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IRAN'S ENERGY POLICY AFTER THE NUCLEAR DEAL



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Cover photo credit: Raheb Homavandi/Reuters. Gas flares from an oil production platform at the Soroush oil fields with an Iranian flag in the foreground.

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EXECUTIVE SUMMARY

This report looks at changes to Iran's energy policy in light of the 2012 acceleration of economic and energy sanctions that the country faced because of its nuclear program, as well as Iran's July 2015 nuclear deal with the Western powers. To gain a better understanding of the psychology and rationale of the Iranian leaders with regard to their energy policy, this report starts by discussing the history of Iran's energy industry, including the country's conflicts with the international community over its energy resources. These historical examples, which are discussed in detail, indicate that after any conflict and relief from international sanctions, Iran took steps toward increasing its domestic capability in order to become more independent.

The next section of the report is dedicated to changes in Iran's energy policy since 2012, including the impact of the sanctions relief that was part of the July 2015 nuclear deal. It compares Iran's crude oil and natural gas production and export policy after the 1979 Revolution with those from after the 2012 sanctions and the 2015 nuclear agreement. Iran's upstream and downstream energy policy, its plans for its petrochemical industry, and its new upstream investment regulation (Iran Petroleum Contract) are discussed in detail. Other emphasized topics include Iran's energy diplomacy; plans for reintegrating with the global energy market; strengthening its political and economic ties with its Arab neighbors; increasing incentives for international investors to invest in its energy industry; attempts to regain its lost oil market share; controlling its domestic energy consumption; and other specific measures to increase the country's resistance toward possible sanctions and limitations in the future, based on the doctrine of "Economy of Resistance." It is important to note that this report only discusses the changes in Iran's energy policy and diplomacy since 2012. Hence, analyzing the viability of each policy is above the scope of this report. Oil is not only the main driver of Iran's economy and its primary source of income, but also an important diplomatic tool. Nuclear-related sanctions on Iran's energy industry, particularly since 2012, have created a new approach among Iranian leaders toward the economy, energy industry, and oil diplomacy. This will be particularly true in light of the possible sanctions relief prompted by the nuclear agreement between Iran and the P5+1 (China, France, Germany, Russia, the United Kingdom, and the United States) reached on July 14, 2015.

This new approach is mostly based on Iranian Supreme Leader Ayatollah Ali Khamenei's doctrine of the "Economy of Resistance," which seeks to create resistance toward current and possible future sanctions or international pressures on the Iranian economy, particularly on its oil and gas exports. The "Economy of Resistance" seeks to increase the value of non-oil exports and of the value-added chain of production inside the country, lower

energy consumption, and boost economic self-reliance.¹ The doctrine also places special emphasis on exporting downstream products (such as refined petroleum products) and petrochemical products. The "Economy of Resistance" also focuses on converting part of Iran's natural gas into electricity, and on exporting that electricity.

One of Iran's other major policies is to increase investment incentives by modifying its upstream investment regulations for oil and gas, and its terms and conditions for foreign investment. These newly reformed regulations consider flexible ceilings for profit and cost, and also focus on integrating the exploration, development, and production processes. Iranian petroleum officials called the new upstream investment contract the Iran Petroleum Contract (IPC). This model is introduced only for upstream investment contracts and covers exploration, development, and production of the oil and gas fields. Iran reformed its upstream energy contracts because, given the risks of investment in Iran (particularly international sanctions), the existing contracts were not attractive enough to engage and maintain the international investors active in its energy industry. (This is discussed in detail in section 6.1.) According to the IPC economic model, the profit rate per barrel increases in correlation with the risk of investment in each project.² Although the details of the IPC have not yet been officially introduced by the Ministry of Petroleum, the contract will most likely extend the duration of investment from seven years to twenty years by involving foreign investors in the production process.³ Iran hopes to increase the quality of its work and protect its hydrocarbon reservoirs by involving investors for longer periods of time, and by giving them a more vested stake in the field.⁴ This factor could have a political advantage for the Iranian side, as international partners would have shared profits and interests in Iran for longer periods of time.⁵ Involving international oil companies (IOCs) in the production process will also help Iran to better market and sell its oilfield products, thereby increasing its market share.

Allocating its foreign currency reserves to investment in the energy sector, and to international companies, allows Iran to utilize part of its oil revenue that has been in international escrow accounts outside of Iran since 2012. The top priorities of Iran's petroleum ministry and the

1 This means that, instead of exporting raw materials such as crude oil or natural gas, Iran would process them domestically and export the final product. For instance, Iran could refine its crude oil or condensate domestically and export the refined petroleum products. It could also convert its natural gas to electricity or petrochemical products, and export these instead of natural gas.

2 In other words, as the risk of investment increases for each field, the investor's reward or profit for each barrel it produces will increase. Interview with Seyed Mehdi Hosseini, *SHANA*, February 2014, <http://www.shana.ir/fa/newsagency/212965/دنا-اوخ-دوخ-یوس-هب>.

3 Sara Vakhshouri, "Iran Offers New Terms for Oil Contracts," *Al-Monitor*, February 26, 2014, <http://www.al-monitor.com/pulse/originals/2014/02/iran-oil-contract-sanctions-energy-nuclear.html>.

4 Ibid.

5 Ibid.

National Iranian Oil Company (NIOC) include: increasing Iran's oil and natural gas production; regaining its lost market share of more than one million barrels per day and its position as the second-leading exporter in the Organization of the Petroleum Exporting Countries (OPEC); and increasing its share of exports in the global natural gas market. Beyond that, exchanging oil for goods or services, along with other incentives such as discounting oil, would be an important strategy for Iran to try to regain its lost market share.

Iran has twelve shared oil and gas fields with its neighbors. Tehran has adopted a new approach toward its neighbors with regard to its energy diplomacy. One of Iran's priorities is to increase the export of crude oil, refined petroleum products, natural gas, and electricity to Turkey, Iraq, and other Gulf Cooperation Council (GCC) neighbors. It aims to use these countries as transit points to send Iranian natural gas to international markets—the European Union (EU) in particular—and vice versa (e.g., exporting natural gas to Oman and using its liquefied natural gas (LNG) facilities to

re-export gas; pursuing oil-swap plans with its neighbors north of the Caspian Sea such as Azerbaijan). Both before and after 1979, Iran's policy for securing market share was to build or purchase a share of refineries outside of Iran, but the country never obtained a significant share of any refinery outside of its borders. Recently, however, Iran has been actively attempting to build refineries in countries like Iraq; the chairman of NIOC announced in August that his company had opened an office in Iraq.⁶ Iran is also actively seeking to increase economic and energy ties with its neighbors through industrial exports and engineering services.⁷

6 "NIOC Opened an Office in Iraq," SHANA, August 31, 2015, <http://www.shana.ir/fa/newsagency/246128>.

7 Ibid. Iranian oil officials announced that they have exported \$450 million of engineering services to Turkmenistan, and this number is planned to increase to \$1 billion by the end of March 2015.

1. BACKGROUND

The history of Iran's hydrocarbon industry is one of ups and downs. It has engendered a palpable sense among Iranian leaders of the need for self-reliance and increased "resistance" of the Iranian economy against international pressures. As a result, Iranian energy policy has become predicated upon survival and preparing for the worst.

Iran's oil discovery dates back to 1901, when Iranian King Mozaffar a-Din Shah of the Qajar dynasty gave the British William Knox D'Arcy a sixty-year oil concession with the exclusive right to explore, process, and export oil and petroleum products.⁸ The agreement stipulated that the Iranian government would receive only 16 percent of the net profit from all oil and petroleum-related operations. In 1908, D'Arcy and his team drilled the first oil well in the southwestern city of Masjid Soleiman. And in 1909, the Anglo-Persian Oil Company (APOC), now known as BP, was established in London to control D'Arcy's rights and operations in Iran. The British government became APOC's major shareholder in 1914, with a 51 percent-share of the company.

The long-lasting conflicts over rights and profit sharing between Iran and APOC, which changed its name to the Anglo-Iranian Oil Company (AIOC), escalated in the 1940s. In March 1951, the Iranian Parliament, under the leadership of Prime Minister Mohammad Mossadegh, nationalized the Iranian oil industry.⁹ The British government immediately instituted an international ban (read sanctions) on the purchase of Iranian oil, causing the AIOC to withdraw its engineers from the Iranian oilfields. In spite of this, the Iranian government was able to continue production. It was finally able to break the international embargo in 1953, by selling its first cargo of oil (with a 30 percent-discount on global prices) to both the Italian government and the Japanese company Idemitsu Kosan.

Then, in September 1954, an eight-member consortium called the Iranian Oil Participants (IOP) formed, with the following composition: British Petroleum Company (BP) held 40 percent, Shell 14 percent, Chevron 8 percent, Exxon 8 percent, Gulf 8 percent, Mobil 8 percent, Texaco 8 percent, and Compagnie Française des Pétroles 6 percent. The National Iranian Oil Company (NIOC) was the owner of Iran's oil deposits and the Iranian oil industry's installed assets. However, actual control over the industry was

firmly in the hands of the consortium members.¹⁰ NIOC, therefore, had no influence or control over the production, refining, and export of Iranian crude oil and products.

As a result of this lack of control, in addition to lessons learned from the oil embargo, the Iranians began to increase their self-reliance. The Iranian government realized that one of its main weaknesses was the inability to transport its own oil to global markets. In 1955, Iran established the National Iranian Tanker Company (NITC), which today is one of the largest oil-transporting companies in the world, owning at least forty-two very large crude carriers (VLCC). NITC had a major role in transporting Iranian oil to international markets during the eight years of war with Iraq (1980-1988), and also after EU and US sanctions on Iranian oil exports, transportation, and insurance in 2012.

The 1979 Islamic Revolution, and the subsequent eight years of the Iran-Iraq War, upended Iran's energy policy once again. After 1979, the consortium was dissolved, and NIOC took control of Iran's energy industry and the export of crude oil and refined petroleum products. Iran also announced that it would not export its crude oil and products to Israel—ending a once-robust relationship—and that Islamic countries would be preferred customers.¹¹ US-Iranian relations hit a low point in the early days of the Iranian revolution, and were further damaged by the hostage crisis of 1979-81. Diplomatic relations between the two countries were broken off, and have not been reestablished. As a result, the United States stopped purchasing and importing Iranian oil, causing Iran's broader oil trade and flow to shift toward Asian markets.

The United States has also implemented unilateral sanctions on Iran since 1996, when President Bill Clinton prohibited US investment in Iran's energy sector. Successive US administrations tightened sanctions and limitations against Iran on the basis that Iran was pursuing nuclear weapons, as well as Tehran's support for groups such as Hamas, Islamic Jihad, and Hezbollah.

In 1996, the United States passed the Iran-Libya Sanctions Act, later renamed the Iran Sanctions Act (ISA), which imposed sanctions on firms making financial and technological investments in Iran's energy industry. However, ISA did not prevent non-US firms from investing there. By 2012, the EU implemented its own sanctions, which complemented US sanctions by also banning imports of oil, investments in the hydrocarbon industries, and

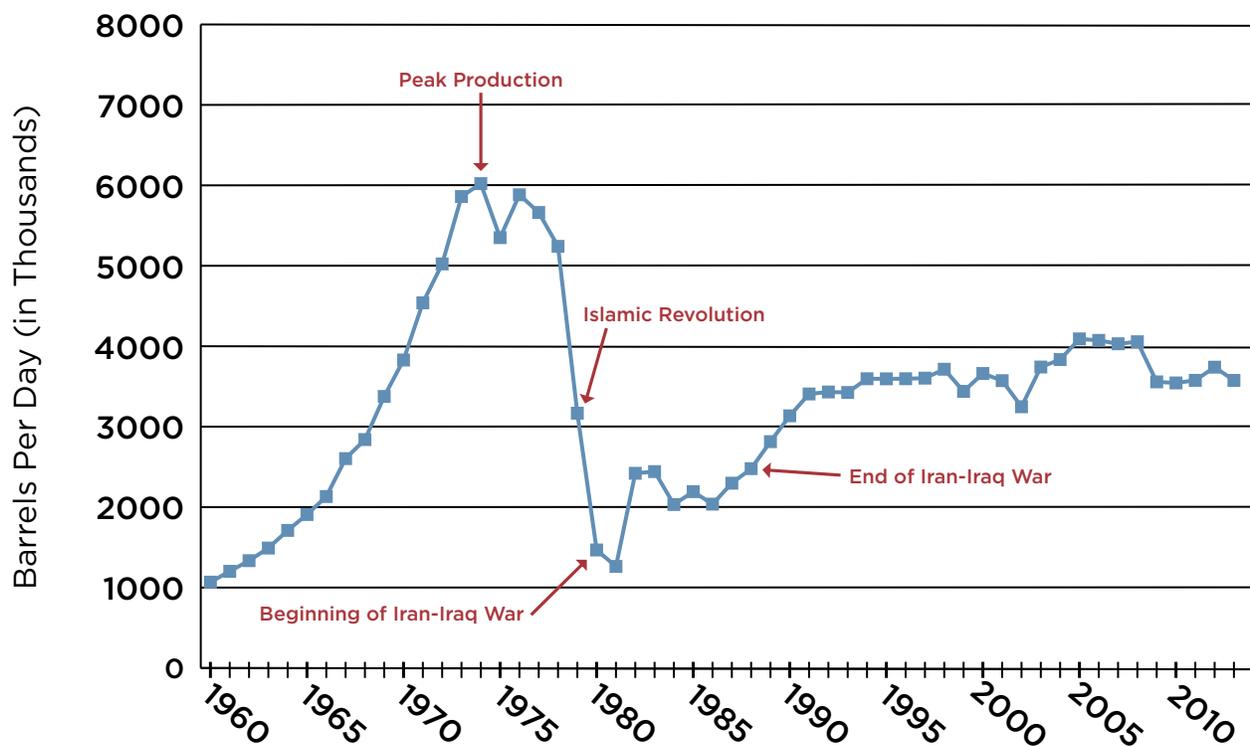
8 Mohammad Malek, "Oil in Iran between the Two World Wars," *Iran Chamber Society*, http://www.iranchamber.com/history/articles/oil_iran_between_world_wars.php.

9 Oil production rose from 51 million barrels per year in 1933 to 232 million barrels per year in 1950. During this time, most of the oil was sold to Great Britain for domestic use and to fuel ships during World War II. See Sara Vakhshouri, *Marketing and Sale of Iranian Crude Oil after the Islamic Revolution* (Tehran: Sobh Qalam Publishing House, 2011).

10 The National Iranian Oil Company (NIOC) is a government-owned company under the direction of Iran's Ministry of Petroleum. NIOC was established in 1948 and is responsible for oil and natural gas development, production, and export.

11 In 1957, the Eilat-Ashkelon Pipeline was built in Israel to transport Iranian crude oil to Europe. In 1968, the Eilat-Ashkelon Pipeline Company (EAPC) was founded as a joint venture, with a 50-50 share between Iran and Israel, in terms of operation and oil transport to Europe. Between the Arab-Oil embargo of 1973 and the revolution of 1979, Iran supplied most of Israel's oil.

Figure 1. Iran Crude Oil Production



Source: <http://www.opec.org/library/Annual%20Statistical%20Bulletin/interactive/current/FileZ/XL/T37.HTM>.

other financial transactions. This hindered Iran’s financial dealings with the international community.

Total of France, which was the first major international oil company that refused to consider the American sanctions as legally binding, invested in and developed the Siri A and E oilfields.¹² Iran could attract \$15 billion of investment under sanctions, even though this was far less than what was required to rehabilitate its energy production.¹³ As a result of two decades of war and sanctions, Iran’s oil production had dropped from its peak of 6 million barrels per day (mb/d) in late 1970 to about 4.2 mb/d in early 2000.

The 2000s saw further decreases in Iranian hydrocarbon production and exports, as the West sought to limit Tehran’s nuclear program. However, the real changes came in 2012, because of the additional sanctions implemented by both the United States and the EU, which caused Iran’s production to drop below 3 mb/d.

As a result of these turbulent decades and additional international sanctions, Iran’s strategic energy policy is largely based on two pillars: building an “Economy of Resistance” and creating strategic alliances. First, Khamenei’s “Economy of Resistance” doctrine, announced in February 2014, suggests that Iran should increase self-reliance by focusing on developing or adding value to the production chain inside

the country, instead of exporting raw material, and also by reducing its dependence on oil-export revenue.¹⁴ Second, Iran seeks to create long-term energy ties and alliances with international oil companies and neighboring countries to raise their interest and stakes in Iran.

This historical context lays the framework for understanding Iran’s current energy policies, which were adopted as a response to the 2012 sanctions against its energy industry and exports, and in anticipation of the possible removal of sanctions following the nuclear deal between Tehran and the P5+1. The following sections are dedicated to discussing Iran’s policy toward domestic oil and gas production, exports, the downstream and refinery sectors, the petrochemical industry, and new investment regulations.

2. CRUDE OIL AND NATURAL GAS PRODUCTION POLICY

Iran holds the fourth-largest proven oil reserves after Saudi Arabia, Venezuela, and Canada. The country also possesses the second-largest natural gas reserves after Russia.¹⁵ In 2015, estimates indicated that Iran had the largest natural

12 Sara Vakhshouri, “Iran Oil Minister Confront Sanctions,” (Washington, DC: Atlantic Council, August 21, 2013), <http://www.atlanticcouncil.org/publications/articles/iran-s-oil-minister-confronts-sanctions>.

13 Ibid.

14 Center for Preserving and Publishing the Works of Grand Ayatollah Sayyid Ali Khamenei, “General Policies of Economy of Resistance,” <http://farsi.khamenei.ir/news-content?id=25370>.

15 US Energy Information Administration, “Country Analysis Brief, Iran,” http://www.eia.gov/beta/international/analysis_includes/countries_long/Iran/iran.

gas reserves in the world.¹⁶ In 2013, Iran produced 3.2 mb/d of oil and 5.6 trillion cubic feet (Tcf) of natural gas. Iran is among the top-five global oil and gas producers in the market. However, because of sanctions, Iran's share of oil exports in the global market has plummeted since 2012. Also, despite having substantial natural gas reserves, Iran has never obtained even 1 percent of the global gas market.

Iranian Minister of Petroleum Bijan Zangeneh said Iran's crude oil policy is to regain its pre-2012 production level of 4 mb/d of crude oil and its lost OPEC share of 2.5 mb/d of crude oil export.¹⁷ NIOC seeks to achieve this by implementing reinjection techniques utilizing water or natural gas, and by developing new fields.

NIOC also sees developing natural gas fields and expanding production capacity as its highest priority. South Pars, the giant non-associate gas field shared by Iran and Qatar, is the top priority.¹⁸ The advantages of increasing natural gas capacity are many. Iran can utilize natural gas production for: domestic electricity generation, thereby releasing its oil liquid capacity for export; feedstock of its petrochemical factories, where natural gas is in higher demand than crude oil; export via land or LNG for neighbors and other international buyers; or electricity export to neighboring countries.

As a byproduct of natural gas, condensate creates other significant advantages for Iran.¹⁹ Indeed, condensate is of higher quality than Iran's heavy and sour crude oil, is priced higher than its crude oil, and enjoys far less intense competition in the market than does crude oil. Iran could also refine its condensate in house, and produce light distillates like gasoline for domestic use or export.

2.1. CRUDE OIL AND CONDENSATE PRODUCTION POLICY

Iran has 547 billion barrels (b/b) of initial oil in place, with 158-159 b/b of it recoverable.²⁰ This constitutes approximately 10 percent of global crude oil resources.²¹ Onshore oilfields constitute 70 percent of Iran's total oil reserves.²² Almost 86 percent of the country's production comes from southwestern reservoirs located in central Zagros, particularly the Asmari and Bangestan

formations.²³ The Asmari formation has the highest amount of oil production, and the Bangestan (Sarvak) formation holds a considerable volume of recoverable oil.

Iran suffers from the long-term negative effects of international sanctions that have prevented investment and technologies from entering the Iranian energy market. Prior to the 2012 sanctions, Iran's oil production was about 4 mb/d.²⁴ The latest status of Iranian oil and gas fields indicate that Iran's current crude oil production is about 2.9 mb/d, and natural gas liquids (NGL) and condensate production has stayed level at about 692,000-710,000 b/d.²⁵ Out of this 2.9 mb/d, Iran consumed about 1.5-1.7 mb/d domestically and exported about 1-1.2 mb/d. (See 2.4.1 for Crude Oil and Condensate Exports.)²⁶

About 75 percent of Iran's non-crude-oil liquid is condensate and the byproduct of non-associated gas in the South Pars gas field, and the rest is liquid that comes from Kangan, Nar, and other fields.²⁷ Iran's current condensate production is about 480,000 b/d, and is expected to rise to 630,000 by mid-2016.

Most Iranian oilfields are old and mature, which means they require further investment, and treatments like gas reinjection, in order to maintain current production levels. "The country's oil wells are mostly in the second half of their lives, and are facing continued natural depletion of production capacity at the rate of 8-11 percent per year."²⁸ It is estimated that Iranian oilfields lose between 300-500,000 b/d of natural reduction every year due to the maturity of the fields.²⁹

As sanctions roll back, Iran's supply will gradually rebound. Iran's oil minister announced that he will increase oil production by 500,000 b/d after the sanctions are lifted, and will add an extra 500,000 b/d six months after that.³⁰ In the most conservative view, if sanctions are lifted by the end of 2015, Iran could possibly add 500,000-700,000 b/d of crude oil and liquids to its production by mid-to-late 2016. NIOC can add 150,000-200,000 b/d of condensates to its liquid production by mid-2016. This additional condensate will be from phases³¹ 12, 15-16, and 17-18

16 *BP Statistical Review of World Energy June 2015*, <http://www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2015/bp-statistical-review-of-world-energy-2015-full-report.pdf>.

17 "Iran Oil Minister Describes the Oil Policy of Economy of Resistance," *SHANA*, April 19, 2014, www.shana.ir/fa/newsagency/pdf/215340.

18 *Ibid.*

19 Condensate, or natural gas condensate, is light hydrocarbon liquid with low density that is the byproduct of natural gas from a gas field. It is also called natural gasoline, because it contains hydrocarbons with the boiling range of gasoline.

20 "Recoverable" or "proven" reserves are the amount of natural resources that is extractable using current technological capabilities. "Initial" or "in place" resources indicate all of the explored hydrocarbon in the reservoir.

21 *BP Statistical Review of World Energy June 2015*, op. cit.

22 US Energy Information Administration, "Country Analysis Brief, Iran."

23 *Ibid.*

24 EIA, Country Analysis Brief, Iran, June 19 2015, EIA: http://www.eia.gov/beta/international/analysis_includes/countries_long/Iran/iran.pdf.

25 SVB Energy International, "Iran Upstream Oil and Gas Report."

26 *Ibid.*

27 *Ibid.*

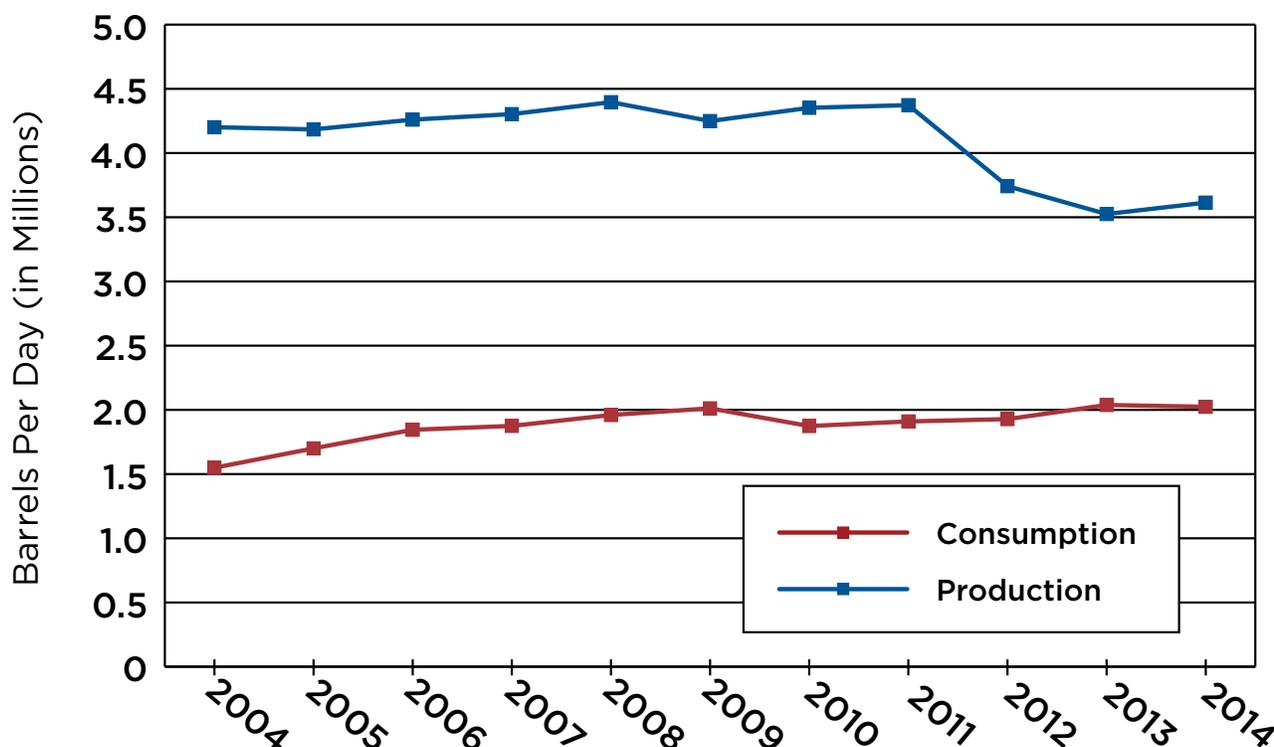
28 US Energy Information Administration, "Country Analysis Brief, Iran."

29 *Ibid.*

30 Grant Smith, "What Iran's Nuclear Deal Means for the Global Crude Oil Market," *Bloomberg*, July 14, 2015, <http://www.bloomberg.com/news/articles/2015-07-14/what-iran-s-nuclear-deal-means-for-the-global-crude-oil-market>.

31 South Pars is a giant gas field that was discovered in 1990 and is located in the Persian Gulf. Pars Oil and Gas Company is in charge of development of this field, and defined twenty-four developmental phases for this field. Each field is expected to produce both natural gas and condensate. Currently, the phases 1-10 and 12 are completed. Phases 15-16 are also partially completed, and are expected to finish by mid-2016.

Figure 2. Iran Oil Production and Consumption*



* Includes crude oil, shale oil, oil sands and NGLs (natural gas liquids—the liquid content of natural gas where this is recovered separately). Excludes liquid fuels from other sources such as biomass and derivatives of coal and natural gas.

Source: <http://www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2015/bp-statistical-review-of-world-energy-2015-full-report.pdf>.

of South Pars gas field.³² Immediately after the removal of sanctions, Iran will also start sales negotiations for exporting the 37-45 million barrels of additional stored liquid on its floating storages. More than half of Iran’s floating storages are estimated to be filled by condensate; the other half are crude oil, fuel oil, and a blend of crude oil and condensate.

Over the next few years, NIOC will work to increase its crude oil production capacity by:

- preventing any further production drop and restoring the lost production capacity from mature fields, particularly in the southern oilfields, by enhanced oil recovery (EOR) and international oil companies (IOC) operation; and
- producing new resources of crude oil from heavy oilfields located west of the Karun River, known as “West Karun” oilfields (North and South Azadegan, Yadavaran, Jufeyr, Sohrab, Susangerd, and Yaran).³³

NIOC announced that its oil production capacity would reach 5.7 mb/d by 2017-2018, of which 1 mb/d would be

condensate.³⁴ Most of this condensate would be produced from the South Pars giant gas field.³⁵ As a result of easing sanctions, enhanced oil recovery and improved oil recovery (EOR/IOR) projects from mature oilfields, as well as new development projects in the West Karun oilfields, could add an additional 650,000-700,000 b/d of crude oil production. This could also increase condensate production in South Pars to 1 mb/d by 2017-2018.³⁶

2.2. NATURAL GAS PRODUCTION POLICY

Iran has the world’s largest proven natural gas reserves, and the country is the home of 17-18 percent of the world’s natural gas reserves.³⁷ Iran’s original gas in place is estimated to be 1,201 Tcf (about 34 trillion cubic meters).³⁸

Iran is now the third-largest global producer of natural gas behind Russia and the United States.³⁹ Additionally, the

32 Sara Vakhshouri, “Iran’s Oil Production Boost Scenarios in a Post-Sanctions Era,” *Middle East Economy Survey*, July 3, 2015, <https://www.mees.com/docs/public/iran-oil-production-boost-scenarios-in-a-post-sanctions-era.pdf>.

33 “Iran Oil Minister Describes the Oil Policy of Economy of Resistance,” *SHANA*.

34 *Ibid.*

35 SVB Energy International, “Iran Upstream Oil and Gas Report”; Vakhshouri, “Iran’s Oil Production Boost Scenarios in a Post-Sanctions Era.”

36 “Iran Oil Minister Describes the Oil Policy of Economy of Resistance,” *SHANA*, April 19, 2014, <http://www.shana.ir/fa/newsagency/pdf/215340>.

37 *BP Statistical Review of World Energy June 2015*.

38 *Ibid.*

39 *Ibid.*

Table 1: NIOC's Plan to Increase Crude Oil and Condensate By 2017-2018

Hydrocarbon Type	By June 2015	End of 2017- Mid-2018	Major Source of Increase
Crude Oil	About 2.9 mb/d	4.7 mb/d	EOR/IOR of mature fields 700 kb/d new oil from West Karun oilfields
Condensate	480 kb/d	1 mb/d	South Pars

Source: "Iran's priorities for developing its shared oil and gas fields," IRNA, March 15, 2015, <http://www.irna.ir/fa/News/81543026/>; "Iran's Condensate Production Reached to 500 kb/d," Iran Oil Minister Describes the Oil Policy of Economy of Resistance, Ministry of Petroleum's News Agency (SHANA), August 2015, Amir Hossein Zamaninia; "Iran's oil diplomacy after the sanctions," Ministry of Petroleum's News Agency (SHANA), <http://www.shana.ir/fa/newsagency/246022/>; and "Iran Upstream Oil and Gas Report," SVB Energy International, June 2015.

Table 2. Additional Condensate Production from South Pars, 2015-2016

South Pars Phases	Production Capacity (b/d)	Latest Status
Phase 12	120,000 (Current Production rate is about 71,000-80,000 b/d)	Completed and inaugurated in March 2015
Phases 15 and 16	75,000	Expected to be complete by the end of 2015
Phases 17 and 18	80,000	Expected to be complete by mid-2016

Source: SVB Energy International, "Iran Upstream Oil and Gas Report."

Table 3: NIOC's Plan to Increase Natural Gas By 2017-2018

Hydrocarbon Type	By June 2015	End of 2017- Mid 2018	Major Source of Increase
Natural Gas	About 580 mcm/d	1 bcm/d	South Pars Phases: 12, 15-16, 17-18

Source: "Iran's priorities for developing its shared oil and gas fields," IRNA, March 15, 2015, <http://www.irna.ir/fa/News/81543026/>; "Iran's Condensate Production Reached to 500 kb/d," Iran Oil Minister Describes the Oil Policy of Economy of Resistance, Ministry of Petroleum's News Agency (SHANA), August 2015, Amir Hossein Zamaninia; "Iran's oil diplomacy after the sanctions," Ministry of Petroleum's News Agency (SHANA), <http://www.shana.ir/fa/newsagency/246022/>; and "Iran Upstream Oil and Gas Report," SVB Energy International, June 2015.

country's natural gas exploration success rate is high, at 79 percent compared to the average success rate of 30-35 percent.⁴⁰ Most of the natural gas production occurs in the Deh Ram and Khami formations in Fars province. In 2014, Iran produced 172.6 billion cubic meters (bcm) of natural gas, up 5 percent from the production rate of 164 bcm in 2013.⁴¹ By March 2015, Iran's daily natural gas production increased to 600 mcm/d.⁴²

NIOC plans to increase its natural gas production from about 600 mcm/d in 2015 to 1 bcm/d by the end of 2017

to mid-2018.⁴³ Most of this will be produced from twenty-seven out of the twenty-eight phases of the South Pars⁴⁴ giant gas field, with the exception of phase 11, which is still undeveloped. Phases 12, 15-16, and 17-18 of South Pars are expected to be completed between mid-2015 and late 2016.⁴⁵ Completion of these phases will add more than 100 mcm/d to Iran's natural gas production. According to NIOC, South Pars is currently producing 54 percent of

40 US Energy Information Administration, "Country Analysis Brief, Iran."

41 BP Statistical Review of World Energy June 2015.

42 SVB Energy International, "Iran Upstream Oil and Gas Report"; "Iran's Natural Gas Production Capacity Reaches to 1 bcm/d," *Entekhab*, April 15, 2015, <http://www.entekhab.ir/fa/news/156467/>; "Iran's Priorities for Developing Its Shared Oil and Gas Fields," *IRNA*, March 15, 2015, <http://www.irna.ir/fa/News/81543026/>.

43 "Iran's Natural Gas Production Capacity Reaches to 1 bcm/d," *Entekhab*; "Iran's Priorities for Developing Its Shared Oil and Gas Fields," *IRNA*.

44 South Pars is the world's largest-known gas structure, comprising 470 Tcf of gas, around 9 percent of global gas reserves.

45 SVB Energy International, "Iran Upstream Oil and Gas Report"; "Iran's Natural Gas Production Capacity Reaches to 1 bcm/d," *Entekhab*, April 15, 2015, <http://www.entekhab.ir/fa/news/156467/>; "Iran's Priorities for Developing Its Shared Oil and Gas Fields," *IRNA*, March 15, 2015, <http://www.irna.ir/fa/News/81543026/>.

Iran's natural gas production, at an average daily rate of 365 mcm.⁴⁶ According to NIOC, South Pars produced 111 bcm of natural gas in 2014.⁴⁷

However, Iran also faces substantial growth in annual domestic gas consumption, which prevents it from achieving significant export capacity. In 2013, 60 percent of Iran's total energy consumption came from natural gas, and only 38 percent was from oil (meaning 98 percent of Iran's consumption was from oil or gas). The remainder, less than 2 percent, included hydropower, nuclear, and non-hydro renewables.⁴⁸ In 2014, Iran consumed nearly 7 percent more gas than it did in 2013. Yet, according to National Iranian Gas Company (NIGC),⁴⁹ Iran's natural gas consumption is growing at an average rate of 3.1 percent per year, making it the third-largest consumer of natural gas after the United States and Russia.⁵⁰ It is noteworthy that in 2013, 67 percent of Iran's electricity was produced from natural gas, and that the share of natural gas in Iran's transportation system is 14 percent.⁵¹

2.3. INVESTMENT REQUIREMENTS TO REACH THE MID-TERM OIL AND GAS PRODUCTION GOALS

Iran's Minister of Petroleum, Bijan Zangeneh, recently announced an urgent demand for approximately \$30 billion to pursue South Pars development plans, and at least \$20 billion to complete the ongoing development projects in the West Karun reservoirs within three years.⁵² Iran's National Development Fund (NDF) approved a \$20 billion allocation for investment in West Karun, and the remaining funds would need to come from foreign investment.

According to the fifth five-year economic plan for the period from March 2011 to March 2016, Iran aimed to increase oil production to 5.152 mb/d by attracting \$155 billion of investment to its upstream oil and gas industry.⁵³ It is also estimated that a total investment of about \$200-250 billion is needed to address Iran's whole oil and gas industry, including upstream exploration and production,

46 "Iran's Priorities for Developing Its Shared Oil and Gas Fields," *IRNA*; "Iran's Condensate Production Reached to 500 kb/d," *SHANA*, August 2015, <http://www.shana.ir/fa/newsagency/244595/>.

47 *Ibid*; "Iran Produced 111 bcm of Natural Gas from South Pars," *Mizan Online*, April 27, 2015, <http://www.mizanonline.ir/fa/news/47624>.

48 US Energy Information Administration, "Country Analysis Brief, Iran."

49 The National Iranian Gas Company (NIGC) was established in 1965, is under the direction of Iran's Ministry of Petroleum, and is responsible for the treatment, transmission, transpiration, and distribution of natural gas to the domestic, industrial, and commercial sectors, as well as power plants.

50 SVB Energy International, "Iran Upstream Oil and Gas Report"; US Energy Information Administration, "Country Analysis Brief, Iran."

51 Iran Fuel Conservation Company, http://ifco.ir/transportation/transportation_index.asp.

52 "Iran's Shared Oil, Gas Fields Need \$50 Billion," *Press TV*, September 3, 2015, <http://www.presstv.com/Detail/2015/09/03/427618/iran-oil-gas-production-shared-fields-zangeneh>.

53 SVB Energy International, "Iran Upstream Oil and Gas Report."

downstream, petrochemicals, midstream, and shipping.⁵⁴ But international sanctions will need to be removed before the industry can attract enough financial investment to help this plan come to fruition.

3. OIL AND GAS EXPORT POLICY

The historical context of Iran's crude oil export policy has been discussed earlier. As mentioned, after the Islamic Revolution, the consortium of international oil companies that were in charge of marketing and sales of Iranian oil was dissolved, and NIOC took over the entire export process. After the 2012 sanctions that targeted Iranian oil sales, the country's oil production and export dropped by more than 1 mb/d. Given the low oil prices of the current environment, Iran could face hurdles in terms of marketing and selling its oil. This section discusses different strategies that NIOC would adopt to regain its lost market share and sell additional quantities, after the removal of sanctions.

3.1. CRUDE OIL EXPORT POLICY

Prior to the 2012 sanctions, Iran exported around 2.5 mb/d and was the second-largest oil exporter in OPEC.⁵⁵ However, due to sanctions, the average export of crude oil declined around 40 percent to about 1.5 mb/d in 2012, and to 1 mb/d in 2014.⁵⁶ By 2014, Iran had fallen to the seventh-largest exporter in OPEC after Saudi Arabia, Iraq, the United Arab Emirates (UAE), Nigeria, Kuwait, and Angola.⁵⁷

In order to increase crude oil production to pre-2012 levels, Iran will have to tackle significant technical challenges, as well as daunting marketing and sales hurdles such as lost market share, oversupply in the market, and low oil prices.

Market Share. As sanctions are lifted, Iran will try to regain its lost market share of more than 1 mb/d, which is particularly acute at a time of oversupply and low oil prices. Most of Iran's crude oil competitors, primarily Saudi Arabia and Kuwait, have already signed long-term agreements with their customers. These commitments are usually for at least one year. As Saudi Arabia has given no indication that it will cut production, Tehran will have no choice but to sell most of its excess oil supplies on the spot market for the next year. Selling oil on the spot market is not usually a desirable option for major oil suppliers, particularly at the time of oversupply and tight competition

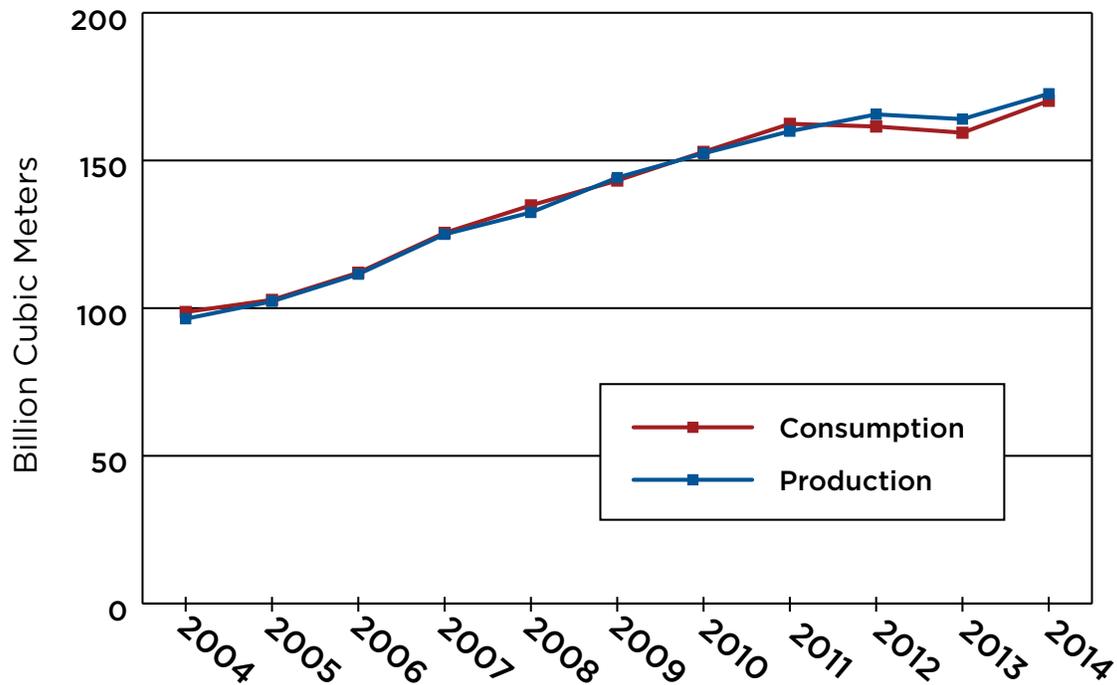
54 *Ibid*.

55 Energy Information Administration, "Total Petroleum and Other Liquids Production - 2014," <http://www.eia.gov/countries/cab.cfm?fips=ir>.

56 *Ibid*; Organization of the Petroleum Exporting Countries, "Annual Statistical Bulletin, 2015," http://www.opec.org/opec_web/static_files_project/media/downloads/publications/ASB2015.pdf.

57 Organization of the Petroleum Exporting Countries, "Annual Statistical Bulletin, 2015."

Figure 3. Iran Natural Gas Production and Consumption*



* Excludes gas flared or recycled. Includes natural gas produced for Gas-to-Liquids transformation.

Source: <http://www.bp.com/content/dam/bp/pdf/energy-economics/statistical-review-2015/bp-statistical-review-of-world-energy-2015-full-report.pdf>.

in the market. It is expected that Iran will regain part of its lost market share of 600,000-700,000 b/d in Europe after the removal of sanctions on its oil exports.

In order to regain market share, Iran will have to create incentives for signing long-term contracts. Iran will try to regain its lost market share of about 700,000 b/d in Europe, and will also increase its exports to the Asia-Pacific region: China, India, and Japan. Part of this oil will be arranged as oil for goods and services with companies from countries that provide investment and procurement to the Iranian energy sector and other industries. (See below for more details.) Iran could also conduct a crude oil swap with its northern neighbors—importing oil from Azerbaijan, refining it in its northern refineries, and delivering the same amount of oil from its southern fields to Azerbaijan’s customers in the Persian Gulf.

However, since Iran lacks a huge storage capacity for its unsold oil, it can only increase its crude oil production slowly and cautiously. With such low prices, it is counterproductive for Iran to rent tankers as floating storage and sell its oil at further discounts. Having excess oil stored at sea will also encourage Iran’s customers to push for further discounts. Another hurdle for Iran is the lack of enough vessels and tankers in the market for transporting extra oil. Iran’s own tanker fleet would not be sufficient for transporting the extra daily production, particularly given that some of the tankers are usually occupied as floating storage. The National Iranian Tanker Company (NITC) has forty-two Very Large Crude Career

(VLCC), each of which has a capacity of 2 mb/d.⁵⁸

Condensate vs. Crude Oil. Some of Iran’s production boost, about 200,000 b/d, will be condensate, which is a lighter liquid than crude oil and sells in a different market. Despite the fact that Iran’s condensate has high levels of sulfur, it is still considered a light crude oil, and is traded at higher prices than is heavy oil. Iran also has few rivals in the condensate market, competing mainly with the United States and Russia.⁵⁹ Additionally, condensate is in high demand, particularly in Asia.⁶⁰

Discounts. Offering discounts or lower price premiums for comparable quality crude oil is one of the easiest ways of creating incentives for customers. The production cost in Iran is \$3-7 per barrel,⁶¹ so even with a market price range of \$40-50, Iran still has space for offering discounts and increasing its market share.

58 “Iran’s Supertanker Fleet, World’s Largest,” *Press TV*, July 3, 2015, <http://presstv.com/Detail/2015/07/03/418583/iran-oil-tanker-fleet-sardashti-exports>.

59 “Asia Condensate Demand to Double by 2016, Opening Market to New Suppliers,” *Reuters*, August 24, 2012, <http://www.reuters.com/article/2012/08/24/condensate-asia-idUSL4E8J81HT20120824>.

60 Asia’s condensate demand is expected to double by 2016, as new splitters are going to be built to process this very light liquid. South Korea, China, and Singapore are building distillation units to split the condensate with one-seventh the cost of a normal refinery unit. On the other hand, the condensate supplies of Qatar, the biggest supplier to this region, are expected to drop as the country’s domestic use of condensate is increasing. See “Asia Condensate Demand to Double by 2016, Opening Market to New Suppliers,” *Reuters*.

61 Sara Vakhshouri, “Why Does Iran Resist Oil Price Discounts?” *Middle East Economic Survey*, September 10, 2012.

It is unclear, however, whether Iran would pursue this course of action. Even under sanctions, when prices were above \$100 per barrel, there was no evidence that Iran substantially discounted its oil. Instead, it offered official discounts of \$2-5 per barrel, never more than \$7.⁶² NIOC understands that discounting is a slippery slope. If it begins offering substantial discounts, its customers will demand increasingly lower prices, especially if the country is seen as weakened from sanctions and international pressure.⁶³ In addition, discounts are even less effective during a time of low oil prices, as other suppliers could easily match the discounted price, given their own low production costs.

Oil for Goods and Services. An exchange or barter of oil for goods and services could be an effective way for Iran to increase its market share. For instance, Iran could take loans from Chinese banks to import industrial goods, and then repay its debts to China with crude oil.⁶⁴ Iran could also use oil to repay any services rendered. NIOC has had significant experience with this type of exchange due to Iran's eight-year war with Iraq, and when it could not access its oil revenue due to sanctions. One of the benefits of exchanging oil for goods and services is that it would not only create incentives for companies to purchase Iranian oil, but would also help Iran import what it needs without resorting to hard currency.

In January 2014, at the height of sanctions, Iran signed a \$20 billion oil-for-goods deal with Russia, exchanging 500,000 b/d of Iranian oil for Russian goods and services.⁶⁵ Russia could redirect this crude oil to Belarus and Kazakhstan and, in return, export its military and industrial goods to Iran.⁶⁶ In June 2015, Bijan Zangeneh said that Russia would start importing the first cargo from the oil-for-goods agreement very soon.⁶⁷ This strategy could help Iran regain part of its lost market share in Europe. Signing an oil-for-goods or oil-for-services deal with European companies could increase their interest both in investing in Iran and in purchasing Iranian oil.

3.2. NATURAL GAS EXPORT POLICY

Part of Iran's 2025 National Vision Document and the "Economy of Resistance" includes increasing natural gas production and expanding the natural gas market from 1.5 percent to 10 percent by the end of 2025.⁶⁸ This is also the

target date for reaching Iran's goals for exporting natural gas or converting it to electricity and then exporting it. If sanctions are lifted and Iran succeeds in attracting the required foreign investment and technology to develop its natural gas fields, this target would be a realistic goal.

As mentioned earlier, sanctions on foreign investment and technology, along with high levels of domestic consumption, have kept Iran's share of the global gas export market relatively low, despite Iran's success in increasing natural gas production and exportation during the past few years.

Overall, Iran produced 159.9 bcm of natural gas in 2011, while it consumed 162.4.8 bcm, which means that Iran had little to no export capacity.⁶⁹ Iran's natural gas trade balance became positive for the first time in 2014 (see below) when its production of natural gas increased to 172.6 bcm and its consumption of natural gas rose to 170.2 bcm.⁷⁰

According to Zangeneh, Iran is planning to increase natural gas production to 1,000 million cubic meters a day (mcm/d) by 2018, and to increase natural gas exports to 80 mcm per year by 2020.⁷¹ Iran consumes almost all of its gas production domestically; 65 percent of Iranian primary energy consumption is supplied by its own natural gas. Iranian households "account for 48 percent of annual gas consumption, power plants for 27 percent, and major industries for about 16 percent."⁷² Iran utilizes gas injection to maintain pressure in its oil wells. It injected about 100 million cubic meters a day (cm/d) of gas into its oilfields last year, and is planning to raise the volume to 270 million cm/d by 2015.⁷³

The international sanctions did not target Iran's natural gas exports, so the country was able to increase its natural gas production since the 2012 sanctions. In 2014, Iran's natural gas production increased and, as noted above, its natural gas trade balance was positive for the first time.⁷⁴ Iran exported 9.6 bcm, and its natural gas imports were only 6.9 bcm.⁷⁵

Turkey accounts for 90 percent of Iran's exports. In 1996, Iran and Turkey signed a contract for the sale of 10 billion cubic meters per year (bcm/y) of natural gas from Iran to Turkey for twenty-five years. In 2009, Iran exported only 5.25 billion cubic meters (bcm) of gas to Turkey. But in 2010, this rose to 7.77 bcm, and in 2011 to 8.4 bcm,

62 Ibid.

63 Ibid.

64 Amir Hossein Zamaninia, "Iran's Oil Diplomacy after the Sanctions," *SHANA*, <http://www.shana.ir/fa/newsagency/246022/>.

65 Jonathan Saul and Parisa Hafezi, "Exclusive: Iran, Russia Negotiating Big Oil-For-Goods Deal," *Reuters*, January 10, 2014, <http://www.reuters.com/article/2014/01/10/us-iran-russia-oil-idUSBREA090DK20140110>.

66 "Russia Set to Start Iran Crude Imports Under Oil-for-Goods Deal," *Bloomberg*, June 5, 2015, <http://www.bloomberg.com/news/articles/2015-06-06/russia-set-to-start-iran-crude-imports-under-oil-for-goods-deal>.

67 Ibid.

68 "Iran's Priorities for Developing Its Shared Oil and Gas Fields," *IRNA*; Center for Preserving and Publishing the Works of Grand Ayatollah Sayyid Ali Khamenei, "General Policies of Economy of Resistance."

69 "Russia Set to Start Iran Crude Imports Under Oil-for-Goods Deal," *Bloomberg*.

70 Ibid.

71 "Interview with Iran's Minister of Petroleum, Bijan Zangeneh," *ISNA New Agency*, May 1, 2015, <http://isna.ir/fa/news/93031808646/>.

72 Sara Vakhshouri, "Sanctions Raise Questions about Iran's Export Capacity," *Middle East Economic Survey*, November 9, 2012, <http://archives.mees.com/issues/1448/articles/49566>.

73 Ibid.

74 Ibid.

75 *BP Statistical Review of World Energy June 2012*, http://www.bp.com/content/dam/bp/pdf/Statistical-Review-2012/statistical_review_of_world_energy_2012.pdf.

Table 4: Iran's Export Destinations and Volume, 2010–2014 (1,000 b/d)

Region	2010	2011	2012	2013	2014
Europe	764	780	162	128	117
Asia-Pacific	1,367	1,630	1,839	1,085	992
Africa	117	127	101	2	-

Source: Organization of the Petroleum Exporting Countries, "Annual Statistical Bulletin, 2015."

ultimately hitting 8.9 in 2014 (out of a total export of 9.6 bcm).⁷⁶ Iran also exports less than 1 bcm/y of natural gas to Azerbaijan, and barter gas with Armenia in exchange for electricity.⁷⁷ Azerbaijan supplies gas to Iran's northern provinces, in return for Iran sending equal amounts of gas to the Azeri exclave Nakhjavan.

On the other hand, Iran imports substantial volumes of natural gas from Turkmenistan. In 2011, it imported 10.2 bcm.⁷⁸ However, as previously mentioned, Iran's natural gas trade balance became positive in 2014, and its production will increase even further by mid-2016 to 2017 upon completion of phases 12, 15-16, and 17-18.

One significant advantage Iran has is its land connections with its neighbors. Despite fruitless efforts to build LNG plants, because sanctions prevented Iran from obtaining the mostly American LNG technology, Iran's geopolitical location offers the opportunity to easily export gas via pipelines, to China via Pakistan and India, to Syria and Lebanon via Iraq, and to Europe via Turkey.

Europe. On the consumer side, EU economies have been searching for secure and more diversified energy sources. Iran could send its gas to Europe through the Turkey corridor, and conceivably play a role in exporting gas through the Trans-Anatolian Natural Gas Pipeline (TANAP).⁷⁹ Iran's geographical location could also allow it to be a conduit for transporting energy resources from the Caspian Sea and Central Asia energy producers into Europe, via routes such as TANAP and the Trans-Adriatic Pipeline

(TAP).⁸⁰ Both Tehran and Baku have shown an interest in Iran sending gas to Azerbaijan and participating in projects like TAP and TANAP.⁸¹ It should be noted that there are many political and geopolitical complexities involved in Iran sending its gas to Europe via these mentioned routes. However, this is only discussed as an option, and analysis of its viability is above the scope of this report.

Gulf Cooperation Council Neighbors. One aspect of Iran's energy diplomacy is to export natural gas and electricity to its Gulf Cooperation Council neighbors in order to increase its market share and create long-term economic—and perhaps political—alliances with its Arab neighbors. One of the priorities of Iranian President Hassan Rouhani's foreign policy is to focus on building and strengthening positive relations with Iran's Arab neighbors. Iranian energy officials also recently announced that they are engaging in serious talks about exporting natural gas, and possibly electricity, to Iran's Arab neighbors.⁸²

Many of the GCC member countries are major producers of oil and are highly dependent on it for revenue. However, their oil consumption is increasing. Having another source of supply, like Iranian gas, could free up some of their export capacity and allow them to export more oil to help their economies. Oman, UAE, and Kuwait are among the first Arab countries to engage in gas-deal negotiations with Tehran. Iran could also look to redirect its natural gas onto the global market with the help of LNG facilities in Oman. Iran could make the same arrangement with UAE, particularly with regard to its Salman gas field, which is a shared field between the two countries.

Theoretically, there is also significant potential for energy cooperation between Iran and Saudi Arabia. However, any long-term gas-export commitment must be built on trust.

76 *BP Statistical Review of World Energy June 2012*, http://www.bp.com/content/dam/bp/pdf/Statistical-Review-2012/statistical_review_of_world_energy_2012.pdf; *BP Statistical Review of World Energy June 2015*; US Energy Information Administration, "Country Analysis Brief, Iran." 77 *Ibid.*

78 *BP Statistical Review of World Energy June 2012*.

79 "Post-Iran Deal, Azerbaijan Eyes Energy Transit Opportunities," *EurasiaNet*, June 15, 2015, <http://www.eurasianet.org/node/74236>. The Trans-Anatolian Natural Gas Pipeline (TANAP) is a natural gas pipeline from Azerbaijan to Europe through Georgia and Turkey. TANAP, South Caucasus Pipeline (SCP), and Trans Adriatic Pipeline are all designed to connect the Shah Deniz giant gas field in Azerbaijan to Europe.

80 The Trans-Adriatic Pipeline (TAP) is a pipeline that connects Azerbaijan's natural gas to Europe. TAP connects Azerbaijan's natural gas to Italy and Western Europe via Albania and the Adriatic Sea.

81 "Post-Iran Deal, Azerbaijan Eyes Energy Transit Opportunities," *EurasiaNet*.

82 "Iran in 'Serious' Gas Talks with Its Arab Neighbors," *Iran Daily Online*, August 29, 2015, <http://www.iran-daily.com/News/125670.html>.

Table 5: Iran's Plans for Natural Gas Export by Destination

Turkey	Currently importing 90 percent of Iranian natural gas 8.9 bcm in 2014
Iraq	2013, an agreement to export Iranian natural gas from South Pars to Iraq (two routes to Basra and Baghdad). Total export to Iraq is planned to reach 70 mcm/d, and NIGC is planning to increase it to 90 mcm/d. First phase: Through Baghdad route (to Al-Mansour power plant) with total capacity of 40 mcm/d. It is planned to start with 7 mcm/d and have a gradual increase. Second Phase: through Basra route (to Basra power plant) with total capacity of 35 mcm/d. The first phase was planned to start exporting 4 mcm/d in March 2015. Iranian officials announced the export hasn't started due to political and security reasons.
Gulf Cooperation Council	Oman: Agreement signed in 2015 for export of 10 bcm/y for 25 years. Requires infrastructure and pricing agreement. Kuwait and UAE: Under negotiation.
Europe	Exporting natural gas to Europe is part of Iran's natural gas export policy in the past decade. However, no contract for gas exporting to this region, either through pipeline or LNG, is signed. Iran's petroleum minister announced that Iran has the potential of exporting 25-30 bcm/y.
Pakistan	Is not a top priority for NIOC anymore. The contract was signed in 2010 and the export was expected to start in 2014. However, Pakistan has not built the required pipeline to connect to the Iranian line.

Source: "Iran's Priorities for Developing Its Shared Oil and Gas Fields," *IRNA*; Amir Hossein Zamaninia, "Iran's Oil Diplomacy After the Sanctions," *SHANA*; Center for Preserving and Publishing the Works of Grand Ayatollah Sayyid Ali Khamenei, "General Policies of Economy of Resistance"; *BP Statistical Review of World Energy June 2012*; Karami, "Iran to Export Gas to Iraq Soon, Says Iranian Official"; "Iran Can't Export Gas to Europe," *Shargh Daily*; "Iran Gas Export to Iraq," *IFNAA*; SVB Energy International, "Iran Upstream Oil and Gas Report."

Saudi Arabia is planning to increase its petrochemical capacity, and is using liquid fuel in its petrochemical refineries. Therefore, if Saudi Arabia could gain access to Iran's massive gas resources, it could use natural gas instead of liquid fuel in its petrochemical facilities. Saudi Arabia could also use Iranian gas in power generation and, instead of burning liquid fuel, could burn gas for producing electricity.⁸³

However, the history of conflict and mistrust between Iran and some of its Arab neighbors, particularly Saudi Arabia, makes it hard to believe that the kingdom would commit to twenty years of gas imports from Iran in the near future. There is also not a significant natural gas trade deal between Saudi Arabia and its other Arab neighbor, Qatar.

It seems that relying on external energy resources is not part of Saudi energy security policy, at least for now. The kingdom is mostly focusing on integration of its upstream oil industry with its petrochemical industry. Considering the low price of oil in the current environment, consuming its oil and liquid fuel in its petrochemical industry and power plants could make economic sense for the kingdom.

Iraq. In 2013, the governments of Iran and Iraq signed an agreement to export Iranian natural gas from South Pars to Iraq. Two separate pipelines will take Iranian gas to power plants in Basra and Baghdad. The total export to Iraq is planned to reach 70 mcm/d, and NIGC is planning to increase

⁸³ Sara Vakhshouri, "Iran and the Arab World: Implications of the Nuclear Negotiations," *Middle East Policy* vol. 22, no. 3, 2015.

production to 90 mcm/d.⁸⁴ According to this agreement, the first phase transports a total capacity of 40 mcm/d of gas to Al-Mansour power plant in Baghdad.⁸⁵ The gas export is planned to start at 7 mcm/d and gradually increase from there. NIGC announced that it had finalized the construction of 97 kilometers (km) of a 48-inch pipeline with primary capacity of 5 mcm/d. This pipeline would transfer gas to the power plant in Baghdad. Iran would need to construct a total 227 km of pipeline in its own land to transfer the gas to the Baghdad and Al-Mansour power plants.⁸⁶ However, Iranian officials announced that the export had not started, due to political and security reasons.⁸⁷ The second phase would see a total capacity of 35 mcm/d of gas transported to Basra.⁸⁸

Electricity vs. Natural Gas. One possible use for Iranian natural gas would be to convert it into electricity and export it. This is beneficial because it would seemingly resemble an “Economy of Resistance” by increasing the value added to natural gas instead of just exporting it in its original form. It would also create stronger trade ties and alliances with Iran’s consumers and neighbors, and it would be harder to convince these countries to stop purchasing electricity from Iran in the event of a “snap back” of sanctions. It would also diversify Iran’s options for utilizing its natural gas, at a time the market is facing oversupply and low energy prices.

Iran plans to allocate 6 bcm of its natural gas for conversion to electricity by 2020. This amount will yield additional 5,000 megawatts of electricity per year, solely for export.⁸⁹ Iran currently has the capacity to produce 74,000 megawatts of electricity per year.⁹⁰

4. IRAN'S POLICY TOWARD ITS DOWNSTREAM AND REFINERY SECTOR

Increasing the refinery capacity of crude oil, natural gas, and condensate is part of Iran’s policy to expand its production chain and increase the value added by preventing the export of raw materials. According to the official website of Iran’s Supreme Leader Sayyed Ali Khamenei, article thirteen of “The General Policies of the ‘Economy of Resistance’” suggests that, in order to reduce Iran’s vulnerability and

84 Arash Karami, “Iran to Export Gas to Iraq Soon, Says Iranian Official,” *Al-Monitor*, August 19, 2015, <http://www.al-monitor.com/pulse/originals/2015/08/iran-iraq-gas.html#ixzz3m3lizHly>; “Iran Can’t Export Gas to Europe,” *Shargh Daily*, May 5, 2014, <http://sharghdaily.ir/News/33539/>; “Iran Gas Export to Iraq,” *IFNAA*, August 2015, <http://www.ifnaa.ir/fa/news/26852/>; SVB Energy International, “Iran Upstream Oil and Gas Report.”

85 Ibid.

86 Ibid.

87 Ibid.

88 Ibid.

89 “Iran’s Priorities for Developing Its Shared Oil and Gas Fields,” *IRNA*.

90 “Iran’s Electricity Production Increased,” *Mehr News Agency*, September 9, 2015, <http://www.mehrnews.com/news/2912331>.

dependence on its crude oil exports, Iran needs to increase exports of natural gas, electricity, petrochemical products, and refined petroleum products.⁹¹

After Saudi Arabia, Iran is the second-largest consumer of refined products in the Middle East, with average domestic oil consumption of 1.8 mb/d in 2014.⁹² This number was 3 percent higher than Iran’s domestic oil consumption in 2012. Gasoline, diesel, and fuel oil have the highest share in Iran’s domestic consumed-fuel basket. International sanctions that have limited Iran’s access to the importation of refined petroleum products, particularly gasoline, have minimized Iran’s ability to export crude oil, and have forced Iran to expand its refinery capacity. Its refinery capacity increased from 1.5 mb/d to around 1.86 mb/d in 2011, 1.98 mb/d in 2013, and 2.03 mb/d in 2014.⁹³ Most of the refining-capacity expansion came from completion of two refineries at Lavan and Arak, complemented by capacity expansion at the Bandar Abbas refinery (see table 6).

In 2013, Iranian refineries produced most of Iran’s demand for refined petroleum products. In that same year, Iran imported only 17,000 b/d of refined products, mostly gasoline with 85 percent of import share.⁹⁴ It is expected that Iran’s refinery capacity, and particularly gasoline production, will increase further by the end of the Iranian year (ending in March 2016), mainly from capacity expansion in two refineries of Isfahan and Bandar Abbas.⁹⁵ Iran is planning to increase its oil refinery capacity even further. By 2017, it is expected to export gasoline upon the completion of its Persian Gulf Star refinery in Bushehr province, in the southern part of Iran. The mentioned refinery has three phases (or units), and each phase has a capacity of refining 120,000 barrels of condensate per day (total amount of 360,000 b/d). Iran’s gasoline production capacity will reach 96 million liters per day when the Persian Gulf Star refinery starts to produce at its maximum capacity in 2017.

Iran wants to increase its oil refinery capacity to 2 mb/d, and to expand its condensate refinery capacity to 1 mb/d by 2020, thereby reaching a total refinery capacity of 3 mb/d. Iran is on track to meet this goal; by the end of 2014, Iran reached its nominal oil refinery capacity of 2 mb/d.⁹⁶

On the condensate side, if Iran achieves a 1 mb/d refinery capacity by 2020, it can replace almost all of its condensate export with the light distillates produced in its refineries. Three major condensate refineries

91 Center for Preserving and Publishing the Works of Grand Ayatollah Sayyid Ali Khamenei, “General Policies of Economy of Resistance.”

92 US Energy Information Administration, “Country Analysis Brief, Iran.”

93 SVB Energy International, “Iran Upstream Oil and Gas Report”; US

Energy Information Administration, “Country Analysis Brief, Iran.”

94 US Energy Information Administration, “Country Analysis Brief, Iran.”

95 Ibid.; “Interview with Iran’s Minister of Petroleum, Bijan Zangeneh,”

ISNA, May 1, 2015, <http://isna.ir/fa/news/93031808646>.

96 Ibid.

Table 6. Oil Refinery Capacity in Iran

Refinery	Crude Distillation Capacity in 2013 (Thousand Barrels/Day)	Crude Distillation Capacity in 2014 (Thousand Barrels/Day)
Abadan	360	400
Isfahan	370	375
Bandar Abbas	320	330
Tehran	250	250
Arak	170	250
Borzuyeh	120	120
Tabriz	110	110
Shiraz	57	60
Kermanshah	25	22
Levan Island	30	60
Boo Ali Sina	34	34
Booshehr	10	10
Aras	5	15
Yazd	3	3
Total	1,864	2,039

Source: SVB Energy International, "Iran Upstream Oil and Gas Report"; US Energy Information Administration, "Country Analysis Brief, Iran."

are to be built: the Persian Gulf Star refinery, with the capacity of 360 thousand barrels per day (kb/d); the Fars refinery, with the capacity of 120 kb/d; and the new Assalouyeh refinery project, with the capacity of 480 kb/d.⁹⁷ The Assalouyeh refineries are defined in a project called Siraf, which includes eight refineries, each having a capacity of 60 kb/d.⁹⁸ To complete construction of Siraf refineries, Iran would need \$250-300 million for each refinery unit.⁹⁹ The investment and construction of the Persian Gulf Star refinery has already started, and is expected to reach completion by 2017.¹⁰⁰ Upon completion, Iran would become self-reliant for domestic gasoline production.¹⁰¹

4.1. DOMESTIC CONSUMPTION AND FUEL SUBSIDY REFORM PLAN

Lowering the Iranian domestic energy consumption rate is another part of Khamenei's doctrine of an "Economy of Resistance." Article 4 indicates that a significant reduction of domestic energy use could be achieved by implementing

97 "Zangeneh: Even Under Sanctions We Will Increase Oil and Condensate Production to 5.7 mb/d," *ISNA*, June 2014, <http://isna.ir/fa/news/93031808646>.

98 SVB Energy International, "Iran Upstream Oil and Gas Report."

99 Ibid.

100 Ibid.

101 Ibid.

targeted, more focused, and effective subsidies.¹⁰²

Reduction of fuel subsidies on the one hand, and increasing the refinery capacity on the other, are key factors in helping Iran control its domestic oil consumption. Both of these tactics could help Iran achieve independence in terms of domestic demand for fuel and gasoline. Although the Iranian government introduced an energy subsidy reform plan, in order to reduce the price subsidies on petroleum, natural gas, and electricity (and, by extension, overall domestic consumption), it still has a long way to go before achieving its goal.¹⁰³

In 2012, Iran consumed 9.6 quadrillion British thermal units (BTU) of energy, of which oil and gas accounted for almost 98 percent of total energy consumption.¹⁰⁴ Iran's domestic consumption growth increased by 50 percent in the past ten years, and is expected to have an upward trend by 2030. Nevertheless, Iran's subsidy reform plan helped with controlling the bullish trend in consumption of domestic refined petroleum, particularly gasoline.

The Iranian government introduced the subsidy reform program to reduce subsidies on domestic fuel prices. The subsidy reform was designed to happen gradually, in order to prevent a shock in the domestic market. The first phase

102 Center for Preserving and Publishing the Works of Grand Ayatollah Sayyid Ali Khamenei, "General Policies of Economy of Resistance."

103 US Energy Information Administration, "Country Analysis Brief, Iran."

104 Ibid.

of this plan was implemented at the end of 2010. The second phase of this program was launched in April 2014, and the price for subsidized¹⁰⁵ gasoline increased from 4,000 rials (16 cents) per liter to 7,000 rials (27 cents) per liter, and from 7,000 rials (27 cents) to 10,000 rials (42 cents) for free-market gasoline.¹⁰⁶

The subsidy reform plan was designed to reduce the gap between international and domestic prices, save the government money, and allow Iran to better manage its domestic consumption. Iran's Fifth Five-Year Development Plan (2011-2015) suggested that domestic gasoline prices should rise to about 90 percent of the free-on-board (FOB) prices of the Persian Gulf by the end of the plan (March 2015). Yet since 2011, mainly due to its sanctions-caused currency devaluation, the Iranian government has not saved significant money from reducing fuel subsidies. The rial's devaluation since 2011 has increased the gap between international and domestic prices for fuels, particularly gasoline. When the first phase of the plan was implemented in 2010, the US dollar was equal to 10,000 rials. In this scenario, Iran could manage to increase gasoline prices from 10 to 40 cents per liter, and save about 30 cents per liter. However, when the value of the rial dropped between 2012 and 2014, Iran's maximum savings from the fuel price subsidy reduction was only 16 cents per liter.

5. IRAN'S POLICY TOWARD ITS PETROCHEMICAL INDUSTRY

During Bijan Zangeneh's first term as oil Minister, from 1997 to 2005, he massively expanded Iran's petrochemical industry, increasing the value of annual petrochemical production from \$1 billion to \$18 billion.¹⁰⁷ Investment in and development of Iran's downstream sector has always been part of Zangeneh's strategy, and, since his reappointment in 2013, this will continue to be part of his new team's plan. In 2014, Iran's petrochemical industry consumed 5 percent of Iran's total liquid and gas hydrocarbon production and produced about 41 million ton of products. Iran's petrochemical products represented 40 percent of Iran's non-oil export in the same year.¹⁰⁸ Zangeneh is planning to increase the petrochemical production nominal capacity from today's 60 million tons per year to 180 million tons by 2025.¹⁰⁹ It is important to note that due to sanctions and lack of adequate feedstock, Iran's petrochemical production in 2014 was only 41 million tons per year below its nominal capacity of 60

105 The Iranian government issues a smart fuel card for each card, with 60 liters of semi-subsidized gasoline a month. Once the 60 liters in the card is used up, the extra amount of gasoline has to be purchased at the free market price.

106 SVB Energy International, "Iran Upstream Oil and Gas Report."

107 Sara Vakhshouri, "Iran's Oil Minister Confronts Sanctions."

108 'Iran's Petrochemical Products reaches to 180 million ton/year', Islamic Republic News Agency (IRNA), January 2015, <http://www.irna.ir/fa/News/81442405/>

109 "Iran's Priorities for Developing Its Shared Oil and Gas Fields," *IRNA*.

million tons/year.¹¹⁰ Iran plans to supply most of the natural gas feedstock for its petrochemical factories from the South Pars gas field.

Expanding the petrochemical sector makes economic sense for Iran's economy, mainly because the country holds massive natural gas reserves. Being able to use natural gas as the feedstock of its petrochemical factories gives Iran a substantial economic advantage over its regional competitors.

Expansion of the petrochemical industry is also desirable because it is in line with Khamenei's "Economy of Resistance." Because sanctions have largely targeted Iranian crude oil exports, expanding downstream capability increases the share of non-oil petroleum products in the country's economy and serves as a way to lessen the impact of sanctions.

6. UPSTREAM INVESTMENT POLICY: ATTRACTING FOREIGN INVESTMENT

US and EU sanctions have had a significant long-term toll on Iran's infrastructure and have prevented adequate investment and technology from entering the country. According to Iran's latest five-year energy investment plan (2011-2015), Iran needs \$255 billion worth of investment in its oil and gas industry in order to reach its target plans (see table 7). According to this plan, Iran needs to drill 2,500 wells—2,000 wells onshore and 500 wells offshore—to increase its crude oil production to the target level of 5 mb/d.¹¹¹ Iran's petroleum ministry could not absorb the required investment, however, and is far behind its scheduled oil and gas development plans. This has hindered key natural gas reinjection projects, which are necessary to sustain production from matured oilfields, and completion and development of the South Pars gas field.

6.1. MODIFYING THE UPSTREAM INVESTMENT REGULATIONS

After 1979, Iran modified its policy toward foreign investors in its energy industry. In the late 1990s, Minister Zangeneh introduced a new type of contract that, for the first time since the 1979 revolution, allowed international investment in Iran's development projects of old oilfields. The new contract was named buy-back and its main goal was to enhance Iran's recovery factors.¹¹² Later, Iran

110 'Managing Director of National Iranian Petrochemical Company: "By the end of 2015, additional 8.4 million tons/year will be added to the total petrochemical production capacity," Iran's Ministry of Petroleum website, January 2015, <http://www.mop.ir/Portal/Home/ShowPage.aspx?Object=NEWS&ID=80177a72-eea7-43ec-80d2-22fe07b-2caad&LayoutID=912a60ab-89b6-4c35-8cc9-ae59d0709689&CategoryID=6949fd08-0b05-417d-9828-7f7c4022aeb0>

111 Reza Zandi, "The \$50 Billion Game of Drilling Rig," *Seda Weekly*, August 2015.

112 Iran's average recovery factor is around 20 percent.

Table 7. Iran's Fifth Five-Year Energy Investment Plan, 2011-2015

Iran's Five-Year Energy Investment Plan (2011-2015) (\$ Billion)	
Upstream (Oil and Gas)	\$155
Midstream and Downstream Oil	\$21
Midstream and Downstream Gas	\$41
Petrochemical	\$38
Total	\$255

Source: Iran's Ministry of Petroleum; US Energy Information Administration, "Country Analysis Brief, Iran."

allowed the international investors to participate on exploration projects and work on its green fields. Iran's petroleum ministry revised buy-back contracts for a third time in order to increase their incentives, to reduce investment risks, and to increase the flexibility of the contract terms for the investors.

Iran could attract around \$50 billion of investment for its energy industry by offering buy-back contracts to international companies. Nevertheless, this type of contract was not successful in maintaining the investments and activities of international oil companies, such as Total and Eni, in its energy industry. Lack of IOC interest in the buy-back contract was further reinforced by international sanctions on Iran and by the situation in Iraq in 2004 and 2005. The Iraqi government and, in particular, the Kurdistan region offered more desirable contract models for investors. These hurdles along with tighter sanctions on Iran's energy industry forced the country's decision-makers to revise their investment contracts.

In 2013, for the first time, Iran's Minister of Petroleum Rostam Ghasemi, former head of IRGC-affiliated Khatam-al Anbiya Construction Headquarters, offered production-sharing contracts for investment in upstream energy fields.¹¹³ During Ghasemi's time, NIOC offered such a contract to an Indian consortium to develop the offshore Farzad B gas field, a shared field with Saudi Arabia located in the Farsi exploration block in the Persian Gulf.

Upon resuming office, Zangeneh put a lot of effort and focus on revising Iran's upstream investment contract models in order to once again attract international investors in the country's energy sector. In February 2014, the committee that Zangeneh assigned for revising the investment regulations introduced a new type of investment contract.

The new contract model was named 'Iran Petroleum Contract,' or IPC. According to this committee, IPC offers more desirable terms and incentives by providing investors with higher profits and implementing fees that are in correlation with the investment risks.¹¹⁴

The IPC proposes a joint venture between an Iranian company and international companies for exploration, development, and production projects (see table 8.) Involvement of foreign companies in the production process is one of the major differences between the IPC and the buy-back contract. Previously, international investors were only allowed to participate in exploration and development projects and had to leave the field by the time the production started. Under the IPC, international oil companies will have an active role in the production process—a very unusual concession, unseen since the inception of the Islamic Republic in 1979. This is the first time since the 1979 revolution that Iran will involve international oil companies and investors in the production process.

The terms for the exploration projects are the other noticeable difference between the IPC and the buy-back contract. If no commercial resources are discovered during an exploration project, IPC allows the investing company to participate in another exploration project. According to the Iranian Constitution, "the ownership of the reservoir belongs to the nation and cannot be transferred."¹¹⁵ But according to the IPC committee, the new investment model allows investors to include their revenue from projects in Iranian oil and gas fields in their annual monetary and financial reports.¹¹⁶

The duration of Iran's new investment contracts is almost double the length of buy-back contracts, between twenty

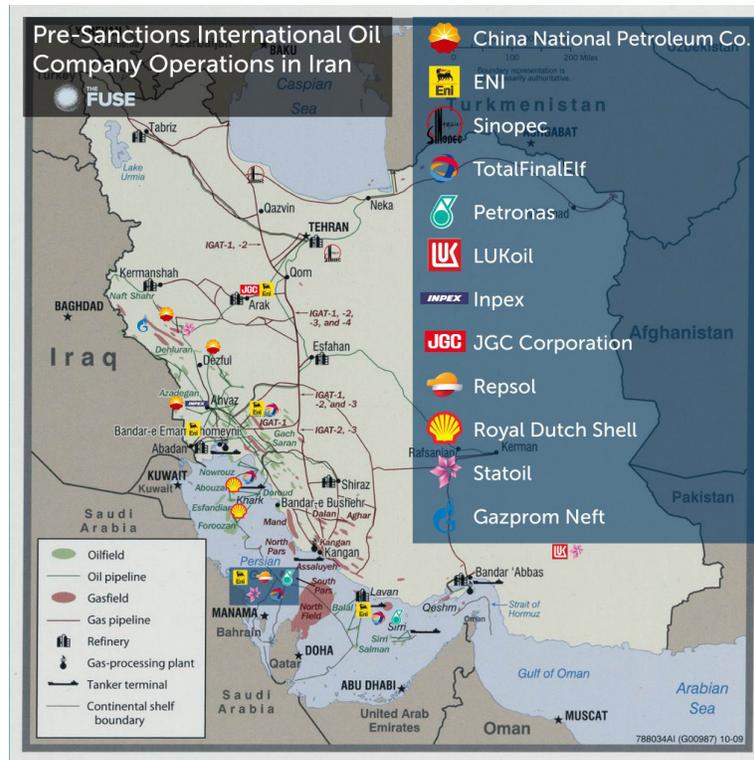
114 Interview with Seyyed Mehdi Hossein, *SHANA*, February 2014, <http://www.shana.ir/fa/newsagency/212965/دین‌اوخ‌دوخ-یوس-هب-ار-ن‌ای‌ناه‌ج-ن‌اری>.

115 Ibid.

116 Interview with Seyed Mehdi Hosseini, *SHANA*, February 2014.

113 Sara Vakhshouri, "Iran Offers New Terms for Oil Contracts."

International Oil Companies Activities in Iran Oil and Gas Fields prior to 2012 sanctions



Source: Matt Piotrowski, "Gas Could Trump Oil in Iran's Post-Sanctions World," Energy Fuse, September 16, 2015, <http://www.energyfuse.org/gas-could-trump-oil-in-irans-post-sanctions-world>.

and twenty-five years. NIOC hopes to increase the quality of work and protect its oil and gas reservoirs by engaging international companies for longer periods of time. This will give the investors a more vested stake in the field and could create political advantages for the country, as investing companies would have long-term interests in Iran. Nevertheless, committing to a long-term investment contract involves more risk evaluation from the investing company, particularly given the current low-oil price environment.

The IPC model also creates an integrated investment plan for exploration, development, and production processes. By comparison, in the previous buy-back contracts, the investor had to enter a new bidding round after the exploration process and compete with other investors to gain a development project for the same field.

It is worth mentioning that, although the proposed terms in the new IPCs are much more flexible and have higher incentives than buy-back contracts, no international oil company will be able to invest in the Iranian oil industry until international sanctions are eased, following the implementation of the nuclear agreement reached between Iran and the P5+1. The true test of the attractiveness of the IPC contracts will be seen in the months and years after sanctions are lifted.

6.2. NATIONAL DEVELOPMENT FUND

The National Development Fund of Iran (NDFI) was founded in 2011, based on Article 84 of the country's five-year "socioeconomic development plan." The NDFI was established as independent from Iran's budget, and holds about 20 percent of all oil, condensate, and natural gas export revenue (after cost deductions) for investment purposes.¹¹⁷ In 2014, the Sovereign Wealth Fund Institute estimated that the NDFI is worth about \$62 billion, which has since risen to \$70 billion, according to the latest official estimate.¹¹⁸ Upon the removal of sanctions, Iran would have access to an estimated \$100-120 billion of its foreign exchange reserves, currently frozen in escrow accounts abroad due to sanctions.¹¹⁹ The Iranian government is planning to provide international investors with some of these international reserves through agreements with international banks.¹²⁰ This way, if Iran could not gain full access to its escrow accounts for some reason, it would still

117 In the case of natural gas, the central bank has to transfer 20 percent of the export revenue after deducting the value of imported gas. See: <http://ndfi.ir/#ژوندن-صن-همان-س-ا/109314>.

118 "Iran to Draw on Sovereign Fund to Withstand Oil Price Slide," *Reuters*, November 14, 2014, <http://www.reuters.com/article/2014/11/15/us-iran-economy-idUSKCN0IZ0MV20141115>; Sharagim Sham, remarks during the Second South Caspian Summit, April 16, 2015.

119 Bijan Khajepour, "What Will Happen Once Iran's Assets are Unfrozen?" *Al-Monitor*, May 26, 2015, <http://www.al-monitor.com/pulse/originals/2015/05/iran-import-sanctions-investment-consumer-foreign-assets.html>.

120 Sham, Second South Caspian Summit.

Table 8. Comparison between the Terms of the IPC and Buy-Backs

Buy-Backs Versus IPC		
Type of contract	Buy-Back	IPC
Duration of the contract	3-5 years	20-25 years
Fields of involvement	Exploration and development	Exploration, development, and production
Investment returns in exploration projects	If the project doesn't lead to development and production, the IOC's investment will not be reimbursed	If the project doesn't lead to development and production, the IOC's investment will not be reimbursed The IOC has priority to participate in another exploration project
Fees	Low flexibility	Higher flexibility
Ceiling of profit	Limited	Flexible (higher fees and bonuses in the fields with higher risks)
Cost of operation	Fixed	Open /flexible

Source: Iran's Ministry of Petroleum; SVB Energy International, "Iran Upstream Oil and Gas Report."

be able to use these resources for investment domestically. However, lower oil prices and Iran's budget deficit, along with lack of access to its oil income, will limit the NDFI's resources. Moreover, Iranian officials have not yet clarified their priorities, or the procedure for allocating these resources to private investors.

6.3. INTEGRATING THE INVESTMENT PROCESS IN UPSTREAM, DOWNSTREAM AND PETROCHEMICAL

Iran is planning to offer an investment package to international investors, to integrate their investment in Iran's energy industry so they can extract the hydrocarbon in the upstream sector, and then convert it to the final product in the downstream sector or petrochemical process. This will integrate the investment in upstream with downstream and petrochemical. International investors can take advantage of the discounted raw feedstock that they produced from oil or gas fields, and use it in a refinery or petrochemical industry in which they have invested. For instance, we could refer to Iran's agreement with India for developing the Farzad B field, and involving Indian companies in investing in and sharing

a petrochemical project in Chabahr. In other words, integrating India's investment from developing a gas field all the way to developing a petrochemical factory, with the purpose of exporting the final product to India.

7. CONCLUSION

Iran, with its huge oil and gas reserves, has witnessed many ups and downs in its relations with other countries and international oil companies. In response to each challenge, Iran's energy policy changed, moving it toward self-reliance. After the 1979 Islamic Revolution, years of sanctions and war prevented the energy industry from having continuous access to the necessary investment and technology. Since 2012, sanctions against Iran's energy industry and oil exports intensified, due to conflict surrounding Iran's nuclear program. In 2014, Khamenei announced the idea of the "Economy of Resistance," with the aim of reducing dependency on oil revenue, and increasing value-added production by processing raw material domestically and exporting the processed material. Therefore, focusing on the downstream and refinery sector, as well as the petrochemical sector, will be a major component of Iran's energy industry in the next decade. In regards to

Table 9. Iran's Energy Policy and Diplomacy after the Nuclear Deal

Goal	Strategy
Regaining and expanding the market share of oil, natural gas, refined petroleum products, and petrochemical products	<ul style="list-style-type: none"> - Adopt an oil-for-goods-and-services strategy. - Offer discounts on oil prices and transportation. - Engage buyers in investment contracts and production processes throughout the value chain (e.g., Iran's agreement with India for developing the Farzad B field and involving Indian companies in investing and sharing a petrochemical project in Chabahr. In other words, integrating India's investment from developing a gas field all the way to developing a petrochemical factory with the purpose of exporting the final product to India). - Involve IOCs in the production and exportation of the field's product for a longer time in the upstream project.
Attracting investment and technology	<ul style="list-style-type: none"> - Create new upstream investment regulations with higher incentives (Iran Petroleum Contract). - Use the NDFI's resources to lend money or share the investment project with foreign partners. - Integrate investments in upstream to downstream and petrochemical, in order to sell the final product to the investing company or its country.
Adding value to the production chain (reducing the share of export of raw resources and increase the non-oil export)	<ul style="list-style-type: none"> - Increase the domestic refinery capacity (for oil, natural gas, and condensate). - Increase the petrochemical capacity. - Convert natural gas to electricity and export electricity instead of natural gas.
Reducing its vulnerability to future sanctions	<ul style="list-style-type: none"> - Increase the non-oil export share. - Export the refined petroleum products and electricity, instead of raw resources. - Reduce and control domestic energy use. - Gain foreign technology as part of the upstream investment agreements. - Create long-term interests and increase the stakes of foreign companies and countries. - Create new channels for redirecting foreign reserves to international escrow accounts by giving funds to companies to reinvest in Iran or importing procurements.
Energy diplomacy	<ul style="list-style-type: none"> - Expand the energy exports to neighboring countries, particularly the GCC. - Increase economic ties with neighbors through investments and exportation of goods and engineering services. - Use neighbors as transit points for exporting energy resources, and vice versa. - Create long-term political relations with other countries, particularly GCC neighbors, European countries, India, China, and Japan, through long-term energy export agreements or involving them in long-term energy investments.

Source: Iran's Ministry of Petroleum; SVB Energy International, "Iran Upstream Oil and Gas Report."

hydrocarbon production, Iran will try to regain its pre-2012 crude oil production level, and put most of its effort and emphasis on the expansion of its natural gas capacity. The export of natural gas and the conversion of natural gas into electricity and petrochemical products are major components of Iran's energy policy. Iran could also increase its condensate production as a byproduct of its natural gas production. Iran will also need to focus on controlling its domestic consumption growth, particularly to prevent a rapid growth in domestic fuel consumption.

Creating long-term energy trade ties is an important part of Iran's energy diplomacy, as is engaging international investors for longer periods of time. Reaching a nuclear deal with the P5+1, and the prospect of rolling back sanctions, gives Iran an opportunity to come out of isolation and once again create ties with international partners. Tehran is planning to strengthen its economic ties with its Arab neighbors and its neighbors north of the Caspian by exporting oil, gas, refined petroleum products, and electricity. Also, by reforming its upstream investment regulations, Iran would create longer ties with international investors.

The outline of Iran's energy policy and diplomacy after the nuclear deal are detailed in table 9.

MARKET IMPACTS TAKEAWAYS

Sanctions removal and immediate impact on the global energy market: Since the start of sanctions in 2012, Iran lost more than nearly half of its market share, and its exports dropped by more than 1 mb/d. Hence, NIOC's primary goal after the sanction rollback would be to gain its pre-2012 position as the second-leading oil exporter in OPEC, and to try to increase its oil exports to 2.5 mb/d. However this increase will be gradual, both because of technical issues and because of the required time for marketing and sale of its extra oil at a time of oversupply in the market. Depending on the timeline of the sanctions-unwinding process, Iran could increase its exports of crude oil about

400,000-500,000 kb/d by mid to end of 2016. Iran could also add an additional 150,000-200,000 b/d of condensate to its liquid export volumes by mid-2016. Iran's petroleum minister announced that he is ready to add 500,000 b/d of oil to its export upon the removal of sanctions, and an additional 500,000 by mid-2016, and part of this additional oil would be condensate. At the same time, the sanctions rollback on Iran, and the prospect of the country increasing production, could have an immediate, psychological effect and downward impact on the international oil prices.

Long-term impact: Iran's main focus will be the development of its natural gas fields, particularly the South Pars giant gas field. Iran's natural gas and condensate (byproduct of its natural gas fields) production is expected to increase significantly in the next 3-5 years. Iran is going to utilize its additional natural gas capacity in different ways: 1) To export natural gas, particularly to its neighbors, in order to increase its gas export market share and also as part of its energy diplomacy to create long-term energy alliance; 2) To convert part of its natural gas into electricity and export electricity to its neighboring countries, with the goal of increasing the value added to its natural gas and also diversifying its exports products. 3) To use its natural gas as the feedstock of its refinery plants. Iran's current petrochemical production capacity is about 60 million tons/year, and the country is planning to increase this capacity to 180 million tons/year by the end of 2025. Most of the natural gas feedstock of its petrochemical factories is expected to be supplied from South Pars gas field.

Iran's condensate production will also increase to 1 million b/d by 2017, and Iran is planning to increase its condensate refinery capacity by the next 2-3 years, in order to refine most of its condensate domestically and export the refined products instead of condensate.

Therefore, it is important to note that Iran's major energy impact in the middle and long terms will be on the global downstream (refined petroleum products) and petrochemical markets.

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