the Iranian capital market as well as the preferred shareholders altogether possessed only 8.0 percent of the share of PGPIC in the period under review. As shown in Graph 6, till the end of fall 1402, the PGPIC owned 31 petrochemical producers in the country, directly and indirectly. Of those 31 enterprises, 13 were in pre-operation phase (marked in orange). Also, the shares of 13 enterprises owned by the PGPIC were tradable in the Iranian capital market.

Graph 6. Ownership Structure of PGPIC till the End of Fall 1402*



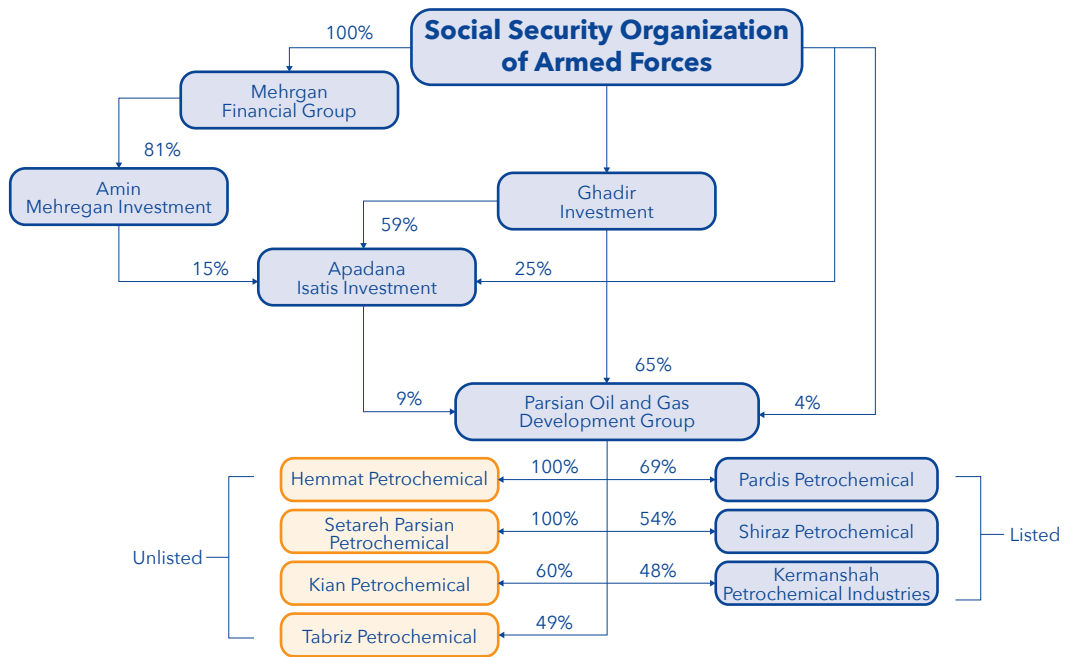
Source: Interim financial statements of fall 1402, IRI Official Gazette and NIPC
 * The companies marked in orange were in pre-operation phase while preparing this Report.
 Note: The number on each arrow indicates the ownership percentage of each company in its subsidiaries.

4-2. Parsian Oil and Gas Development Group

Parsian Oil and Gas Development Group (Parsian Group for short) enjoys an exceptional position in the Iranian petrochemical industry via bearing control stock of some largest Iranian petrochemical companies. According to its reports, 63 percent of the Iranian production capacity of Urea, 53 percent of Ammonia, and 27 percent of Methanol belongs to Parsian Group. Up to the end of fall 1402, around 65 percent of the share of Parsian Group was possessed by Ghadir Investment Group - a

subsidiary of the Social Security Organization of Armed Forces - with 20 percent of its portfolio in oil, gas, and petrochemicals. The board members of the Social Security Organization of Armed Forces are appointed by the Supreme Council of that Organization which itself consists of several ministers as well as military commanders. The Minister of Defense is the Chairman of the Supreme Council. Graph 7 depicts the ownership structure of Parsian Group.

Graph 7. Ownership Structure of Parsian till the End of Fall 1402*



Source: Interim financial statements of fall 1402, IRI Official Gazette and NIPC
 * The companies marked in orange were in pre-operation phase while preparing this Report.
 Note: The number on each arrow indicates the ownership percentage of each company in its subsidiaries.

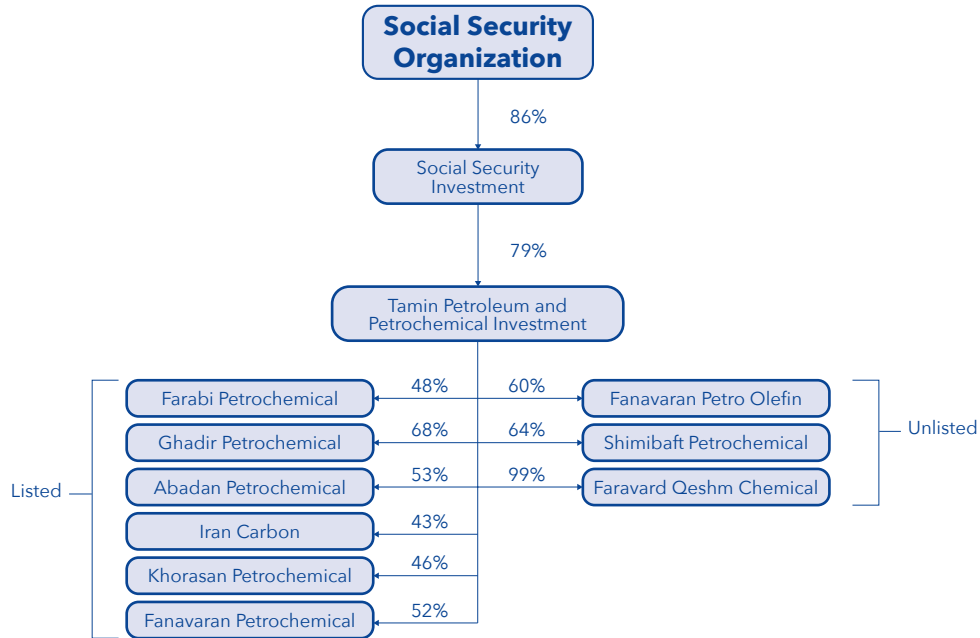
4-3. Tamin Petroleum and Petrochemical Investment Co (TAAPICO)

As a subsidiary of the Social Security Investment Company (SSIC), Tamin Petroleum and Petrochemical Investment Co is an industrial conglomerate, known as TAAPICO in the Iranian capital market. Up to the end of fall 1402, TAPPICO owned 34 listed and 59

unlisted Iranian companies. Regarding Chemical and petrochemical companies, TAPPICO held 25 companies' shares, of which 10 companies are fully managed by TAPPICO. Graph 8 depicts the ownership structure of TAPPICO⁹.

9. TAAPICO owns 68 percent of the shares in Petrochemical Industries Investment Co (PIIC), a listed company. As PIIC is different from other companies in hands of TAAPICO in nature, it is not included in Graph 8.

Graph 8. Ownership Structure of TAAPICO till the End of Fall 1402



Source: Interim financial statements of fall 1402, IRI Official Gazette and NIPC
 Note: The number on each arrow indicates the ownership percentage of each company in its subsidiaries.

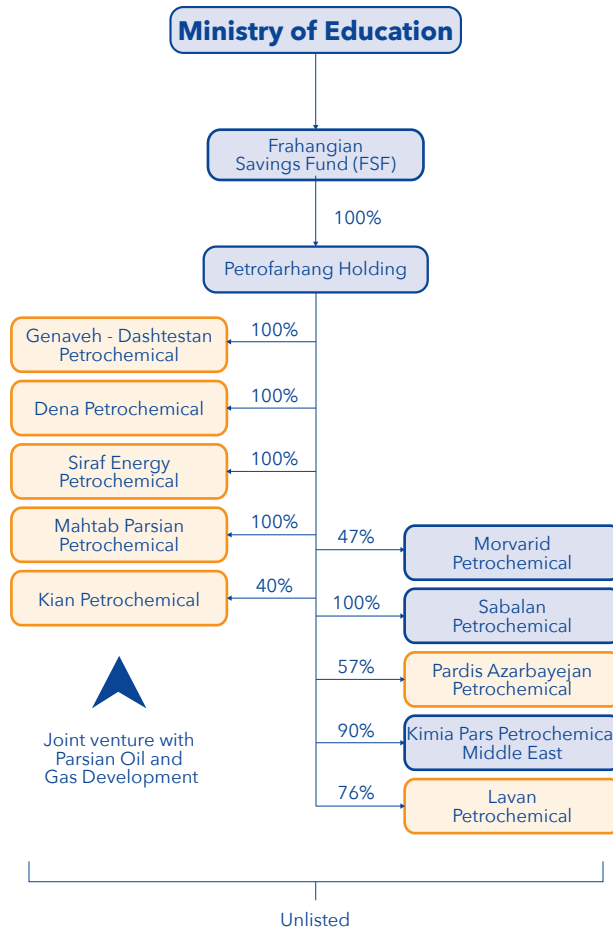
4-4. Petrofarhang Holding

As the investment division of the Farhangian Savings Fund (FSF)¹⁰ in oil, gas and petrochemicals, Petrofarhang Holding was established in 1387. In recent years, the Holding mainly focused on Methanol production and in 1402 its subsidiaries produced 21.4 percent of the domestic Methanol production at 1.902 million tons. As the Holding is 100 percent owned by the FSF, its board members are also appointed by the same Fund. The

board of trustees of FSF includes Minister of Education, Deputy Minister of Education in planning, and 3 members authorized by the Minister of Education. Out of the 10 petrochemical producers affiliated to Petrofarhang Holding, only three were active while preparing this Report and the remaining were yet to reach operating phase. In Graph 9 the ownership structure of Petrofarhang Holding till the end of fall 1402 is illustrated.

10. Farhangian Savings Fund (FSF) is affiliated to the Ministry of Education.

Graph 9. Ownership Structure of Petrofarhang Holding till the End of Fall 1402*



Source: Interim financial statements of fall 1402, IRI Official Gazette and NIPC

* The companies marked in orange were in pre-operation phase while preparing this Report.

Note: The number on each arrow indicates the ownership percentage of each company in its subsidiaries.

4-5. Share of Holdings in Production Capacity of Iran's Petrochemical Industry

The share of each holding in the nominal production capacity of the Iranian petrochemical industry on the basis of their controlling interest in the year 1400 is shown in Table 2. According to the NIPC statistics, the nominal production capacity of the Iranian petrochemical industry in 1400 registered 90.2 million tons, while its actual production in the same year reached 65.3 million tons. The PGPIC with 28.5 million tons coupled with Parsian Group with 10.4 million tons of nominal production capacity, altogether constituted 43.1 percent of the nominal production capacity of the Iranian petrochemical industry in the year 1400. Note that in the same year, the state-owned and public holdings accounted for 76.4 percent of the nominal production capacity of the Iranian petrochemical industry. During 1380s, the Iranian petrochemical industry was among the industries under Privatization. On the basis of the NIPC, during the period 1384 to 1389, 39 state-owned petrochemical companies were privatized. As for the shares of the subsidiaries of the NPIC, 15 percent

have been disposed in exchange of settlement of Government debts to its creditors and the remaining 85 percent were allocated as Justice Shares. As the Justice Shares were untradable for their retail bearers, the so-called privatized companies through Justice Shares were still managed by the Government via Ministry of Petroleum and Ministry of Economic Affairs and Finance. On the other hand, a large amount of the shares of petrochemical companies under privatization were allocated to the public institutions as well as semi-public enterprises in exchange of settlement of government debts. Accordingly, contrary to the main goal of the Privatization Plan, much of the ownership of the Iranian petrochemical industries that was planned to be in hands of the private sector was transferred to the public institutions. Hence, under such circumstances the private sector that was supposed to have a dominant position in the board of directors of the privatized companies, in effect has a negligible role in management of these sorts of companies.

Table 2. Share of Holdings in Nominal Production Capacity Based on Controlling Interest in 1400

Company/ Group	Nominal Production Capacity (million ton per annum)	Share in Total Production Capacity (percent)
Persian Gulf Petrochemical Industries Company	28.5	31.5
Parsian Oil and Gas Development Group	10.4	11.6
National Iranian Oil Industry Pension Fund	9.6	10.7
Social Security Organization of Armed Forces	5.8	6.4
Civil Servants Pension organization	5.1	5.7
Bakhtar Group	3.6	4.0
Execution of Imam Khomeini's Order	3.4	3.7
Pertofarhang Holding	3.3	3.6
Tamin Petroleum and Petrochemical Investment Company	2.8	3.2
Other	17.7	19.6
Total	90.2	100.0

Source: National Petrochemical Company of Iran

5. SPECIAL ECONOMIC ZONES FOR PETROCHEMICALS

5-1. Mahshahr

The special economic zone of Mahshahr was established in the year 1376 with initial area of 1,700 hectares in south-west Iran alongside the Persian Gulf coast. The area of the zone was increased to 2,600 hectares in 1385 and 3 petrochemical producers including Bandar-e-Emam, Razi, and Farabi were also attached to the zone. Geographically, the zone is linked to international waters via the Persian Gulf and also to Turkey, Europe, and Central Asia through railway. In addition to its geographical position, the special regulations of Mahshahr economic zone have made it a place for enhancement of production and trade, especially in downstream industries, absorbing new

technologies, and finally contributing to the employment rate. The feedstocks for the aforementioned petrochemical companies are provided by Abadan refinery via a pipeline and other petrochemical producers in the region. The needed gas (used as feedstock and fuel) is also supplied from the South Pars gas field. On the basis of the most recent sources, 21 petrochemical companies with the aggregate annual production of 18.2 million tons have been active till the end of 1400 in Mahshahr zone. Arvand, Amir Kabir, Bandar-e-Emam, Bouali Sina, Khouzestan, Razi, Fanavaran, Laleh, Marun, Ghadir, Farabi, Tondgouyan, and Karoon petrochemical companies were as such.

5-2. Pars (Asaluyeh)

The special economic zone of Pars consists of three zones of Pars I (south pars), Pars II (Kangan), Pars III (North Pars) with respective areas of 14,000, 16,000, and 16,000 hectares. The Zone with aggregated area of 46,000 hectares was mainly established for supporting the development of the largest gas condensate mutual field of the world (South Pars Gas Condensate Field) in the year 1377. In line with the Third, Fourth, and Fifth Development

Plans, the required gas (as feedstock) for running some of the petrochemical projects in Pars zone was provided from South Pars field. On the basis of the latest data, by the end of 1400, 22 petrochemical complexes were active in Pars zone with annual production of 32.0 million tons. The nominal capacity as well as the actual volume of production of the petrochemical complexes in 1400 in various economic zones are presented in Table 3.

Table 3. Production Capacity and Actual Volume of Production of Petrochemicals in Various Economic Zones in 1400

Zone	Number of Complexes	Nominal Production Capacity (million ton)	Actual Production (million ton)	Share in Total Production (percent)	Capacity Utilization Ratio
Mahshahr	21	25.7	18.2	27.9	70.8
Pars	22	42.9	32.0	49.0	74.6
Other Zones	25	21.6	15.1	23.1	70.1
Total	68	90.2	65.3	100.0	72.4

Source: National Petrochemical Company

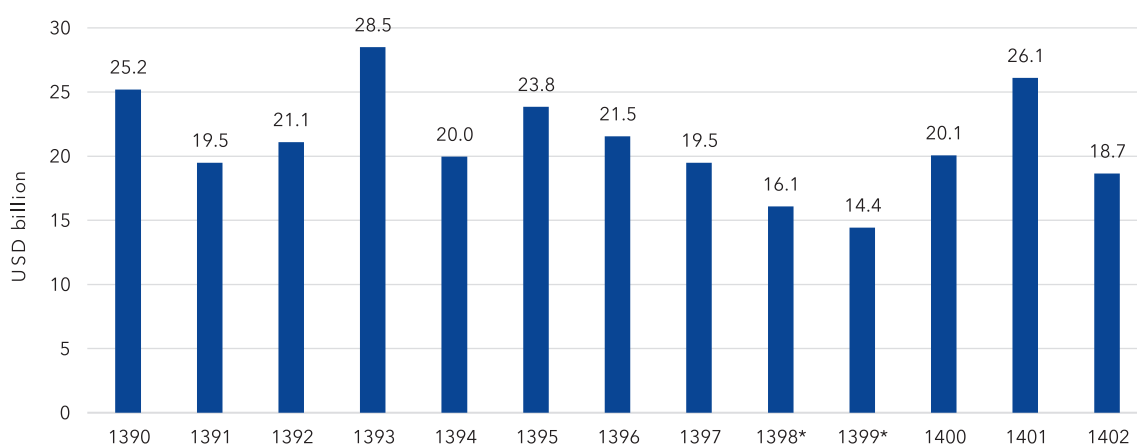
6. IRAN'S EXPORTS OF PETROCHEMICALS

6-1. Value and Volume of Exports

The value of Iran's exports of petrochemicals¹¹ that had registered USD26.1 billion in 1401 fell by 28.5 percent to USD18.7 billion in 1402. During the period 1390 to 1402, the value of Iran's exports of petrochemicals averaged USD21.1 billion per annum. In the year 1402, the exports of petrochemicals accounted for 37.8 percent

of the total customs non-oil exports of Iran¹². The fall in global prices of petrochemicals coupled with offering discount to foreign clients could be referred to as the major drivers of the fall in the value of Iran's exports of petrochemicals. Graph 10 exhibits the value of Iran's exports of petrochemicals from 1390 to 1402.

Graph 10. Value of Iran's Petrochemical Exports From 1390 to 1402*



Source: Trade Promotion Organization of Iran and Islamic Republic of Iran Customs Administration

*As the values of some petrochemical exports in 1398 and 1399 eliminated from customs reports due to some national concerns, they are estimated using the NIPC database.

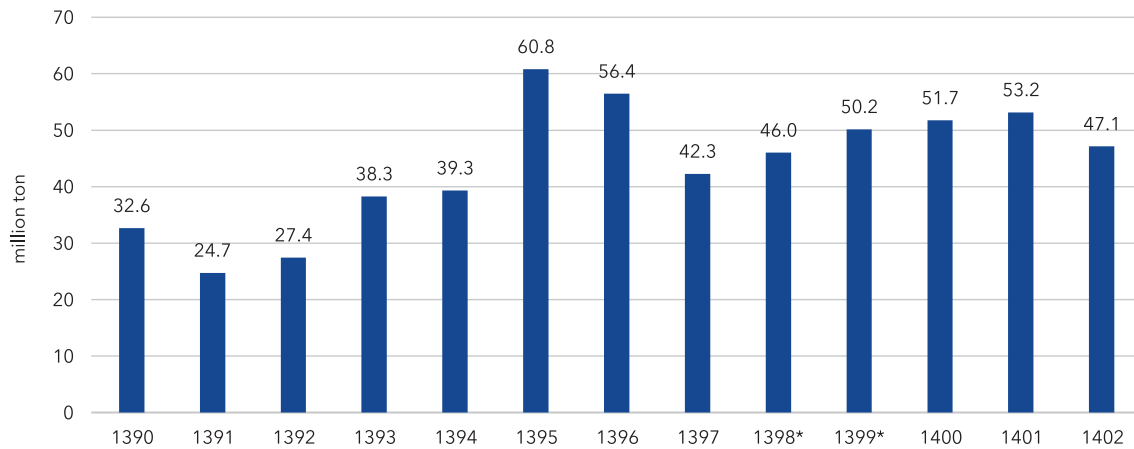
As shown in Graph 11, the volume of Iran's exports of petrochemicals reached 47.1 million tons in 1402 from 53.2 million tons in 1401, indicating 11.3 percent fall. The volume of Iran's exports of petrochemicals averaged 43.9 million tons per annum from 1390 to 1402. Moreover, the average value of Iran's exports of petrochemicals from USD772 per ton in 1390, diminished by 48.7 percent to USD396 per ton in 1402. Part of this fall is attributed to the fall in the global price of petrochemical products due to the fall in prices of oil and gas, but it mainly roots in the imposition of economic sanctions on

Iran. The sanctions on the one hand have limited foreign investment in the Iranian downstream petrochemical industry, and on the other hand have limited the exports to a few destinations. Consequently, the Iranian petrochemical industry has tended to exports of low value-added products such as methanol and liquified gases. Among the various petrochemical products, liquified natural gas (LNG) and liquified petroleum gas (LPG) were the top 2 petrochemical exported items with respective volumes of 1.437 million tons and 918 thousand tons in 1402.

11. In this Report exports of gas condensates are also included in the exports of petrochemicals.

12. Iran Trade Promotion Organization report of 1402

Graph 11. Volume of Iran's Petrochemical Exports From 1390 to 1402*



Source: Trade Promotion Organization of Iran and Islamic Republic of Iran Customs Administration

*As the values of some petrochemical exports in 1398 and 1399 eliminated from customs reports due to some national concerns, they are estimated using the NIPC database.

The average value of exports of Iran's petrochemicals registered USD491 per ton in 1401 and fell by 19.4 percent to USD396 per ton in 1402, mainly due to the fall in the global prices of petrochemicals and also discount on price of Iran's petrochemical products. Among various petrochemical products of Iran, the highest price falls in 1402 are attributed to urea fertilizer and LPG at 40.3 percent and 31.0 percent, respectively. Note that as the shipment of LPG requires special types of vessels that need special security measures and also could be easily tracked, Iran's exports of LPG

was highly vulnerable to the sanctions. Under such circumstances, in recent years, China was the largest buyer of Iran's LPG, i.e., in 1402, about 97 percent of Iran's LPG was exported to that country, causing more bargaining power for China. The price of exported LPG of Saudi Arabia in 1402 averaged USD536 and in 1401 averaged USD726, up 24 percent and up 10 percent above that of Iran, respectively, translating to prices discounts offered by Iran. Table 4 presents the average value of Iran's exported petrochemicals per ton in 1401 and 1402.

Table 4. Average Value of Iran's Exported Petrochemicals per Ton in 1401 and 1402

Product	Value of Iran's Exports of 1Petrochemicals Per Ton (USD)		Percentage Change
	1401	1402	
LPG	659	454	-31.0
LNG	364	333	8.5
Polymer Raw Materials	1,115	959	-13.9
Methanol	272	225	-17.1
Urea Fertilizer	518	309	-40.3
Other Petrochemical Products	510	367	-28.0
Other Petroleum Gases	444	454	2.2
Aromatics	769	599	-22.1
Gas Condensates	508	496	-2.3
Total Average	491	396	-19.4

Source: Trade Promotion Organization of Iran and Islamic Republic of Iran Customs Administration

6-2. Exports Products

In the year 1402, LPG and LNG, respectively, accounted for the highest shares of 27.6 percent and 16.6 percent of the total value of exports of Iran's petrochemicals. Note that low value-added raw materials accounted for much of Iran's exports of petrochemicals. In 1402, the

highest drop in exports value of Iran's petrochemicals was attributed to LNG at 59.1 percent followed by aromatics at 41.9 percent. In Table 5, the exports value of petrochemicals with their share in total in 1401 and 1402 are presented.

Table 5. Exports Value of Petrochemicals and Share of Each Product in Total Value of Exports of Petrochemicals

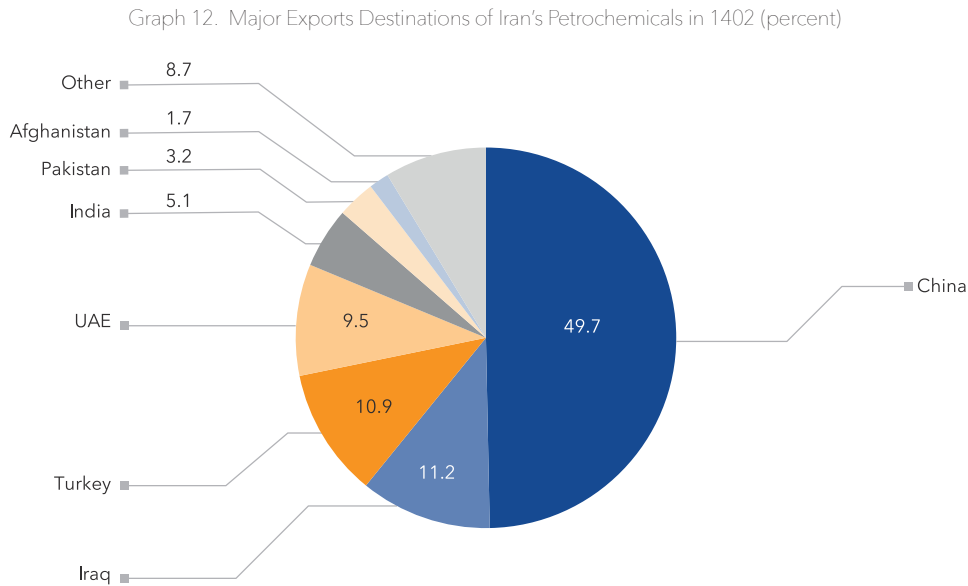
Product	Exports of Petrochemicals (USD million)		Percentage Change	Share in Total Exports of Petrochemicals (percent)	
	1401	1402		1401	1402
LPG	6,003	5,144	-14.3	23.0	27.6
LNG	7,557	3,090	-59.1	29.0	16.6
Polymer Raw Materials	4,023	2,816	-30.0	15.4	15.1
Methanol	2,181	2,108	-3.3	8.4	11.3
Urea Fertilizer	2,554	1,711	-33.0	9.8	9.2
Other Petrochemical Products	1,532	1,566	2.2	5.9	8.4
Other Petroleum Gases	756	1,231	62.8	2.9	6.6
Aromatics	1,390	808	-41.9	5.3	4.3
Gas Condensates	101	183	81.2	0.4	1.0

Source: Trade Promotion Organization of Iran; Islamic Republic of Iran Customs Administration

6-3. Exports Destinations

As shown in Graph 12, China, Iraq, and Turkey with respective shares of 49.7 percent, 11.2 percent, and 10.9 percent in total exports of Iran’s petrochemicals were the top 3 petrochemicals exports destinations of Iran in 1402. However, the limited exports destinations of Iran could be considered as Achilles’ Heel of Iran in that regard. Given the close relationship of Russia with Turkey and China on the one hand and imposition of sanctions on Russia on the other hand, loss of Iran’s major petrochemical exports destinations - China and

Turkey - in favor of Russia seems plausible, just like what happened in the market for metals. Moreover, due to the difficulties from imposition of sanctions, Russia has practiced dumping in markets for oil, petrochemicals, and metals via offering its clients with appealing price discounts. Consequently, in order to eliminate the risks of losing Iran’s market share and limited exports destinations and also getting rid of price discounts, it necessarily calls for normalization of international relations and elimination of sanction.



Source: Trade Promotion Organization of Iran and Islamic Republic of Iran Customs Administration

7. PETROCHEMICALS IN THE IRANIAN MERCANTILE EXCHANGE

The Iranian Mercantile Exchange (IME) as a commodities exchange was established in fall 1386 through mergers of two previously established Exchanges of Agriculture as well as Metal. Generally, the logic behind establishment of the commodity exchanges is however to assist both the consumers and producers to trade in a competitive atmosphere and to manage various market risks. In the aftermath of establishment of the IME, metals, agricultural products, and petrochemicals were traded in that market. The imposition of the economic sanctions on Iran in the early 1390s and the surge in the USD/IRR exchange rate caused the government to intervene in the IME through setting price for the petrochemicals, known as basic price using the secondary market the USD/IRR exchange rate for conversion of their prices to Iranian Rial (which is basically below the USD/IRR free-market exchange rate and above the official USD/IRR exchange rate). The government intervention in the market inevitably resulted in the demand surplus, supply deficit, and more transactions out of the IME. Finally, the government

amended the USD/IRR exchange rate for price conversion to the free-market USD/IRR exchange rate and all of the petrochemical producers including public and private ones were subject to supply their products in the IME until 1397.

In 1397, a committee was established within the NIPC that was responsible for setting the basic prices for petrochemical products, given their average global prices as well as the secondary market USD/IRR exchange rate in each month. While preparing this Report, the basic prices of petrochemical products in the IME equaled 95 percent of their Persian Gulf FOB prices that was converted to Rial by the secondary market USD/IRR exchange rate.

In 1402, the value of transactions of petrochemicals in the IME constituted about 16 percent of the total value of its transactions. As for the value of transactions of petrochemicals, 82.5 percent belonged to polymers, 17.3 percent to chemicals, and 0.2 percent to feedstocks. In Table 6 the various petrochemical products supplied in IME are presented.

Table 6. Petrochemicals Supplied in Iran Mercantile Exchange

	Main Group	Products
Petrochemicals	Polymers	Hi Density Poly Ethylene (HDPE), Low Density Poly Ethylene (LDPE), Polyethylene Terephthalate, Polystyrene, Polypropylene, Polycarbonate, Poly Butadiene Rubber (PBR), Styrene Butadiene Rubber (SBR), Polyvinyl chloride (PVC), epoxy resin, Low Molecular Polyethylene (LMP), Acrylonitrile, Acrylonitrile Butadiene Styrene, Partially Oriented Yarn (POY)
	Chemicals	Ethylene glycol, Styrene monomer, Linear alkyl benzene, o-Xylene, p-Xylene, Nitric acid, Hydrochloric acid, Sulfuric acid, Terephthalic acid, Acetic acid, Mixed Xylene, Sodium hydroxide, Urea, Ammonia, Benzene, Sulfur, Sodium carbonate, Bicarbonate of Soda, Vinyl acetate, Toluene diisocyanate, Ammonium sulfate, Methylene diphenyl diisocyanate, Potash, Diammonium phosphate, Heavy Aromatics, Ethanolamine, Oxo Alcohol, Ammonium nitrate, Ethylene dichloride, Argon, Melamine Crystals, Sodium sulfate, Urea Ammonium Nitrate, Toluene, Carbon Black, Dioctyl Phthalate, N-Butanol, Iso butanol, Phthalic Anhydride.

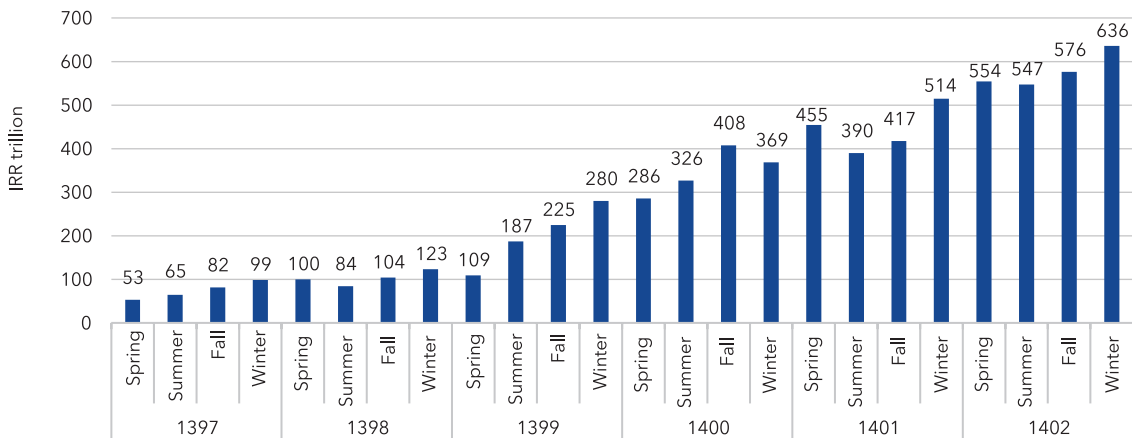
Source: Iran Mercantile Exchange

7-1. Value, Volume, and Type of Transactions of Petrochemicals in the Iranian Mercantile Exchange

The petrochemicals supplied in the IME are solely allowed to be domestically consumed and hence are not allowed to be exported after being purchased. As shown in Graph 13, the value of petrochemical transactions in IME in spring 1397 reached IRR53 trillion and rose to IRR636

trillion in winter 1402, indicating 11.4 percent quarterly growth rate on average in the period under review. Moreover, the value of petrochemical transactions in the IME that had registered IRR1,776 trillion in 1401 rose by 30.2 percent to IRR2,313 trillion in 1402.

Graph 13. Value of Transactions of Petrochemicals in IME

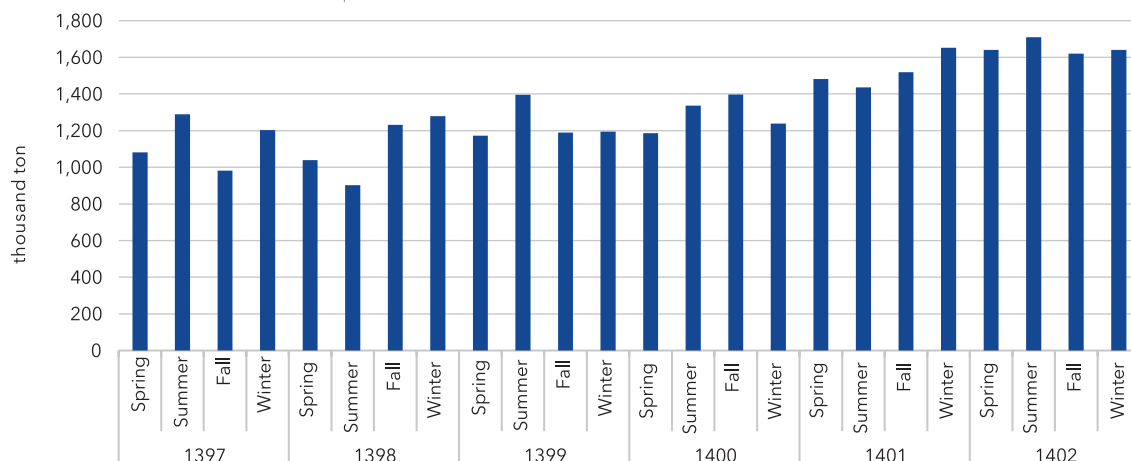


Source: Iran Mercantile Exchange

As shown in Graph 14, from spring 1397 to winter 1402, 31.8 million tons of petrochemicals has been traded in IME, indicating 1.3 million tons a quarter on average. During the period under discussion, the volume of transactions

of petrochemicals has grown by 1.8 percent a quarter on average. The volume of transactions of petrochemicals in the IME that had registered 6.088 million tons in 1401 grew by 8.6 percent to 6.611 million tons in 1402.

Graph 14. Volume of Transactions of Petrochemicals in IME



Source: Iran Mercantile Exchange

7-2. Contract Types for Transactions of Petrochemicals in the IME

As shown in Table 7, from 1397 to 1402, Spot contracts accounted for 67.0 percent of the value of the transactions on average in IME followed by Forward contracts¹³ at 32.8 percent and credit sale contracts at 0.2 percent only.

Table 7. Petrochemical Transactions by Type (percent)

Contract Type	1397	1398	1399	1400	1401	1402	Average
Spot	64.8	65.4	68.8	69.7	70.0	63.0	67.0
Forward	35.2	34.4	31.1	30.0	29.7	37.0	32.8
Credit	0.0	0.2	0.1	0.2	0.2	0.1	0.2

Source: Iran Mercantile Exchange

7-3. Challenges of Pricing of Petrochemicals

The disruption in the market mechanism as well as decreed pricing for some goods are referred to as the main drawbacks of the Iranian Mercantile Exchange. In the initial stages of its activity in the late 1386, the IME followed market mechanism and consequently there was no room for economic rent seeking and the IME was functioning efficiently.

This condition lasted till the early summer 1388, but from that point onwards the price of some products rose due to increase in demand and also the rise in global prices. The rise in petrochemical prices, however, resulted in consumers' dissatisfaction. In order to satisfy the consumers, the government stepped in IME and as expected, the worst decisions were made due to

13. Known as Salaf in CBI books and is a non-standardized contract between two parties to buy or sell an asset with agreed price at the time of transaction and the asset is delivered at a specified future time.

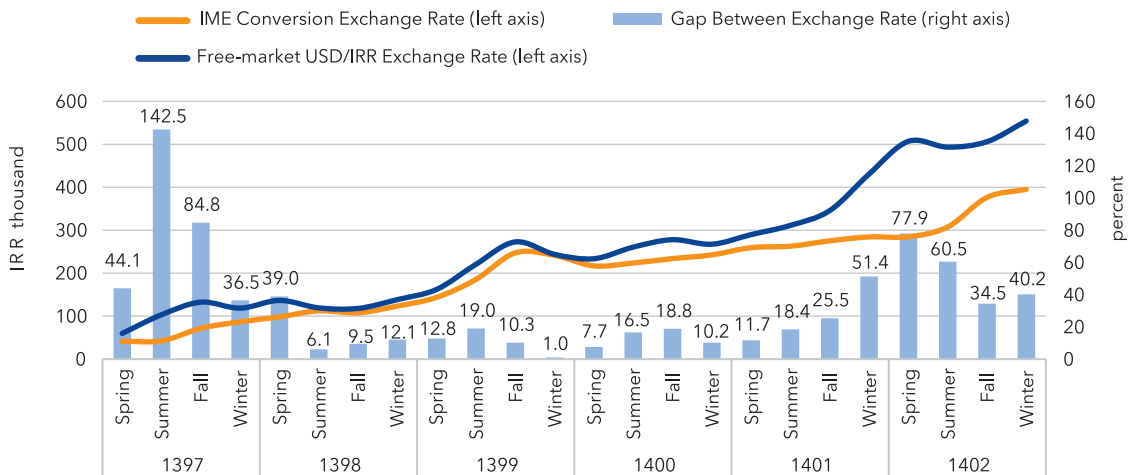
government intervention. For instance, in order to get rid of the excess demand, purchasing petrochemicals in the IME was subject to bearing the permit from the corresponding ministry. This limitation itself, resulted in formation of a market for permits. The government also started setting price for petrochemical products and it was decided that the Persian Gulf FOB prices of some months prior to supply of the products be used as the base of setting prices.

In the early 1390s, in the aftermath of the imposition of the economic sanctions on Iran, the Iranian Rial severely depreciated. Accordingly, all public and non-public petrochemical producers were required to supply their products solely in the IME within its framework - especially its pricing scheme. The IME pricing scheme bears two main problems. First, the producers are subject to supply all of their products in the IME, causing to oversupply and consequently fall in the prices towards the basic price set by the NIPC. Second, the exchange rate used for conversion of the global prices to Rial is below the equilibrium price due to the multiple exchange rate

regime. Forcing producers of petrochemicals to supply in IME and obey the IME pricing rules, translate to disruption in the market mechanism.

However, the wider the gap between the free-market USD/IRR exchange rate and the rate used for conversion of petrochemical prices to Rial, there would be more room for black market activities, i.e., as for the demand side, more products are purchased to be unofficially exported and on the supply side, the producers tend to produce less products to benefit from the rents of the exchange rate differentials. As shown in Graph 15, from 1397 to 1402, the gap between the free-market USD/IRR exchange rate and the rate used for conversion has been highly volatile. The gap registered its high of 142.5 percent in summer 1397 and reached its low of about 1.0 percent in winter 1399. Note that the demand for petrochemicals in IME (especially polymer products) has risen in line with the rise in the gap between the 2 aforementioned exchange rates. Precisely speaking, the wider the gap between the 2 rates, the higher the demand for petrochemical products in the IME.

Graph 15. The Gap Between the Free-market USD/IRR Exchange Rate and the IME Conversion Exchange Rate



Source: Iran Mercantile Exchange; Gold, Coin, and Currency Information Network

During the first half of 1397, the value of transactions of polymer products tripled compared to the same period of its preceding year. Nevertheless, in the same period, the number of operating licenses in downstream petrochemical industry had fallen. Similarly, the production level of selected products of some

downstream petrochemical producers had either remained unchanged or had fallen in the first half of 1397. Hence, it could be grasped that much of the supplied polymer products in the IME aiming for preparing raw materials for domestic production either had not been used or had been hoarded or unofficially exported.

8. IRANIAN PETROCHEMICAL COMPANIES

Petrochemical industry serves as one of the major contributors to the Iranian economy with more than 70 active petrochemical producers. On the basis of the latest report of the NIPC, in 1400, the total volume of production of petrochemicals registered 65.3 million tons, of which, 35.9 million tons is attributed to the

listed Iranian petrochemical companies (in the Iranian capital market). As shown in Table 8, at the end of 1402, 26 petrochemical companies were listed in the Iranian capital market, either in Tehran Stock Exchange (TSE) or in the Over the Counter (OTC). The financial status of the listed companies is explored in the following sections.

Table 8. The Listed Petrochemical Companies in TSE and OTC

	Company Name		Company Name
1	Kermanshah Petrochemical Industries Co.	14	Amir Kabir Petrochemical Company
2	Urmia Petrochemical Company	15	Ghadir Petrochemical Company
3	Shiraz Petrochemical Company	16	Marun Petrochemical Company
4	Fanavaran Petrochemical Company	17	Takhte Jamshid Petrochemical Complex
5	Nouri Petrochemical Company	18	Ghaed Basir Petrochemical Products Co.
6	Bouali Sina Petrochemical Company	19	Arya Sasol Company
7	Pars Petrochemical Company	20	Jam Petrochemical Company
8	Shahid Tondgoyan Petrochemical Company	21	Pardis Petrochemical Company
9	Abadan Petrochemical Company	22	Farabi Petrochemical Company
10	Zagros Petrochemical Company	23	Sina Chemical Industries Company
11	Shazand Petrochemical Company	24	Jampilen Petrochemical Company
12	Khorasan Petrochemical	25	Iran Carbon Company
13	Khark Petrochemical Complex	26	Esfahan Petrochemical Company

Source: Securities and Exchange Organization of Iran

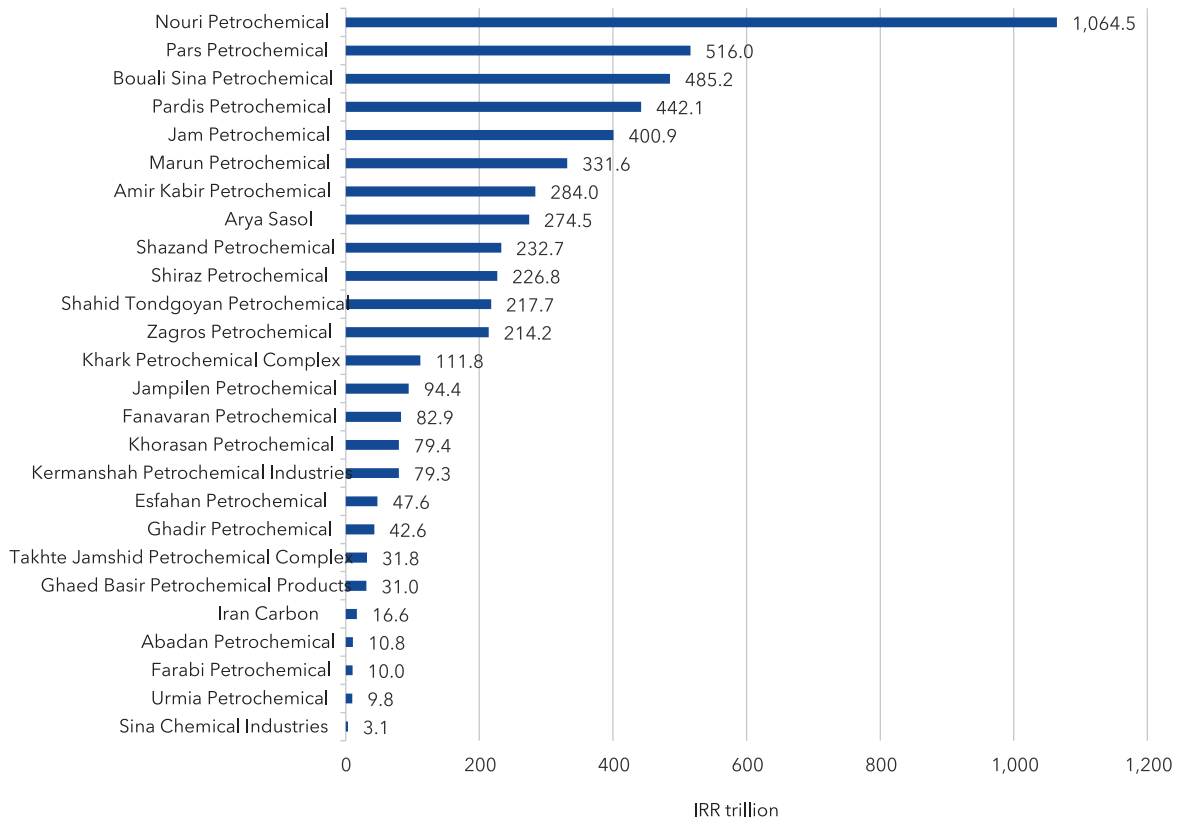
9. SALES VALUE OF THE LISTED PETROCHEMICAL COMPANIES IN TSE

9-1- Sales value in 1401

The sales value of the 26 listed petrochemical companies in TSE¹⁴ that had registered IRR4,200 trillion in 1400, grew by 27.2 percent to IRR5,343 trillion in 1401, far below the 72.5 percent annual growth rate of 1400 compared

to 1399. As shown in Graph 16, in 1401 the highest sales value belonged to Nouri Petrochemical Company at IRR1,065 trillion, while the lowest to Sina Chemical Industries Company at IRR3.1 trillion.

Graph 16. Sales Value of Listed Petrochemical Companies in TSE in 1401



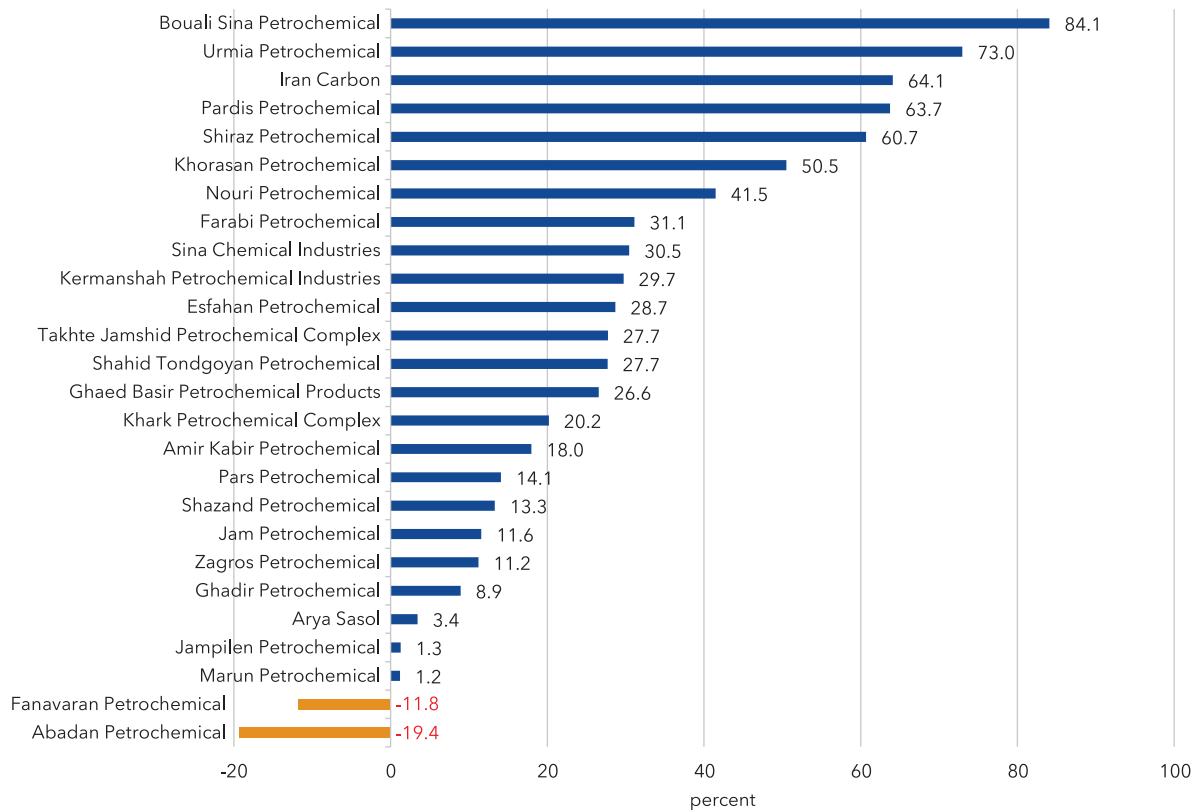
Source: Audited financial statements of companies available in <https://www.codal.ir/>

14. As the financial year of Pardis Petrochemical Company and Takhte Jamshid Petrochemical Complex ends on the last day of fall, in order to make them comparable with the other listed companies, their financial statements ending the last day of each calendar year have been derived from their interim financial statements.

Among the listed petrochemical companies in TSE, Bouali Sina Petrochemical Company experienced the highest expansion of 84.1 percent in its sales value of 1401 compared to 1400, mainly thanks to the 17-fold rise in its domestic sales of Reformate. On the contrary,

Abadan Petrochemical Company as well as Fanavaran Petrochemical Company, respectively, experienced 19.4 percent and 11.8 percent contraction in their sales value in the same year, as shown in Graph 17.

Graph 17. Growth Rate of the Sales Value of Listed Petrochemical Companies in TSE in 1401



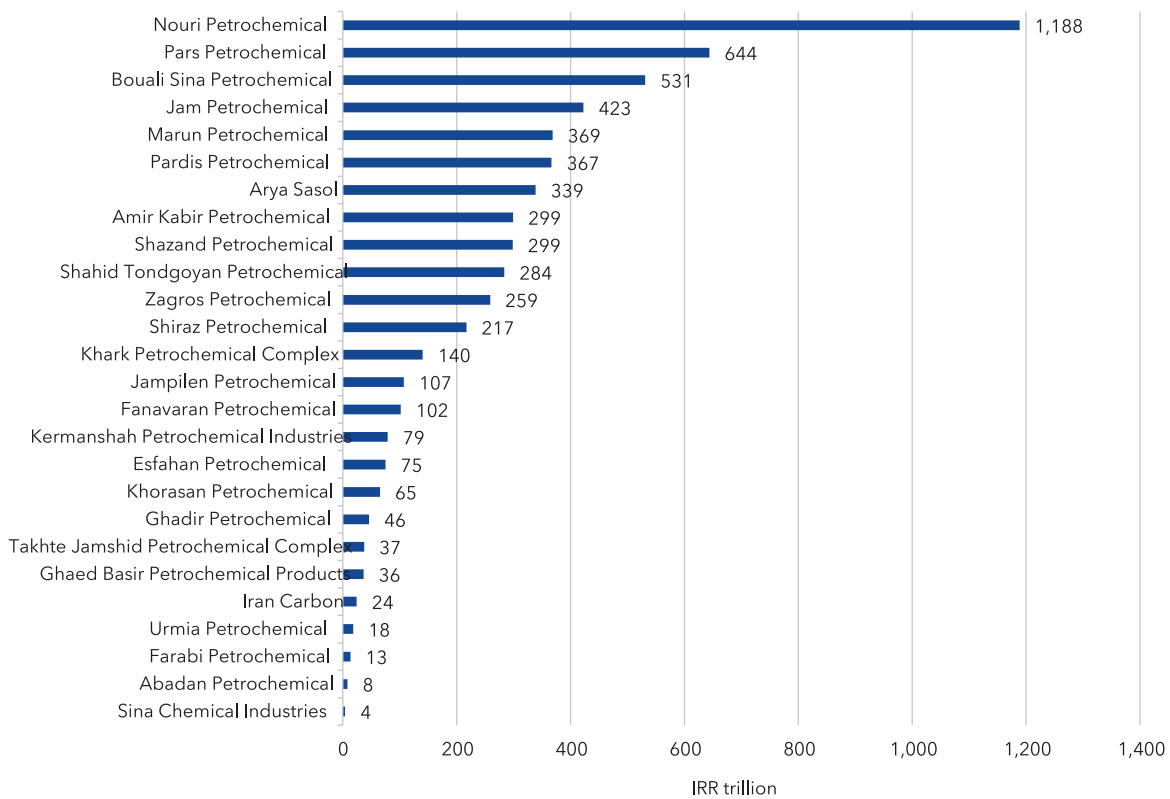
Source: Audited financial statements of companies available in <https://www.codal.ir/>

9-2. Sales value in 1402

The sales value of the 26 listed petrochemical companies in TSE totaled IRR5,974 trillion to stand 11.8 percent above the IRR5,343 trillion in 1401. As shown in Graph 18, in 1402, the highest sales value of IRR1,188 trillion

belonged to Nouri Petrochemical Company, while the lowest was attributed to Sina Chemical Industries Company at IRR4.1 trillion.

Graph 18. Sales Value of Listed Petrochemical Companies in TSE in 1402

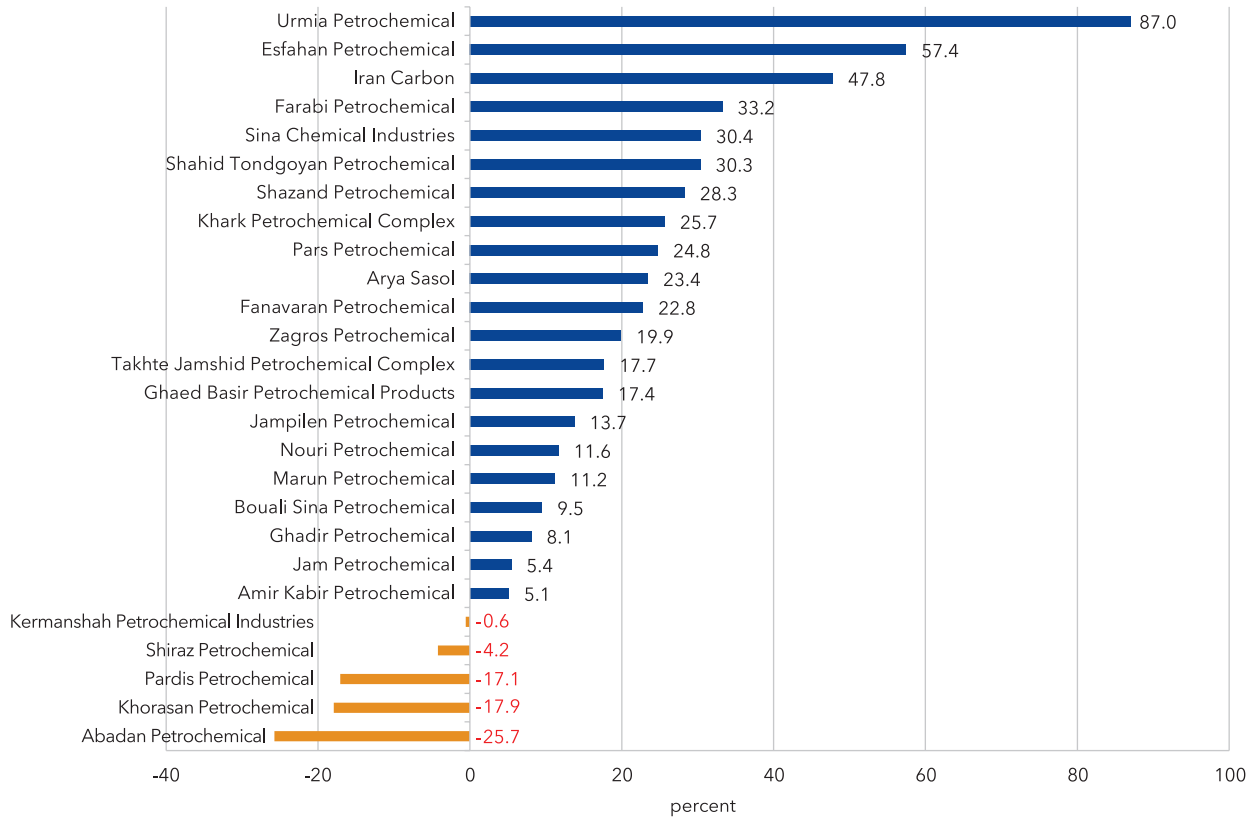


Source: Audited financial statements of companies available in <https://www.codal.ir/>

In 1402, the highest annual growth rate in the sales value of the listed petrochemical companies in TSE was attributed to Urmia Petrochemical Company at 87.0 percent. However, in the same period, the sales values of Abadan Petrochemical Company, Khorasan Petrochemical Joint Stock Company, Pardis Petrochemical Company, Shiraz Petrochemical Company, and Kermanshah Petrochemical Industries Co. considerably fell. The four latter companies (Khorasan Petrochemical Joint Stock Company, Pardis Petrochemical Company, Shiraz Petrochemical Company, and Kermanshah Petrochemical Industries Co.)

accounted for 82.8 percent of the total Urea production of the country in 1402. Note that the fall in sales value of those companies in 1402 is mainly originated in the fall in the global price of Urea. The data issued by Iran Trade Promotion Organization suggests that the price of exports Urea of Iran in 1402 has registered USD318 per ton, 40.3 percent below the USD518 per ton in its preceding year. Among various exports petrochemical products of Iran in 1402, Urea has experienced the most severe fall in price. Graph 19 depicts the growth rates of the sales value of the listed petrochemical companies in TSE in 1402.

Graph 19. Growth Rate of the Sales Value of Listed Petrochemical Companies in TSE in 1402



Source: Audited financial statements of companies available in <https://www.codal.ir/>

In Table 9, the aggregated sales value of the listed petrochemical companies in TSE with their annual percentage change from 1400 to 1402 is presented.

Table 9. Aggregated Sales Value of Listed Petrochemical Companies in TSE

	1400	1401	1402
Aggregated Sales Value (IRR trillion)	4,200	5,343	5,974
Annual Percentage Change	66.2	27.2	11.8

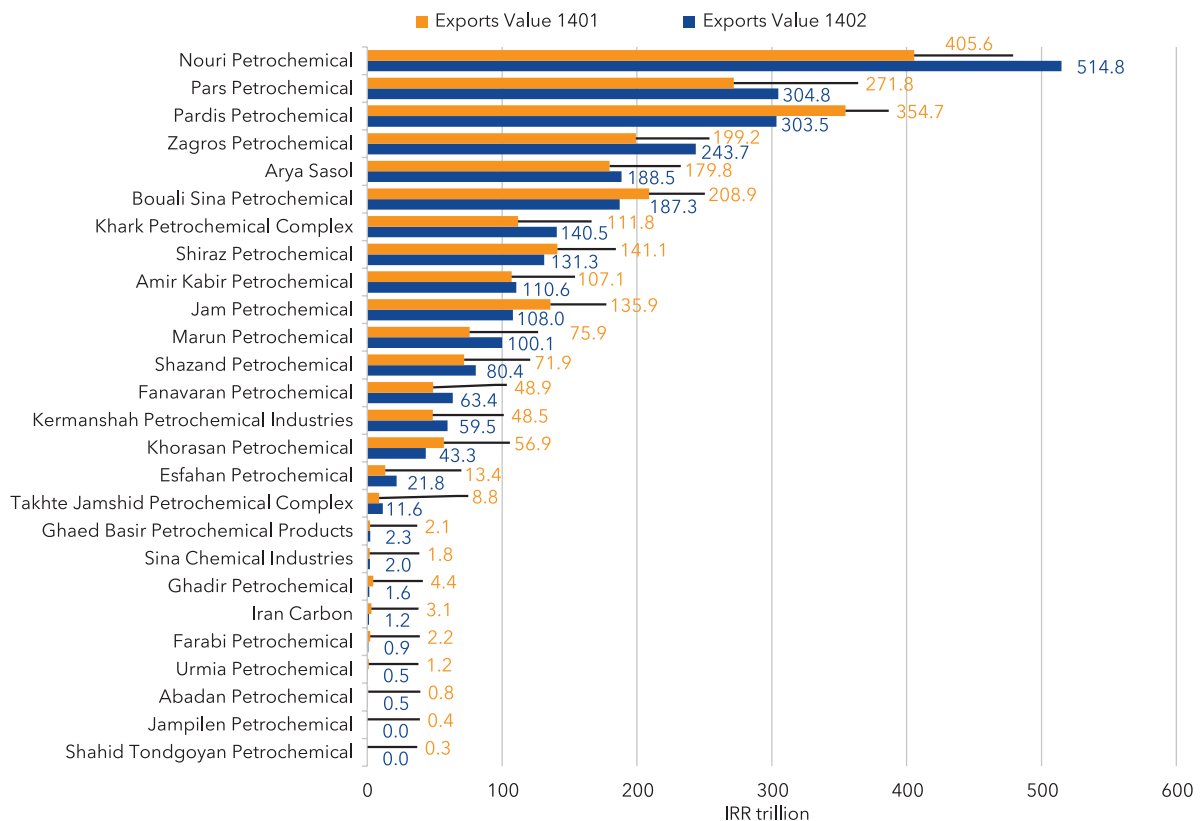
Source: Audited financial statements of companies available in <https://www.codal.ir/>

10. EXPORTS OF LISTED PETROCHEMICAL COMPANIES

The aggregated exports value of the listed petrochemical companies in the Iranian capital market registered IRR2,622 trillion in 1402, indicating 6.8 percent rise compared to the IRR2,456 trillion in 1401, mainly due to the Iranian Rial depreciation against US Dollar. As shown in Graph 20, in 1402 the highest exports value of IRR514.8

trillion belonged to Nouri Petrochemical Company, constituting 19.6 percent of the total exports value of the listed petrochemical companies in capital market. Note that no exports has been reported for Shahid Tondgoyan Petrochemical Company and Jampilen Petrochemical Company in 1402.

Graph 20. Exports Value of Listed Petrochemical Companies in Iranian Capital Market in 1401 and 1402



Source: Audited financial statements of companies available in <https://www.codal.ir/>

In the year 1401, Khorasan Petrochemical Joint Stock Company enjoyed the highest expansion in exports value at 90.6 percent and in 1402, Esfahan Petrochemical Company experienced the highest growth rate of 63.2 percent in the same regard. Note that the fall in the exports value of the Iranian petrochemical companies

in 1402 from 1401 is associated with the considerable fall in global price of the exports products. In Table 10, the annual growth rates of IRR exports value of listed petrochemical companies in the Iranian capital market in 1401 and 1402 are presented.

Table 10. Annual Growth Rates of IRR Exports Value of Listed Petrochemical Companies in Capital Market (percent)

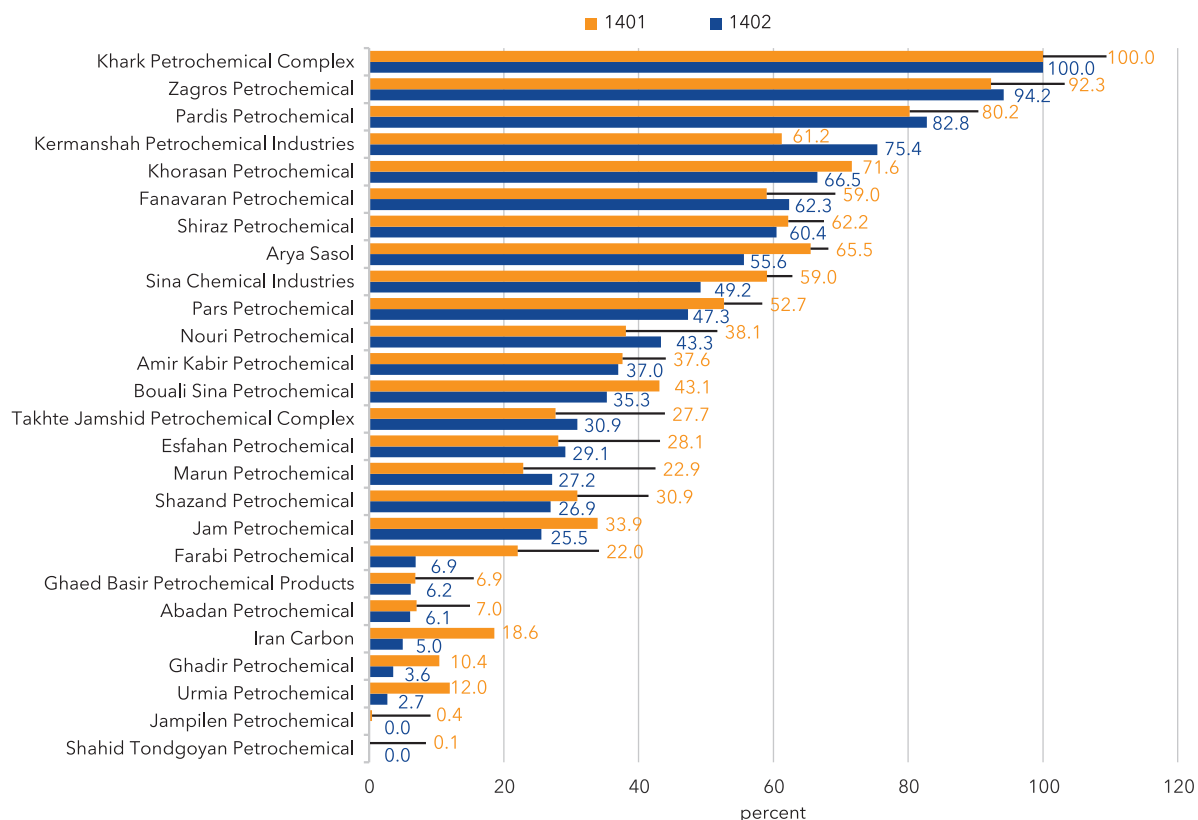
		1402	1401
1	Esfahan Petrochemical Company	63.2	-16.4
2	Marun Petrochemical Company	31.9	-14.0
3	Takhte Jamshid Petrochemical Complex	31.3	-5.9
4	Fanavaran Petrochemical Company	29.7	-16.1
5	Nouri Petrochemical Company	26.9	9.8
6	Khark Petrochemical Complex	25.7	20.2
7	Kermanshah Petrochemical Industries Co.	22.5	23.6
8	Zagros Petrochemical Company	22.3	11.8
9	Pars Petrochemical Company	12.1	40.0
10	Shazand Petrochemical Company	11.9	-5.3
11	Sina Chemical Industries Company	8.7	27.2
12	Ghaed Basir Petrochemical Products Co.	6.1	-41.5
13	Arya Sasol Company	4.9	0.9
14	Amir Kabir Petrochemical Company	3.3	-2.3
15	Shiraz Petrochemical Company	-6.9	69.6
16	Bouali Sina Petrochemical Company	-10.4	46.0
17	Pardis Petrochemical Company	-14.4	85.9
18	Jam Petrochemical Company	-20.5	16.4
19	Khorasan Petrochemical Joint Stock Company	-23.8	90.6
20	Abadan Petrochemical Company	-35.8	-75.8
21	Urmia Petrochemical Company	-58.0	71.7
22	Farabi Petrochemical Company	-58.3	5.7
23	Iran Carbon Company	-60.2	31.1
24	Ghadir Petrochemical Company	-62.9	-62.5
25	Shahid Tondgoyan Petrochemical Company	-100.0	-64.8
26	Jampilen Petrochemical Company	-100.0	-93.1

Source: Audited financial statements of companies available in <https://www.codal.ir/>

As for the exports to sales ratio of the listed petrochemical companies in capital market, in 1402 the highest ratio of 100 percent belonged to Khark Petrochemical Complex, while the lowest was attributed to Shahid Tondgoyan Petrochemical Company as well as Jampilen Petrochemical Company at zero percent. The exports to

sales ratio of the listed petrochemical companies in capital market in 1401 and 1402 registered 46.0 percent and 43.9 percent on average, respectively. Graph 21 depicts the exports to sales ratio of the listed petrochemical companies in capital market in 1401 and 1402.

Graph 21. Exports to Sales Ratio of Listed Petrochemical Companies in Capital Market in 1401 and 1402



Source: Audited financial statements of companies available in <https://www.codal.ir/>

The aggregated exports value of the listed petrochemical companies in Iranian capital market from 1400 to 1402 is presented in Table 11.

Table 11. Aggregated Exports Value of Listed Petrochemical Companies in Iranian Capital Market

	1400	1401	1402
Aggregated Sales Value (IRR trillion)	2,005	2,456	2,622
Annual Percentage Change	80.1	22.5	6.7

Source: Audited financial statements of companies available in <https://www.codal.ir/>

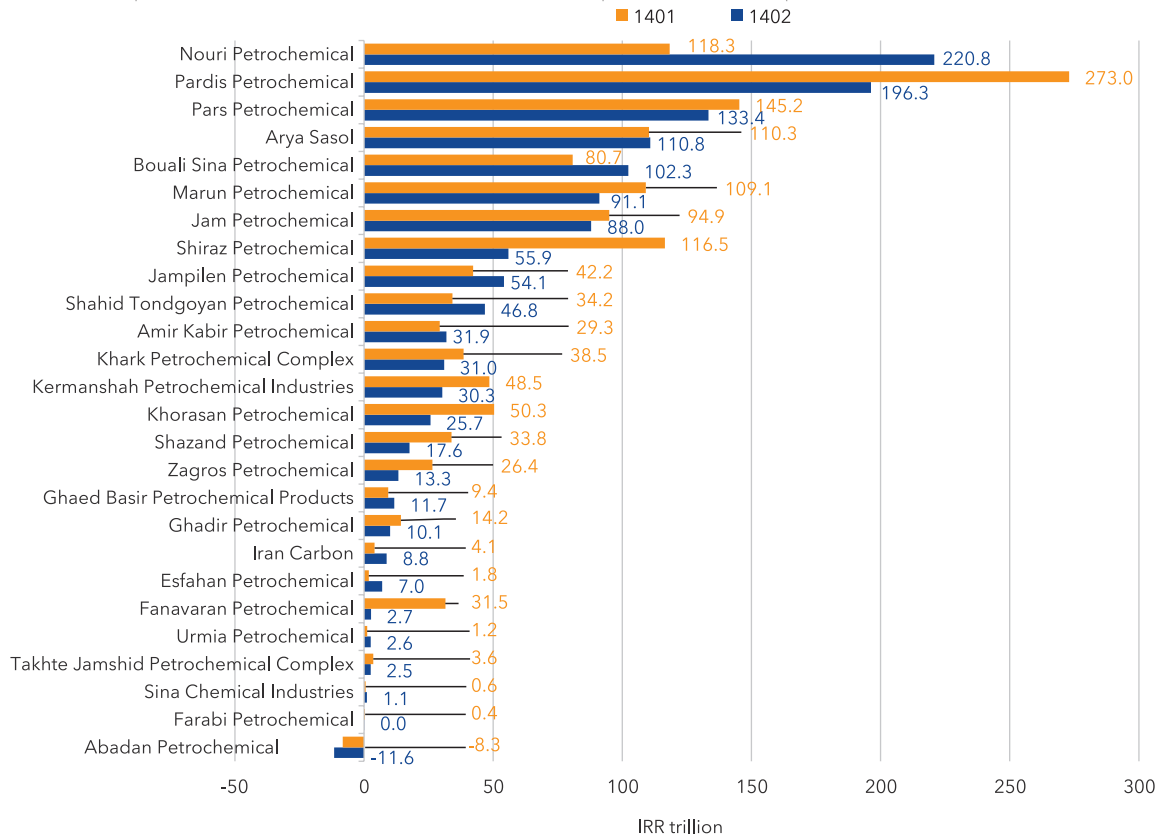
11. NET PROFIT AND NET PROFIT MARGIN OF THE LISTED PETROCHEMICAL COMPANIES

11-1. Net Profit of the Listed Petrochemical Companies

The net profit of the 26 listed petrochemical companies in the Iranian capital market that had reached IRR1,277 trillion in 1400, grew by 10.4 percent to IRR1,410 trillion in 1401, but it reversed course and fell by 8.9 percent to IRR1,284 trillion in 1402. Pardis Petrochemical Company enjoyed the highest net profit of IRR273.0 trillion in 1401 among

the listed petrochemical companies but in 1402, it was outperformed by Nouri Petrochemical Company with IRR220.8 trillion net profit. In 1401 and 1402, Abadan Petrochemical Company was the only listed company that suffered from net loss. Graph 22 depicts the net profit of the listed petrochemical companies in the Iranian capital market in 1401 and 1402.

Graph 22. Net Profit of the Listed Petrochemical Companies in Iranian Capital Market in 1401 and 1402



Source: Audited financial statements of companies available in <https://www.codal.ir/>

11-2. Growth Rate of the Net Profit of the Listed Petrochemical Companies

The highest growth rate of the net profit of the listed petrochemical companies in 1401 and 1402, respectively, belonged to Bouali Sina Petrochemical Company at 121.4 percent and Esfahan Petrochemical Company at 288.1 percent. On the contrary, Takhte Jamshid Petrochemical Complex incurred the highest contraction of 49.3 percent in its net profit in 1401 which was replaced by Fanavaran Petrochemical Company with 91.5 percent contraction in its net profit in 1402. The 91.5 percent fall in the net profit of the latter company in 1402 rooted in the severe fall in its

non-operating profit compared to its preceding year. As for Abadan Petrochemical Company, its net loss of IRR8.3 trillion in 1401 worsened and grew by 40.3 percent to reach IRR11.6 trillion in 1402. One reason which has caused this company to become loss-making is that it has sold its products at prices below the production cost. In 1402, the aggregated cost of labor and raw materials of Abadan Petrochemical Company have exceeded its sales value. In Table 12, the annual growth rates of net profit of listed petrochemical companies in 1401 and 1402 are presented.

Table 12. Annual Growth Rates of Net Profit of Listed Petrochemical Companies in Capital Market in 1401 and 1402 (percent)

		1401	1402
1	Esfahan Petrochemical Company	12.3	288.1
2	Urmia Petrochemical Company	63.7	119.0
3	Iran Carbon Company	53.9	115.0
4	Nouri Petrochemical Company	-10.1	86.7
5	Sina Chemical Industries Company	44.8	70.5
6	Shahid Tondgoyan Petrochemical Company	4.1	36.8
7	Jampilen Petrochemical Company	-12.8	28.2
8	Bouali Sina Petrochemical Company	121.4	26.7
9	Ghaed Basir Petrochemical Products Co.	-1.4	24.6
10	Amir Kabir Petrochemical Company	-29.3	9.2
11	Arya Sasol Company	-18.1	0.5
12	Jam Petrochemical Company	-1.4	-7.3
13	Pars Petrochemical Company	-9.5	-8.2
14	Marun Petrochemical Company	-22.9	-16.5
15	Khark Petrochemical Complex	35.0	-19.5
16	Pardis Petrochemical Company	62.1	-28.1
17	Takhte Jamshid Petrochemical Complex	-49.3	-28.5
18	Ghadir Petrochemical Company	-12.4	-29.1
19	Kermanshah Petrochemical Industries Co.	28.8	-37.6
20	Shazand Petrochemical Company	-38.6	-47.8
21	Khorasan Petrochemical Joint Stock Company	55.0	-49.0
22	Zagros Petrochemical Company	39.5	-49.9
23	Shiraz Petrochemical Company	109.6	-52.0
24	Farabi Petrochemical Company	0.0	-88.4
25	Fanavaran Petrochemical Company	52.3	-91.5
26	Abadan Petrochemical Company*	295.8	40.3

Source: Audited financial statements of companies available in <https://www.codal.ir/>

* The figure for Abadan Petrochemical Company shows the rise in net loss.

Table 13 also presents the aggregated net profit of the listed petrochemical companies in the Iranian capital market from 1400 to 1402.

Table 13. Aggregated Net Profit of Listed Petrochemical Companies in Iranian Capital Market

	1400	1401	1402
Aggregated Sales Value (IRR trillion)	1,277	1,410	1,284
Annual Percentage Change	18.0	10.4	-8.9

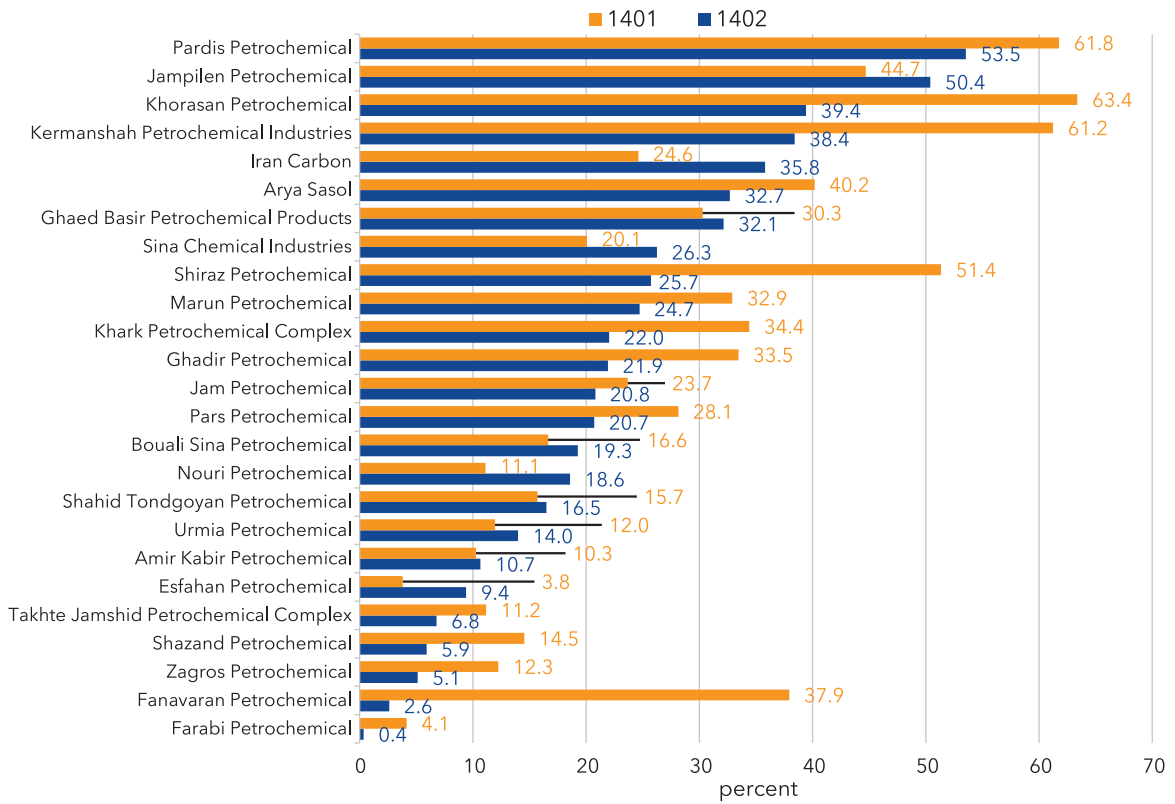
Source: Audited financial statements of companies available in <https://www.codal.ir/>

11-3. Net Profit Margin of the Listed Petrochemical Companies

As shown in Graph 23, among the listed petrochemical companies in the Iranian capital market in 1401, Khorasan Petrochemical Joint Stock Company enjoyed the highest net profit margin of 63.4 percent, while Esfahan Petrochemical Company experienced the lowest of 3.8 percent. As for 1402, Pardis Petrochemical Company and Farabi Petrochemical Company, respectively, experienced

the highest and lowest net profit margins of 53.5 percent and 0.4 percent. The net loss to sales ratio of Abadan Petrochemical Company that had registered 76.6 percent in 1401, grew to 144.8 percent in 1402. All in all, in 1402 the net profit margin of the 26 listed petrochemical companies averaged 15.7 percent, below the 24.0 percent of 1401.

Graph 23. Net Profit Margin of the Listed Petrochemical Companies in 1401 and 1402*



Source: Audited financial statements of companies available in <https://www.codal.ir/>

* The figure for Abadan Petrochemical Company is excluded as it had made loss in the period under discussion.

12. FORECASTED SALES VALUE AND NET PROFIT OF THE LISTED PETROCHEMICAL COMPANIES FOR 1403

The sales value and net profit of the listed petrochemical companies in the Iranian capital market are forecasted using their interim financial statements, their 12 months production forecast for 1403, the changes in the price of their products, and finally extending their 3-month net profit of 1403 to the whole year. Accordingly, the aggregated sales value of the 26 listed petrochemical companies for 1403 is forecasted IRR6,740 trillion to stand 12.8 percent above the actual aggregated sales value of IRR5,974 trillion in 1402. All in all, the fall in global petrochemical prices and domestic energy crisis - that ended up in lower production and exports - have resulted in a lower forecasted sales value growth rate of the aforementioned companies for 1403.

Nevertheless, as for net profit of the listed petrochemical companies, higher growth rate is forecasted than their sales value growth rate for 1403. The aggregated net profit of the 26 listed petrochemical companies for 1403

is forecasted IRR1,628 trillion, up 26.8 percent from their actual aggregated net profit of IRR1,284 trillion in 1402. The forecasted net profit of the listed petrochemical companies for 1403 by various companies reveals the highest forecasted fall of 51.0 percent in net profit for Kermanshah Petrochemical Industries Co., while the highest forecasted expansion of 13-fold in net profit for Fanavaran Petrochemical Company. The considerable forecasted expansion for net profit of Fanavaran Petrochemical Company for 1403, first, roots in its small net profit in 1402 and second, in the fall in its cost of production. The average net profit margin for the 26 listed petrochemical companies for 1403 is forecasted 17.8 percent (23.9 percent if Abadan Petrochemical Company is excluded). The forecasted sales value, net profit, and the net profit margin of the listed petrochemical companies in the Iranian capital market for 1403 is presented in Table 14.

Table 14. Forecasted Figures for Listed Petrochemical Companies in Capital Market in 1403 (IRR trillion)

		1403 Sales Value	1403 to 1402 Percentage Change of Sales Value	1403 Net Profit	1402 Net Profit	1403 to 1402 Percentage Change of Net Profit	1403 Net Profit Margin (percent)
1	Fanavaran Petrochemical Company*	123.2	21.1	37.6	2.7	1,313.6	30.5
2	Zagros Petrochemical Company	278.8	7.8	31.4	13.3	137.2	11.3
3	Bouali Sina Petrochemical Company	618.1	16.4	185.7	102.3	81.5	30.0
4	Farabi Petrochemical Company	13.9	4.9	0.1	0.0	72.5	0.6
5	Pars Petrochemical Company	685.4	6.5	205.9	133.4	54.3	30.0
6	Khark Petrochemical Complex	138.6	-1.3	45.7	31.0	47.6	33.0
7	Shiraz Petrochemical Company	248.8	14.5	78.6	55.9	40.7	31.6
8	Khorasan Petrochemical Joint Stock Company	82.5	26.7	36.1	25.7	40.6	43.7
9	Ghadir Petrochemical Company	55.5	20.6	13.1	10.1	29.6	23.6
10	Jampilen Petrochemical Company	121.3	13.0	67.2	54.1	24.2	55.4
11	Urmia Petrochemical Company	22.8	24.9	3.1	2.6	21.3	13.6
12	Marun Petrochemical Company	452.9	22.9	108.1	91.1	18.7	23.9
13	Nouri Petrochemical Company	1,464.5	23.2	257.8	220.8	16.8	17.6
14	Esfahan Petrochemical Company	80.9	8.0	8.2	7.0	16.3	10.1
15	Sina Chemical Industries Company	5.2	28.4	1.2	1.1	12.7	23.0
16	Shahid Tondgoyan Petrochemical Company	306.3	8.0	51.1	46.8	9.2	16.7
17	Takhte Jamshid Petrochemical Complex	51.1	36.5	2.7	2.5	7.9	5.4
18	Pardis Petrochemical Company	420.2	14.6	205.5	196.3	4.7	48.9
19	Jam Petrochemical Company	592.3	40.1	90.3	88.0	2.7	15.3
20	Ghaed Basir Petrochemical Products Co.	38.4	5.3	11.1	11.7	-4.9	29.0
21	Abadan Petrochemical Company**	8.0	0.0	-10.8	-11.6	-7.0	-134.7
22	Arya Sasol Company	237.1	-30.0	103.0	110.8	-7.0	43.5
23	Iran Carbon Company	28.5	16.4	6.8	8.8	-22.5	23.8
24	Amir Kabir Petrochemical Company	283.9	-5.1	23.7	31.9	-25.8	8.4
25	Shazand Petrochemical Company	326.3	9.3	8.7	17.6	-50.6	2.7
26	Kermanshah Petrochemical Industries Co.	55.9	-29.1	14.9	30.3	-51.0	26.6
Total		6,740.6	12.8	1,627.8	1,284.0	26.8	17.8

Source: Audited financial statements of companies available in <https://www.codal.ir/> and research calculation

* The considerable rise in the forecasted net profit of Fanavaran Petrochemical Company for 1403 roots in the 91.5 percent fall in its 1402 net profit compared to 1401. However, in the most optimistic scenario its forecasted net profit in 1403 stand below that of 1401.

** The figure for Abadan Petrochemical Company indicates a slight fall in its net loss.

13. THE IRANIAN PETROCHEMICAL INDUSTRY PROFITABILITY ANALYSIS

In this section, various factors that affect the profitability of the Iranian petrochemical industry are investigated as follows.

13-1. Price of Feedstocks

The price of gas feedstock for the Iranian petrochemical producers is the equally weighted average of the global and the domestic prices of the natural gas. The global gas price itself, is the average of the gas price in the four major natural gas hubs including Henry Hub of the United States, National Balancing Point (NBP) of the United Kingdom, Alberta Hub of Canada, and Title Transfer Facility (TTF) of the Netherlands. In addition, the domestic price of natural gas is the average of its exports, imports, and domestic consumer prices. That average price of gas feedstock, however, ought to lie between a minimum of IRR50 thousand per cubic meter and a maximum of the average exports price of its preceding month. Note that this pricing system does not properly function and is unreasonable due to various logics. The deficiencies of that pricing system specially appeared in the aftermath of the Russian Invasion of Ukraine and subsequently the European Energy Crisis. Precisely speaking, Iran benefits from abundant and cheap natural gas reserves which has prepared an exceptional ground for the Iranian petrochemical producers, known as comparative advantage. On the contrary, in Europe as an importer of the natural gas, the gas price is derived from the cost of transfer of gas and also that price is highly affected by ecopolitical issues. Given these explanations, the natural gas price in Europe has not to

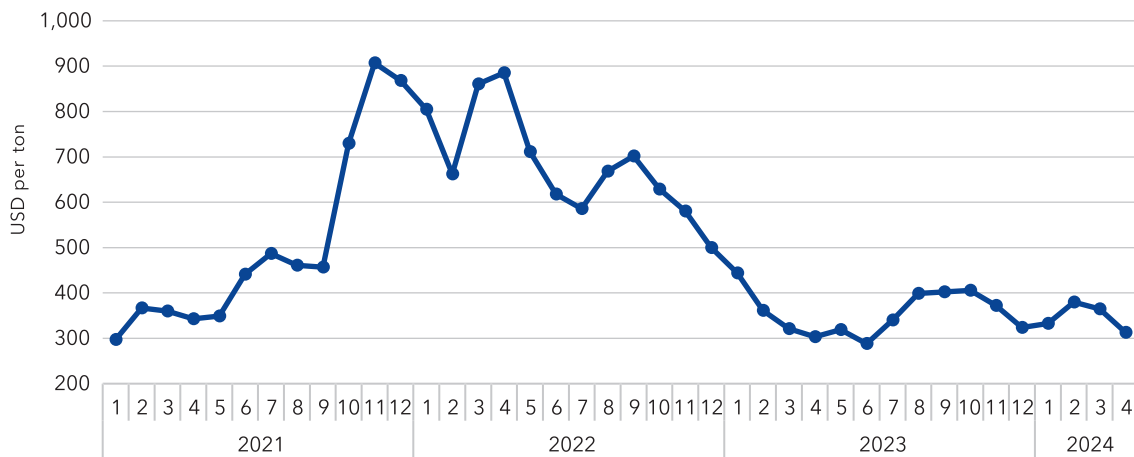
be taken into consideration for pricing of the natural gas feedstock for the Iranian petrochemical producers, since that practice wipes out the comparative and competitive advantage of the Iranian petrochemical producers and makes the profitability of those producers highly vulnerable to the international political circumstances. Moreover, the Government sometimes have violated this method of pricing. For instance, in 1401, the price of natural gas feedstock was fixed at the minimum of IRR50 thousand per cubic meter by the Government, resulting in a considerable source of economic rent in that year. Conversely, in 1402, the Government increased the natural gas feedstock price by 32 percent to IRR66 thousand, once its global price was decreasing. It is worth to mention that the cost of natural gas feedstock accounts for about 55 percent of the total production cost of Urea producers and 72 percent of the total production cost of Methanol producers. Accordingly, so long as the decreed pricing method exists, it would either serve as a source of economic rent or as a factor of decrease in the profitability of the Iranian petrochemical producers. Note that any decreed price for natural gas feedstock is not efficient, hence using the decreed price of natural gas feedstock also for natural gas as fuel (for countrywide industries) from 1400 onwards translates to expanding inefficiency to the whole industries.

13-2. Drop in Global Price of Major Exported Items

• **Urea:** as shown in Graph 24, the Persian Gulf FOB price of Urea per ton that had opened 2021 at USD297, grew by 192 percent to close that year at USD868. The severe Urea export restrictions of China coupled with the considerable rise in European natural gas price that consequently resulted in 70 percent fall in European production of Urea, are altogether referred to as the drivers of the rise in Urea price. Generally, the price of Urea is highly correlated with oil, coal, and natural gas

prices. As natural gas and coal are the main factors of the Urea production, any rise in their prices would escalate the Urea price in global markets. The price of petrochemicals kept on rising throughout 2022 and the price of Urea that averaged USD506 per ton in 2021, grew by 35.2 percent to USD684 in 2022 on average, however, it reversed course and in 2023, the price of Granular Urea - for instance - fell to USD357 per ton.

Graph 24. Developments of Granular Urea Persian Gulf FOB Price



Source: www.investing.com

On the basis of the latest report of the NIPC, in the year 1400, Kermanshah Petrochemical Industries Co., Shiraz Petrochemical Company, Pardis Petrochemical Company, and Khorasan Petrochemical Joint Stock Company, altogether accounted for 82.8 percent of the Urea production of Iran. These 4 companies have sold 5.7 million tons of Urea in total, of which 81.1 percent has been sold in foreign markets. On the basis of the Trade Promotion Organization of Iran, the average

price of Iran's exported Urea that had registered USD518 per ton in 1401, diminished to USD309 per ton in 1402, translating to high dependence of profitability of the Iranian petrochemical producers on the changes in the global Urea price. As shown in Table 15, the gross profit to sales ratio of exported Urea for the aforementioned producers that had registered 69.1 percent on average in 1401, fell to 52.5 percent in 1402.

Table 15. Major Urea Producers with Their Share in Total Domestic Production (percent)

Product	Share in Total Production in 1400	Ratio of Gross Profit to Sales of Exported Urea			
		1399	1400	1401	1402
Pardis Petrochemical Company	43.8	73.5	66.0	67.8	51.1
Shiraz Petrochemical Company	21.3	63.2	56.4	66.3	46.0
Kermanshah Petrochemical Industries Co.	9.6	71.9	69.1	70.8	57.9
Khorasan Petrochemical Joint Stock Company	8.1	68.6	66.0	71.5	54.9
Total	82.8	69.3	64.4	69.1	52.5

Source: Audited financial statements of companies available in <https://www.codal.ir/>

Fitch Institute has forecasted a fall in prices of fertilizer (such as Granular Urea) for 2024 compared to 2023. Precisely speaking, India's autarky in fertilizer production that was obtained thanks to the expansion in its domestic production capacity in 2020 to 2022, has resulted in fall in India's imports of Granular Urea. China's exports of Urea also grew in the aftermath of the lifting of the exports limitations. In addition, due to the likelihood of El Niño effect in 2024 and widespread drought, lower demand for fertilizers seems plausible. Accordingly, Fitch Institute has forecasted the price of Granular Urea per ton of USD349 in 2023 fall to USD300 in 2024 and to USD270 in 2027.

• **Methanol:** as a major petrochemical product, Methanol is used as the raw material for production of final goods including solvents, paints, plastics, and antifreeze and in some countries - especially in South America - is

used for producing biodiesel. Bearing 58 percent of Middle East Methanol production capacity, Iran is the top one Methanol producer in the region. The Iranian petrochemical companies produced 9.9 million tons of Methanol in 1402, of which, above 94.0 percent was exported. In the same year, Zagros Petrochemical Company, Fanavaran Petrochemical Company, and Khark Petrochemical Complex accounted for 39.4 percent of Methanol production of the country. Note that much of the sales value of these three companies is attributed to the sales of Methanol. As shown in Table 16, following its downward path from 1399, the ratio of gross profit to sales of exported Methanol for the three aforementioned companies that had averaged 34.7 percent in 1401, fell to 28.9 percent in 1402, attributable to the rise in cost of production, fall in global prices, or both.

Table 16. Major Methanol Producers with Their Share in Total Domestic Production (percent)

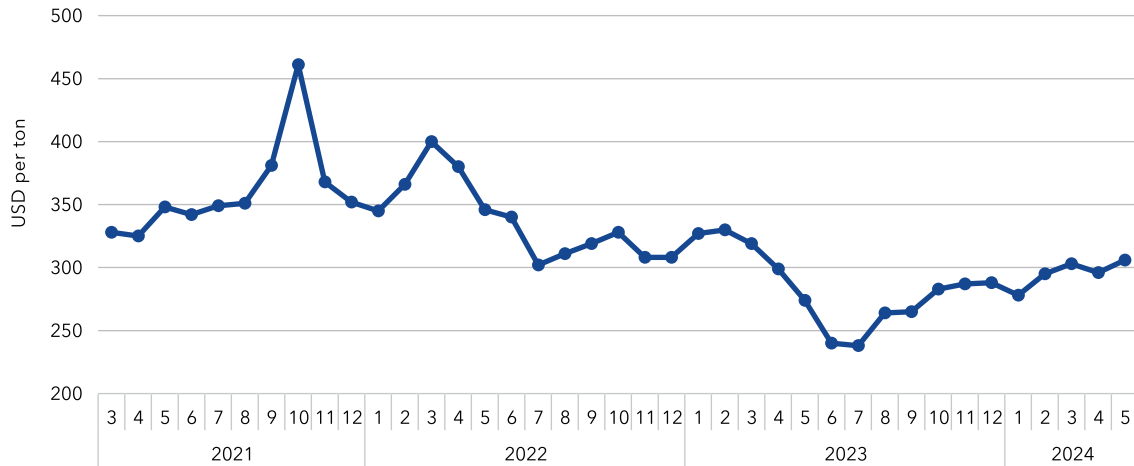
Product	Share in Total Production in 1402	Ratio of Gross Profit to Sales of Export Urea			
		1399	1400	1401	1402
Zagros Petrochemical Company	24.5	56.9	31.2	30.2	26.4
Fanavaran Petrochemical Company	8.2	58.2	52.4	31.4	32.5
Khark Petrochemical Complex	6.7	73.9	37.4	42.6	27.8
Total	39.4	63.0	40.3	34.7	28.9

Source: Audited financial statements of companies available in <https://www.codal.ir/>

As shown in Graph 25, the price of China Methanol (CFR) per ton - in destination including cost of transportation - averaged USD338 in 2022 and USD285 in 2023. As for Iran's exported Methanol, its price per ton averaged USD272 in 1401 and USD252 in 1402. All in all, it could

be concluded that the rise in the price of gas feedstock, considerable discount on exports of petrochemicals, the rise in supply of Methanol in global markets and subsequently fall in its price have altogether served as drivers of the fall in profitability of Methanol producers.

Graph 25. Price of China Methanol (CFR)



Source: www.investing.com

The nominal production capacity of the Methanol producers in the world in 2002 totaled 36.5 million tons with the actual production of 27.5 million tons in the same year. After 2 decades, the former rose to 139 million tons and the latter to 91 million tons. What matters in Methanol production in various parts of the world is the feedstock used for production. For instance, in the Middle East 100 percent of Methanol is produced from natural gas, while in south east Asia, 67 percent of Methanol is produced from coal. Note that the countries with access to natural gas benefit from comparative advantage in production of Methanol which has resulted in a wide gap between the global production capacity and the actual production of that product. Consequently,

the global price of Methanol is highly correlated with the price of natural gas and coal as feedstock. In its report of May 2024, The Energy Information Administration (EIA) has forecasted 14.5 percent and 2.0 percent fall in the price of natural gas and coal in the year 2024, respectively. Given the actual production of Methanol - below the nominal production capacity - and the downward forecast of the price of feedstocks for Methanol production in 2024, the price of Methanol is supposed to remain low. Under such circumstances, changes in the domestic price of gas feedstock and the USD/IRR exchange rate for conversion of export price of products to IRR could alter the profitability of the Iranian petrochemical industry.

13-3. International Sanctions

In the aftermath of the unilateral withdrawal of the US Administration from the JCOPA in 1397 and reimposition of sanctions on Iran, the price of Iran's CFR Methanol started to deviate from the global price of Methanol (in China and east Asia). In 1400, the former price stood 10 percent below the latter, contrary to the years 1395 and 1396 that those prices were the same. This differential in prices, however, originated in the considerable price discounts offered by Iran to Asian clients in order to

maintain Iran's market share. Additionally, the sanctions have also ended up in higher transportation costs for Iran. Precisely speaking, in 1395 - during JCPOA era - the cost of transportation of Methanol constituted 15 percent of the total costs of producer which doubled in 1399. Accordingly, the economic sanctions caused the profitability of the Iranian petrochemical producers to fall due to the higher cost of transportation coupled with more price discounts on exported items.

14. FINANCIAL RATIOS

The financial ratios are the numerical values according to those, meaningful information for assessment of a company performance or comparison of identical companies are gained. Taking into consideration the specific conditions of each industry, the financial ratios are industry-specific, i.e., they ought to be solely used for comparing the companies within the same industry. The financial ratios are categorized into five groups of liquidity, activity, solvency, profitability, and valuation.

- **Liquidity ratios:** these ratios are used as means of assessing the ability of the companies to cover their short-term debts. Among the liquidity ratios, the current ratio - current assets divided by current liabilities - is the most important. The higher the current ratio, the more likely the company is capable of settling its short-term liabilities. The current ratio of below unit indicates negative working capital and the likelihood of liquidity crisis. On the other hand, a considerably high current ratio alerts that the company is not efficiently using its current assets or its short-term financing facilities. A desirable current ratio in various industries is supposed to lie between 1 and 2. The quick ratio is stricter than the current ratio, as it excludes less-liquid assets such as inventory and advance payments from the current assets. The cash ratio is the most conservative liquidity ratio which comes from division of highly-liquid assets including cash and cash equivalents by the current liabilities.

- **Activity ratios:** these ratios show how efficiently a company uses its assets to generate revenues. The inventory turnover ratio - the cost of goods sold divided by the average inventory - is one of the chief activity ratios. The inventory turnover period which is the product of the inverse of inventory turnover ratio by 365 (days of a year) indicates the time interval (days) that the raw materials turn into the goods sold. A long inventory turnover period conveys that either a large amount of capital has been spent on inventory or the inventory of the company is out of date. On the contrary, a very short period might indicate that the company lacks raw materials which threatens its near future sales. The receivables turnover ratio is another activity ratio, obtained from revenues divided by the average receivables. The receivables

collection period - the inverse of receivables turnover ratio multiplied by 365 - measures the average number of days it takes for a business to collect payments from its customers for credit sales. A long period indicates that either a considerable portion of the company sales is credit or the company does not have a regular plan for collection of receivables. Conversely, a short period indicates ease of access to working capital. The operation cycle is the sum of receivables collection period and inventory turnover period. A short operation cycle is translated to less need for working capital and shorter period for converting goods produced to cash.

- **Solvency ratios:** these ratios measure how well a company cash flow can cover its long-term debt. The shareholder equity ratio, also known as equity ratio, is one of the chief solvency ratios, equaling total shareholders' equity divided by total assets. The ratio indicates the portion of assets held by the shareholders. The ratio is such crucial that the CBI has prevented the banks from making loans to companies with the equity ratios below 15 percent.

- **Profitability ratios:** these ratios measure the ability of a business to generate earnings relative to its revenues, operating costs, and balance sheet assets. They also indicate the efficiency of the managers, ability to make profit, and the return on investments. The return on assets (ROA) which is the net income divided by the total assets indicates how effective a company is at deploying assets to generate sales and profits. The minimum desirable threshold for ROA is 5 percent. The return on equity (ROE) is the net income divided by the shareholders' equity and measures the ability of the company to earn a return on its equity investment. The net profit margin or net margin, reflects a company's ability to generate earnings after all expenses and taxes are accounted for. It is obtained by dividing net income by total revenues. Operating margin compares operating profit to revenues, measuring how well the company has made profit from its normal operations. The continuous drop in this ratio can put a company at a high-risk situation.

In Tables 17 and 18, major financial ratios of the listed petrochemical companies in the TSE are presented.

Table 17. Liquidity and Activity Ratios in 1401

Product	Liquidity Ratios			Activity Ratios		
	Current Ratio	Quick Ratio	Cash Ratio	Inventory Turnover Period (day)	Receivables Collection Period (day)	Operation Cycle (day)
Arya Sasol Company	2.3	1.4	0.6	69	62	130
Bouali Sina Petrochemical Company	1.3	0.7	0.3	57	30	88
Pars Petrochemical Company	2.2	1.9	0.8	37	107	145
Jam Petrochemical Company	1.7	1.3	0.3	38	104	142
Jampilen Petrochemical Company	3.5	2.9	2.9	57	3	61
Khorasan Petrochemical Joint Stock Company	8.2	7.5	3.9	44	124	168
Zagros Petrochemical Company	0.9	0.7	0.2	32	65	97
Urmia Petrochemical Company	1.1	0.4	0.1	158	57	215
Shazand Petrochemical Company	1.7	1.1	0.4	50	41	91
Ghaed Basir Petrochemical Products Co.	2.5	0.7	0.1	153	34	188
Abadan Petrochemical Company	4.1	3.9	1.4	41	333	374
Pardis Petrochemical Company	0.5	0.3	0.1	70	155	225
Takhte Jamshid Petrochemical Complex	1.3	0.5	0.1	97	52	149
Khark Petrochemical Complex	3.1	2.3	0.7	78	98	176
Sina Chemical Industries Company	4.7	3.1	0.8	45	70	115
Esfahan Petrochemical Company	1.5	1.0	0.2	61	85	146
Amir Kabir Petrochemical Company	1.9	1.2	0.5	43	33	76
Ghadir Petrochemical Company	0.8	0.4	0.2	53	30	83
Farabi Petrochemical Company	0.8	0.4	0.3	35	16	50
Fanavar Petrochemical Company	1.3	1.2	0.8	47	97	144
Kermanshah Petrochemical Industries Co.	3.0	2.7	0.2	60	202	262
Iran Carbon Company	2.2	1.5	0.2	51	85	136
Shahid Tondgoyan Petrochemical Company	1.4	0.9	0.6	51	20	71
Shiraz Petrochemical Company	5.4	4.8	1.9	71	169	240
Marun Petrochemical Company	1.4	1.0	0.5	39	104	143
Nouri Petrochemical Company	1.2	0.8	0.4	44	64	108
Simple Average	2.3	1.7	0.7	61	86	147
Asset-weighted Average	2.4	2.0	0.8	48	119	167
Income-weighted Average	2.1	1.6	0.7	49	91	140

Source: 1401 Audited financial statements of companies available in <https://www.codal.ir/>; research calculations

Table 18. Investment and Profitability Ratios in 1401 (percent)

Company	Solvency Ratios		Profitability Ratio		
	Equity Ratio	Operating Margin	Return On Assets (ROA)	Return on Equity (ROE)	Net Profit Margin
Arya Sasol Company	60	33	51	83	33
Bouali Sina Petrochemical Company	41	16	41	118	17
Pars Petrochemical Company	81	26	18	22	28
Jam Petrochemical Company	51	24	38	73	25
Jampilen Petrochemical Company	73	40	77	107	50
Khorasan Petrochemical Joint Stock Company	82	66	79	96	63
Zagros Petrochemical Company	34	14	29	88	14
Urmia Petrochemical Company	26	18	16	55	12
Shazand Petrochemical Company	43	12	31	58	15
Ghaed Basir Petrochemical Products Co.	64	35	56	81	30
Abadan Petrochemical Company	9	-69	-30	-176	-77
Pardis Petrochemical Company	75	54	44	58	63
Takhte Jamshid Petrochemical Complex	46	11	14	28	10
Khark Petrochemical Complex	68	40	50	78	34
Sina Chemical Industries Company	79	21	11	14	20
Esfahan Petrochemical Company	14	10	8	67	4
Ghadir Petrochemical Company	50	34	48	86	33
Farabi Petrochemical Company	28	6	7	24	4
Fanavaran Petrochemical Company	43	15	23	51	38
Amir Kabir Petrochemical Company	50	15	42	89	15
Iran Carbon Company	67	17	28	41	25
Kermanshah Petrochemical Industries Co.	81	67	51	65	61
Shahid Tondgoyan Petrochemical Company	47	15	28	59	16
Shiraz Petrochemical Company	74	60	54	80	51
Marun Petrochemical Company	46	24	35	61	33
Nouri Petrochemical Company	25	9	25	81	11
Simple Average	52	24	34	57	24
Asset-weighted Average	58	28	35	63	31
Income-weighted Average	50	24	36	73	26

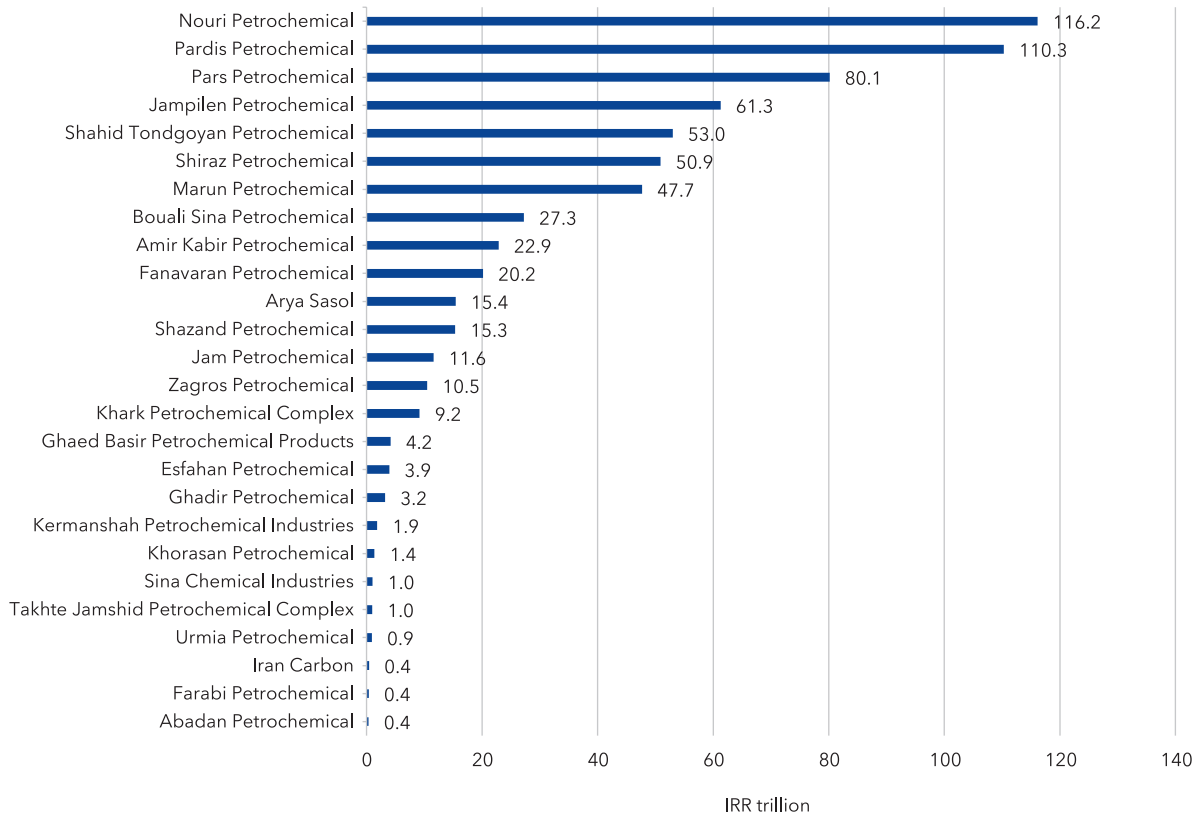
Source: 1401 Audited financial statements of companies available in <https://www.codal.ir/>; research calculations

15. CASH BALANCES OF THE LISTED PETROCHEMICAL COMPANIES (END OF 1402)

Among the 26 listed petrochemical companies in the Iranian capital market, Nouri Petrochemical Company as well as Pardis Petrochemical Company had respectively the highest cash balances of IRR116.2 trillion and IRR110.3 trillion at the end of 1402. The cash balances of the 26 listed petrochemical companies in the Iranian capital market totaled IRR670.5 trillion by the end of 1402 and should their investment in the fixed-income mutual funds be included, their cash balances rise to IRR710.8 trillion

in total. Note that much of the cash balances of the listed petrochemical companies are deposited in the state-owned banks which is not far-fetched as most of those companies are state-owned in nature. Accordingly, and notwithstanding the large amount of the cash balances of the listed petrochemical companies, only 5.1 percent of them were deposited in Middle East Bank. Graph 26 presents the cash balances of the listed petrochemical companies at the end of 1402.

Graph 26. Cash Balances of the Listed Petrochemical Companies at the End of 1402



Source: Audited financial statements of companies available in <https://www.codal.ir/>

16. BALANCE OF EXTENDED FACILITIES OF THE IRANIAN PETROCHEMICAL COMPANIES (AS OF 06/02/1403)

Ease of access to sufficient funds for investment or working capital for small and medium enterprises is crucial. All in all, corporate finance can be carried out either from intra sources or from extra ones. For instance, a company can finance its expansion plans via accumulated profit (retained earnings), new funds injected by the shareholders or through financial markets including money market, capital market, or even unofficial sources. As the capital market of Iran is not deep enough and the real interest rate in the money market is negative, the companies are reluctant to raise fund from the capital market, subsequently they are more willing to take out loans from the banks. Hence, the Iranian banking system serves as the main external source of finance for businesses.

According to the circular of the Central Bank of Iran, issued in the year 1400, the banks can make loans to firms up to 90 percent of their sales value of their preceding year in form of working capital. According to the CBI database, on 06/02/1403, the balance of the extended facilities to the listed and unlisted Iranian petrochemical companies,

respectively, amounted to IRR300.5 trillion and IRR635.6 trillion.¹⁵ The ratio of the balance of extended facilities to the sales value of the listed petrochemical companies in the Iranian capital market in 1402 registered 11.3 percent, below that of the other listed industries, indicating lower dependency of the petrochemical industry on the money market.

As for the non-performing loans (NPL), that of the listed and unlisted petrochemical companies under survey registered IRR221.1 trillion on 06/02/1403, equaling 23.6 percent of their balance of extended facilities. Note that much of the non-performing loans of the surveyed petrochemical companies is attributed to the unlisted petrochemical companies. On average, the NPL ratio of listed and unlisted petrochemical companies on the same date registered 2.1 percent and 33.8 percent, respectively. On the basis of the most recent CBI data while preparing this Report, the NPL ratio of the Iranian banking system by the end of fall 1402 reached 6.0 percent, far below the NPL ratio of the unlisted Iranian petrochemical companies.

15. Including the 26 listed petrochemical companies in Table 8 and 30 largest unlisted petrochemical companies in terms of production capacity based on the NIPC reports.

17. BALANCE OF GUARANTEES AND LETTERS OF CREDIT

Bank guarantees (BG) and letters of credit (LC) are among the financial products that not only serve as a source of revenues for banks, but also facilitate the economic activities and contribute to economic growth. Due to their lower risk compared to the loans, banks are highly interested in issuing guarantees as well as letters of credit. On 06/02/1403, the balance of guarantees of the 26 listed and 30 unlisted petrochemical companies under

survey registered IRR104.1 trillion and IRR192.6 trillion, respectively. As for balance of the letters of credit, that of the listed companies registered IRR45.9 trillion and that of the unlisted companies registered IRR112.3 trillion on the same date. All in all, on the same date the balance of guarantees as well as the letters of credit of listed and unlisted petrochemical companies under survey altogether amounted to IRR454.8 trillion.

18. UNFULFILLED OVERDUE FOREIGN EXCHANGE OBLIGATIONS (AS OF 06/02/1403)

The Iranian importers who provide foreign currencies for their imports from the Iranian banking system are required to import the goods they have officially declared in a given period of time, otherwise they would be classified as importers with unfulfilled overdue foreign exchange obligations. Once these sorts of obligations exceed 10 percent of total foreign exchange obligations of the applicants (either individuals or legal entities), they would be deprived of some banking services such as facilities and remittance of foreign currencies. On 06/02/1403, the unfulfilled overdue foreign exchange

obligations of the 26 listed petrochemical companies and 30 unlisted petrochemical companies under survey registered EUR28.4 million and EUR412.5 million, respectively. On the same date, these sorts of obligations formed 2.3 percent and 11.0 percent of the total foreign exchange obligations of listed and unlisted petrochemical companies, respectively, indicating lower share of petrochemical industry compared to other industries in total foreign exchange obligations, mainly due to the lower dependency of the Iranian petrochemical industry on imports of raw materials.

19. CHALLENGES OF THE IRANIAN PETROCHEMICAL INDUSTRY

19-1. Natural Gas supply Deficit

Despite bearing the 2nd largest natural gas reserves in the world, Iran faces gas supply crisis especially during cold seasons, due to increasing consumption of natural gas as well as gas production limitations. High share of natural gas in the country's energy consumption (70 percent), suboptimal gas consumption, high dependency of gas production on South Pars Gas-Condensate Field (South Pars Field for short) and declining in the pressure of that field and lack of investment in that area have altogether made energy supply in Iran a daunting task.

As a result of the expansion of South Pars Field and the rise in its gas production, various sectors of the economy tend to use as much as possible from that source, i.e., 80 percent of households, 61 percent of commerce and public services, 79 percent of industry sector, 13 percent of transportation, 32 percent of agriculture and 55 percent of the petrochemical feedstocks energy consumption is directly dependent on the natural gas. Additionally, due to the socio-political concerns and implications, any rise in gas price is challenging. Accordingly, no sufficient attention has been paid for efficient gas consumption and use of high-efficiency equipment. Consequently, investing in energy consumption optimization plans is not economically justifiable, causing suboptimal natural gas consumption to maintain.

In addition to the aforementioned issues, Iran's capacity of gas production and storage have been troublesome. The economic and political status of the country has limited the investment in gas production, especially in South Pars Field, hence, the gas production could not be expanded in line with the rise in gas consumption. These factors have altogether resulted in Iran's natural gas supply crisis. As the South Pars Field that supplies around 74.9 percent of Iran's natural gas production has passed half of its life from 1402, an annual 10-billion cube meter decline in its production is anticipated. This is like taking one phase of the South Pars Field out of production every year. In the year 1401, the

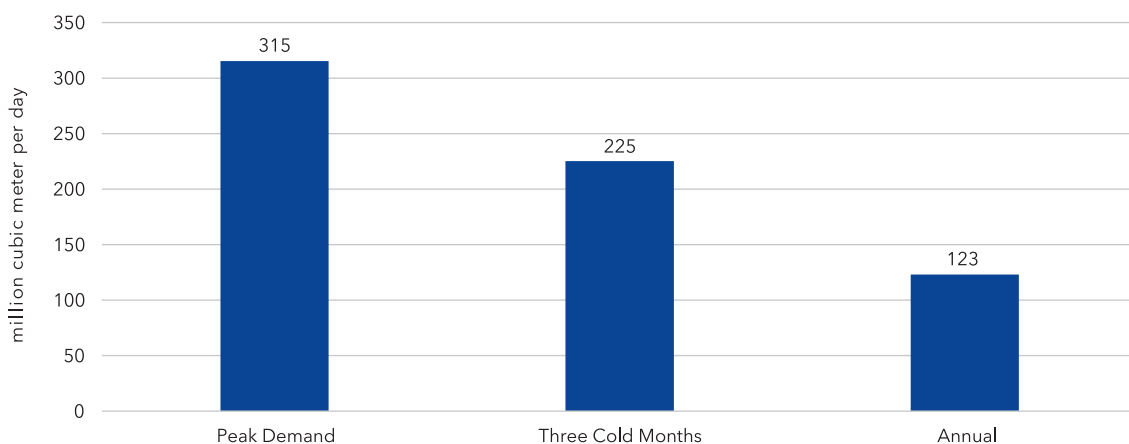
gas pressure of the Iranian section of South Pars Field was 120 bars that is predicted to decline by 7 bars per annum from 1402 onwards. The Qatari section of South Pars field (North Dome Field) reached its second half of its life in the past years, but contrary to Iran, Qatar prevented that section from declining in production through new investments and also collaboration with large and well-known companies (especially TotalEnergies) in installation of huge 20,000-ton platforms (15 times larger than those installed in the Iranian section) and large compressors. Additionally, Qatar signed new contracts in order to rise gas production of the Filed by 30 percent till 2027. This is while for any new investment in South Pars Field, at least it takes 5 years to reach operation stage.

Given that the supply of natural gas for households and commercial sector is the government priority and their gas consumption for heating is also increasing, the natural gas production capacity limit has specially limited the supply of gas to petrochemical and steel producers. For instance, prior to the year 1398, the seasonal deficit of natural gas supply was managed through using alternative liquid fuels in powerplants, however, in recent years the industry sector faced obstacles in providing natural gas, mainly due to natural gas production limits as well as more consumption of natural gas by other sectors. In the year 1401, the limited gas production during the cold seasons of the year not only put the industries and powerplants to trouble, but also disturbed gas injection to oil fields, causing more limitations on petrochemical and steel producers. In the year 1401, the natural gas supply deficit in the 3 coldest months of the year and the coldest month of that year averaged 225 million cube meters and 315 million cube meters, respectively. In the second half of 1402, Zagros Petrochemical Company, Shiraz Petrochemical Company and Khorasan Petrochemical Joint Stock Company, respectively, experienced gas cut offs of 63 days, 52 days

and 59 days. As no remarkable action has been taken in order to solve the natural gas supply deficit in recent years, further obstacles for the petrochemical and steel producers in coming years is likely to happen, which may end up in

imports of the natural gas, notwithstanding the fact that Iran ranks among the largest countries in terms of oil and gas reserves. In Graph 27, the supply deficit of the natural gas in the year 1401 is depicted.

Graph 27. Natural Gas Supply Deficit in Iran in 1401



Source: IRI Parliament Research Center

19-2. Carbon Tax

In order to address their environmental concerns, the EU members devised Emissions Trading System (ETS) that seeks to reduce carbon emission through levying tax on imports of the goods that are drivers of the environment pollution. By the end of 2023, the EU members reached an agreement in that regard named Carbon Border Adjustment Mechanism (CBAM). On the basis of CBAM, tariffs will be effective gradually in various phases and apply to imports of certain goods including steel, aluminum, cement, electricity, fertilizers and hydrogen from the year 2026. The importers of the aforementioned products to the EU countries are required to declare the carbon dioxide emission associated with the production

of those certain products and if the level of emission violates the EU standard, they are required to pay the corresponding tariff based on the CBAM.

It should be noted that the EU carbon tax ought to be paid just once, i.e., if a steel producer in China pays its carbon tax within its country of origin, the importer of that steel to the EU is exempt from EU carbon tax. This may encourage non-EU governments to device carbon taxation and benefit from its proceeds themselves. Moreover, levying tax on other sorts of goods, especially petrochemicals in addition to fertilizers by the EU members in future seems plausible, which in effect would cause the profitability of petrochemical producers to decline.

19-3. Regional Competitors of the Iranian Petrochemical Industry

The chemical and petrochemical industries are considered as the main drivers of the economies of the Arab States of the Persian Gulf, who seek increasing value-added of the economy via their oil and gas reserves, expanding exports, and higher production and international collaborations. Among this sort of countries, Qatar is worthy to be mentioned. As one of the largest producers and exporters of the natural gas in the world, Qatar has considerably invested in its petrochemical industry. The total production capacity of Qatar petrochemical industry that had registered 7 million tons in 2010, rose to 77 million tons in 2023. Moreover, in 2022 the exports value of chemicals of Qatar grew by 10.5 percent to USD22.5 billion compared to its preceding year. The exports value of chemical products of Qatar is estimated to reach IRR28 billion in 2023. In 2022, Qatar signed a contract with Chevron Phillips Chemical to build the largest petrochemical complex in the Middle East. The estimated capital for building that complex, Ras Laffan Industrial City is estimated USD6 billion and would be capable of producing 2.1 million tons of ethylene and 1.7 million tons of high-density polyethylene per annum. By launching Ras Laffan Industrial City, till 2026 the total petrochemical production capacity of Qatar is expected to expand by 50 percent to 14 million tons. Moreover, Qatar intends to expand its Liquefied Natural Gas (LNG) production through new investments in Qatari Section

of South Pars Gas-condensate Field (North Dome). In its initial phase, the LNG production capacity of Qatar is planned to rise to 110 million tons in 2026 from 77 million tons in 2023, and in the second phase to 126 million tons in 2028.

The expansion of Qatar's petrochemical production capacity challenges the Iranian petrochemical industry through 2 channels. First, higher production of petrochemicals by Qatar translates to more competition between Iran and that country regarding sales of petrochemicals (especially LNG) in China and India - major exports destinations of Iran - which may force Iran to offer more price discount to its parties to maintain its market share. Second, as much of the petrochemical feedstock of Qatar is provided through North Dome/South Pars Gas Field - which is shared with Iran - subsequently higher production by Qatar leads to lower gas pressure as well as lower gas reserves available to Iran. It is estimated that in recent years the gas pressure of South Pars Gas Field have declined by 2 to 3 percent on average per annum. Also, as a result of the imposition of sanctions on Iran, foreign investment in the country is highly limited. Lack of enough investment in South Pars Gas-condensate Field and its lower gas pressure and subsequently gas supply deficit in Iran could altogether cause Iran to lose part of its global market share of petrochemicals in favor of regional competitors.

19-4. Government Ownership in the Iranian Petrochemical Industry

In line with the Privatization Plan, in the late 1380s the IRI Government in conjunction with the NIPC initiated to privatize the state-owned petrochemical companies. According to Law on Implementation of General Policies of Article 44 of the IRI Constitution, 80 percent of the shares of the state-owned companies that were subject to that law ought to be disposed to the private sector and the remaining 20 percent be in the hands of the Government. Finally, it was decided that half of that 80 percent of shares that was planned to be disposed to the private sector be transferred to the individuals as Justice Shares. Notwithstanding the fact that 40 percent of the shares of those state-owned companies were transferred to the 6 bottom income deciles, the new shareholders were not engaged in management of those privatized companies and as previously mentioned, the privatized companies through Justice Shares were managed by Provincial Investment Companies that were themselves directly formed by the Government. So, in fact, given that 40 percent of the privatized companies shares were Justice Shares and 20 percent were owned by the Government, the so-called privatized companies were again managed by the Government. In addition to Justice Shares, part of the shares of the state-owned petrochemical companies were disposed to the public institutions in exchange of settlement of the Government debts to them. The remaining shares were also planned to be sold in the

capital market, albeit the Iranian capital market was not deep enough for that practice. Precisely speaking, the value of the petrochemical companies that were supposed to be privatized by the end of 1380s was estimated USD120 billion at that time, while the value of all listed companies in the Iranian capital market amounted to USD36 billion only. Hence, due to the lack of liquidity, the shares of state-owned petrochemical companies were very hard to be sold in the stock market. For instance, in the year 1401, 12 percent of the shares of PGPIC was planned to be sold to the private sector through the largest privatization process in Iran. In that process, only 2 companies including Tehran Oil Refining Company (much of its shares were disposed as Justice Shares) and AHDAF Investment Company (owned by the Oil Industry Pension Fund) were willing to buy PGPIC shares and eventually the latter company could own that 12 percent of PGPIC shares. Under such circumstances, Foreign Direct Investment (FDI) could be a solution to the limitations of privatization of state-owned companies, however, due to legal obstacles, privatization in Iran cannot benefit from the advantages of FDI and much of the Iranian petrochemical industry remains in hands of the Government. All in all, so long as the Government intervention exists in the Iranian petrochemical industry (as the main supplier of energy), the private sector remains reluctant to invest in that industry even if financial obstacles are eliminated.

20. SWOT ANALYSIS OF THE IRANIAN PETROCHEMICAL INDUSTRY

Strengths

- Exports of more of the products with high value-added, especially the polymers
- Long history of Iranian petrochemical products in the global markets
- Expanding investment in developmental plans

Weaknesses

- Large amount of capital needed for construction of new production lines
- Lower degree of purity of the Iranian petrochemicals compared to those of the competitors
- Lack of proper infrastructure for exports of petrochemicals to Europe and Far East
- Investing in lower value-added products like methanol

Opportunities

- Increasing global prices of petrochemicals in line with the boom in their demand
- Abundant oil and gas reserves in Iran
- New technologies for processing raw materials
- Access to open waters
- Creating appropriate infrastructures in the three special economic zones

Threats

- Decreed foreign exchange rates as well as increasing costs of production due to domestic inflation
- Pricing of petrochemical feedstock by the government
- Likelihood of presence of international petrochemical companies in the region to access to cheap raw materials
- Likelihood of imposition of more economic sanctions on Iran
- Wider gap between the official and free market exchange rates
- Limited number of exports parties
- Lack of timely and continuous supply of petrochemical feedstock that might be worsen in future

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