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The Iran Nuclear Agreement and Iranian Energy Exports, the Iranian Economy, and World Energy Markets

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Introduction

This briefing draws on a range of EIA studies, work by the World Bank, other sources, and the views of experts in the Administration on the nature and impact of the Iran nuclear agreement.

It provides a range of data and estimates on the impact of sanction on Iran's petroleum production, exports, and economy, and the impact that full implementation of the Iran nuclear agreement could have on Iran's exports and economy, and world oil markets.

It is not intended to provide forecasts in these areas, or to make a case for or against the Iran nuclear agreement. It is rather intended to provide a range of different estimates in key areas, and the complexity of the issues involved.

It will be revised over time, and any suggested additions and issues to be addressed would be most helpful in making such revisions. Please send them to Anthony H. Cordesman at acordesman@gmail.com.

Timeline for Sanctions and Reaching the Agreement

1979 November **-** US imposes the first sanctions on Iran, banning imports from Iran and freezing $12bn in assets.

1995 March - US companies are prohibited from investing in Iranian oil and gas and trading with Iran.

1996 April - Congress passes a law requiring the US government to impose sanctions on foreign firms investing more than $20m a year in the energy sector.

2006 December - The UN Security Council imposes sanctions on Iran's trade in nuclear-related materials and technology

and freezes the assets of individuals and companies.

2007 October - US announces sweeping new sanctions against Iran, the toughest since 1979. UN Security Council tightens economic and trade sanctions on Tehran.

2010 June - UN Security Council imposes a fourth round of sanctions against Iran over its nuclear program, including tighter financial curbs and an expanded arms sanctions.

2011 May and December – the assets of 243 Iranian entities and around 40 more individuals are frozen and visa bans imposed.

2012 January - US imposes sanctions on Iran's central bank, for its oil export profits. Iranian threatens to block the transport of oil through the Strait of Hormuz.

2012 June - US bans the world's banks from completing oil transactions with Iran, and exempts seven major customers India, South Korea, Malaysia, South Africa, Sri Lanka, Taiwan and Turkey - from economic sanctions in return for their cutting imports of Iranian oil.

2012 July - European Union boycott of Iranian oil exports comes into effect.

2012 October - Iran's currency, the Rial, falls to a record low against the US dollar, losing about 50% of its value since

2011. EU countries announce further sanctions against Iran focusing on banks, trade and gas imports and freezing assets

of individuals and companies that supply Iran with technology.

2013 November - Iran agrees to curb uranium enrichment above 5% and give UN inspectors better access in return for

about $7 billion in sanctions relief at talks with the P5+1 group - US, Britain, Russia, China, France and Germany – in Geneva.

2015 April - Iran and the EU reach a nuclear framework agreement and set for a final agreement in July 2015 with attendant lifting of the EU and the US sanctions on Iran.

2015 July 14th - The P5+1 group reach an agreement with Iran on limiting Iranian nuclear activity in return for the lifting of

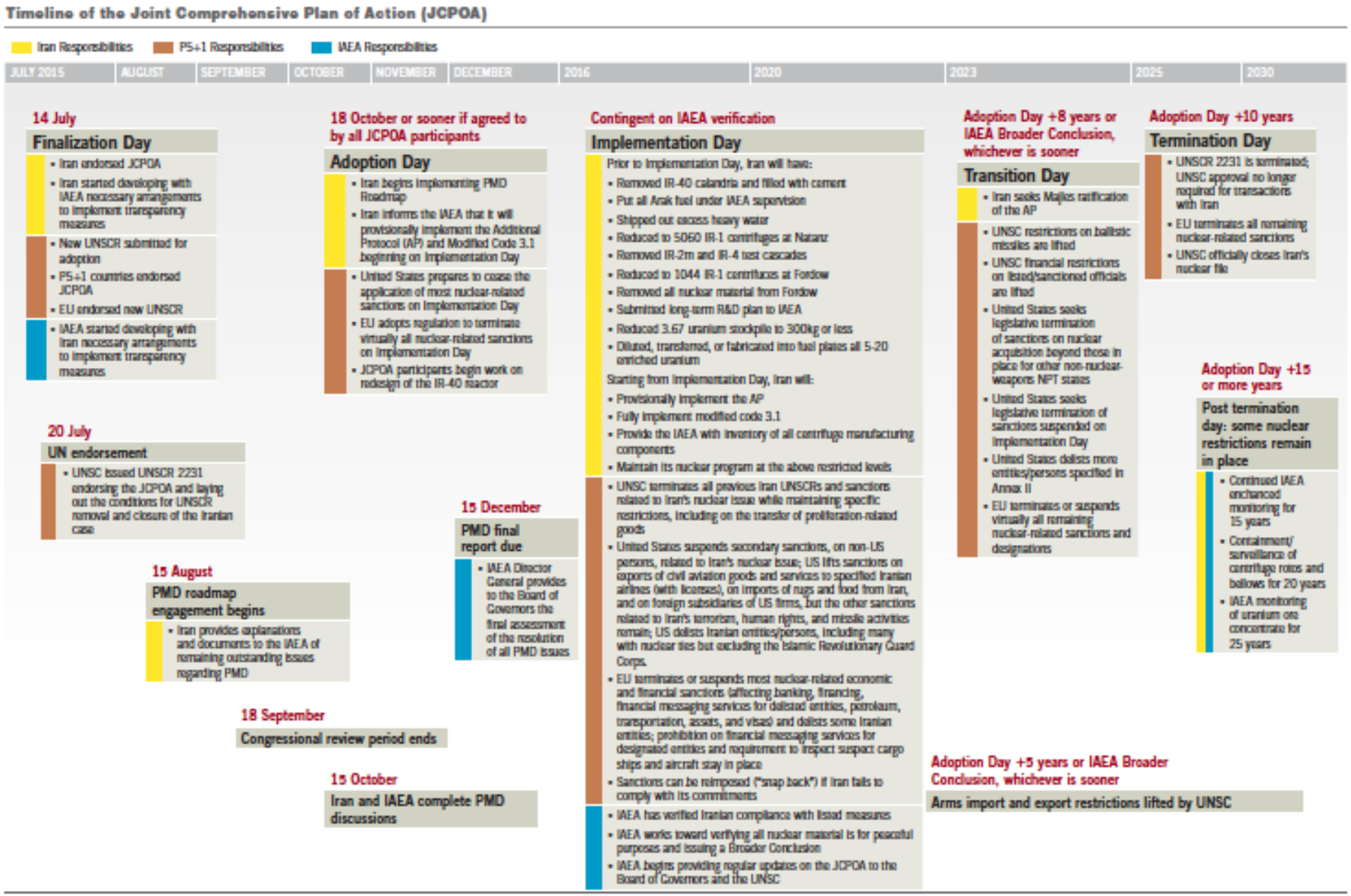
sanctions.

2015 July 20th - The U.N. Security Council unanimously approved the July 14th agreement.

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 2.

Key Aspects of the Iran Deal

JCPOA Implementation Calendar



Source: U.S. experts

Key Conditions that Iran Must Meet for Implementation Day and Beyond - I

Preamble and General Provisions

- The full implementation of this JCPOA will ensure the exclusively peaceful nature of Iran's nuclear program.
- Iran reaffirms that under no circumstances will Iran ever seek, develop, or acquire any nuclear weapons.
- This JCPOA will produce the comprehensive lifting of all UN Security Council sanctions as well as multilateral and national sanctions related to Iran's nuclear program.
- A Joint Commission consisting of the E3/EU+3 and Iran will be established to monitor the implementation of this JCPOA and will carry out the functions provided for in this JCPOA.
- The IAEA will be requested to monitor and verify the voluntary nuclear-related measures as detailed in this JCPOA. The IAEA will be requested to provide regular updates to the Board of Governors, and as provided for in this JCPOA, to the UN Security Council.
- The E3+3 will submit a draft resolution to the UN Security Council endorsing this JCPOA affirming that conclusion of this JCPOA marks a fundamental shift in its consideration of this issue and expressing its desire to build a new relationship with Iran.

Nuclear

Enrichment, Enrichment R&D, Stockpiles

- Iran's long term plan includes certain agreed limitations on all uranium enrichment and uranium enrichment-related activities including certain limitations on specific research and development (R&D) activities for the first 8 years, to be followed by gradual evolution, at a reasonable pace, to the next stage of its enrichment activities for exclusively peaceful purposes.
- Iran will begin phasing out its IR-1 centrifuges in 10 years. During this period, Iran will keep its enrichment capacity at Natanz at up to a total installed uranium enrichment capacity of 5060 IR-1 centrifuges. Excess centrifuges and enrichment-related infrastructure at Natanz will be stored under IAEA continuous monitoring.

(Note: Iran currently has about 19,000 IR-1 and advanced IR-2M centrifuges installed)

Based on its long-term plan, for 15 years, Iran will keep its level of uranium enrichment at up to 3.67%.

(Note: Prior to the Joint Plan of Action, Iran enriched uranium to near 20%)

Iran will refrain from any uranium enrichment and uranium enrichment R&D and from keeping any nuclear material at Fordow for 15 years.

(Note: Iran currently has about 2,700 IR-1 centrifuges installed at Fordow of which about 700 are enriching uranium)

- Iran will convert the Fordow facility into a nuclear, physics and technology center.
- 1044 IR-I machines in six cascades will remain in one wing at Fordow. Two of those six cascades will spin without uranium and will be transitioned, including through appropriate infrastructure modification, for stable isotope production. The other four cascades with all associated infrastructure will remind idle.
- During the 15 year period, Iran will keep its uranium stockpile under 300 kg of up to 3.67% enriched UF6 or the equivalent in other chemical forms.

Source: U.S. experts

Key Conditions that Iran Must Meet for Implementation Day and Beyond- II

(Note: Iran currently maintains a stockpile of about 10,000 kg of low-enriched UF6)

 All other centrifuges and enrichment-related infrastructure will be removed and stored under IAEA continuous monitoring.

Arak, Heavy Water, Reprocessing

 Iran will design and rebuild a modernized heavy water research reactor in Arak, based on an agreed conceptual design, using fuel enrichment up to 3.67%, in the form of an international partnership which will certify the final design. The reactor will support peaceful nuclear research and radioisotope production for medical and instructional purposes. The redesigned and rebuilt Arak reactor will not produce weapons grade plutonium.

 Iran plans to keep pace with the trend of international technological advancement in relying on light water for its future power and research with enhanced international cooperation including assurance of supply of necessary fuel.

 There will be no additional heavy water reactors or accumulation of heavy water in Iran for 15 years.

 Iran intends to ship out all spent fuel for all future and present power and research nuclear reactors.

Transparency and Confidence Building Measures

 Iran will provisionally apply the Additional Protocol to its Comprehensive Safeguards Agreement in accordance with Article 17 b) of the Additional Protocol.

 Iran will fully implement the “Roadmap for Clarification of Past and Present Outstanding Issues” agreed with the IAEA, containing arrangements to address past and present issues of concern relating to its nuclear program.

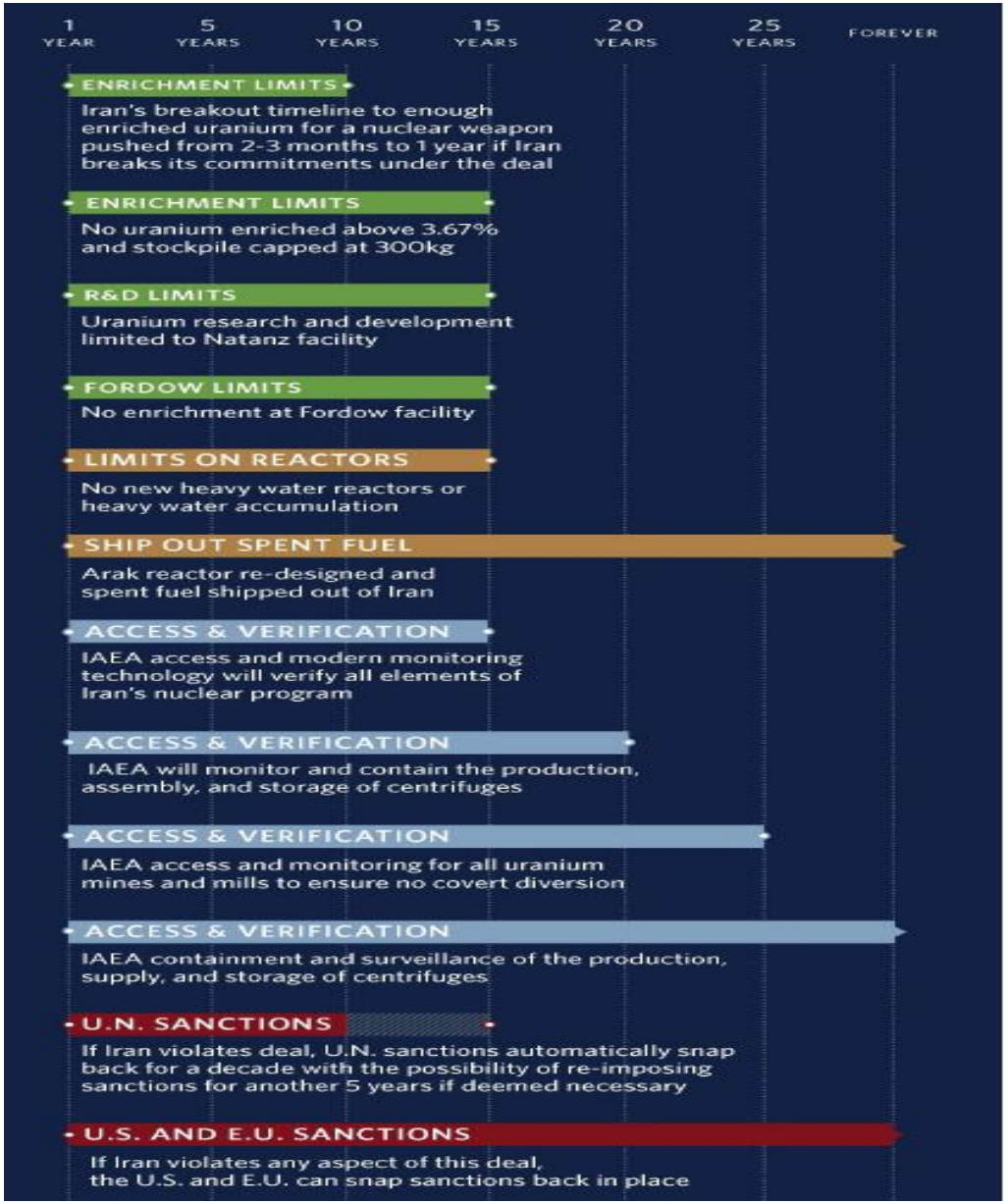
Iran will allow the IAEA to monitor the implementation of the above voluntary measures for their respective durations, as well as to implement transparency measures, as set out by the JCPOA and its Annexes. These measures include: a long-term presence in Iran; IAEA monitoring of uranium ore concentrate produced by Iran from all uranium ore concentrate plants for 25 years; containment and surveillance of centrifuge rotors and bellows for 20 years; use of IAEA approved and certified modern technologies including on-line enrichment measure and electronic seals; and a reliable mechanism to ensure speedy resolution of IAEA access concerns for 15 years, as defined in Annex I.

 Iran will not engage in activities, including at the R&D level, that could contribute to the development of a nuclear explosive device, including uranium or plutonium metallurgy activities.

 Iran will cooperate and act in accordance with the procurement channel in this JCPOA, as detailed in Annex IV, endorsed by the UN Security Council resolution.

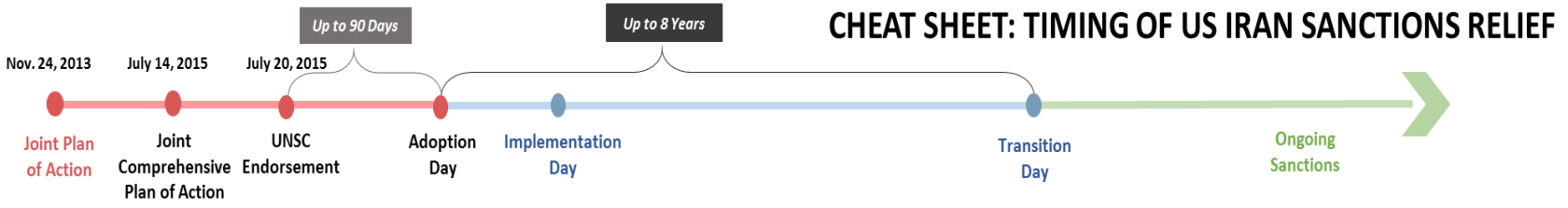
Source: U.S. Experts

Time Periods in Years for Iran Nuclear Deal



Source: U.S. experts

CSIS Estimate of Energy Sanctions Relief



Sanctions and Restrictions Suspended Under Joint Plan of Action (JPOA)	Sanctions and Restrictions To Be Suspended by "Implementation Day" and to Be Lifted by "Transition Day" Under Joint Comprehensive Plan of Action (JCPOA)	Sanctions and Restrictions NOT to be Suspended or Lifted
• Sanctions on: o transactions with or in Iran's energy sector, except for firms based in countries that "significantly reduce" purchases of Iranian oil (note: per JPOA, firms are only required to not increase purchases of Iranian oil); o exportation of Iranian petrochemicals; o dealings with the National Iranian Oil Co., National Iranian Tanker Co., and Naftiran Intertrade Co.; o provision of precious metals to Iran; o and provision of goods and services to Iran's automobile industry. • Prohibitions on: o foreign banks that process payments through Iran's Central Bank from opening US accounts; o foreign banks that use or hold the *rial* from opening US accounts; and o and US banks from maintaining a banking relationship with any foreign bank that conducts transactions with the Iranian Revolutionary Guard Corps (IRGC) or UN-sanctioned Iranian entities.	• Sanctions on: o transactions with or in Iran's energy sector, except for firms based in countries that do not increase purchases of Iranian oil; o provision to Iran of goods, services, or insurance to Iran's oil, gas, petrochemical, shipbuilding, and shipping sectors, of graphite, raw or semi-finished metals, semi-precious metals, precious stones or jewels, or US currency, and of software for integrating industrial processes; o investment in Iran's energy sector, including in international oil pipelines and liquefied natural gas infrastructure; o and purchasing or facilitating of the issuance of Iranian sovereign debt and government bonds. • Prohibitions on: o importing goods to the US from sanctioned individuals; o payments or transfers of credit through any US financial institution by sanctioned entities; o and any firm that sells gasoline or other fuels to Iran, or helps Iran attain gasoline, from selling crude oil to the US Strategic Petroleum Reserve. • Blocks on US-based property of individuals that conduct transactions with sanctioned individuals. • Reporting requirement on transactions with Iran through electronic payment systems (note: this contributed to Iran's blockage from Europe's SWIFT system). • "Lock up" of Iranian oil revenue in local currency accounts (note: this forced Iran to trade oil for goods rather than dollars). • Note: sanctions suspended under JPOA will also be lifted by "Transition Day."	• Sanctions on: o foreign financial institutions that facilitate Iran's support of foreign terrorist organizations; o individuals responsible for suppression of 2009 demonstrations, censorship, limiting freedom of assembly, or diverting food or medicine from the Iranian people; o foreign individuals and governments that provide Iran with goods, services, or technology related to weapons or missile proliferation; o and entities that provide technology to facilitate human rights abuses. • Prohibitions on: o US firms from exporting to, importing from, or investing in Iran, and from knowingly exporting goods for incorporation into products destined for Iran (with an exception for non-US subsidiaries of US firms, and some exceptions for US firms dealing in food, medicine, carpets, and commercial aviation); o US banks from providing financial services to any sanctioned entity; o and US funding, foreign aid, Export-Import bank financing, and arms sales to the Iranian government, as well as assistance for commercial exports to Iran. • Blocks on US-based property of Iranian government and Iranian individuals sanctioned for human rights abuses.

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Source: CSIS Energy and National Security Program

Sanctions Relief - I

The UN Security Council resolution endorsing the JCPOA will terminate all the provisions of the previous UN Security Council resolutions on the Iranian nuclear issue simultaneously with the IAEA-verified implementation of agreed nuclear-related measures by Iran and will establish specific restrictions.

 The EU will terminate all provisions of the EU Regulation, as subsequently amended, implementing all the nuclear related economic and financial sanctions, including related designations, simultaneously with IAEA-verified implementation of agreed nuclear-related measures by Iran as specified in Annex V.

 The United States will cease the application, and will continue to do so, in accordance with the JCPOA, of the sanctions specified in Annex II, to take effect simultaneously with the IAEA-verified implementation of the agreed upon related measures by Iran as specified in Appendix V.
(Note: U.S. statutory sanctions focused on Iran's support for terrorism, human rights abuses, and missile activities will remain in effect and continue to be enforced.)
 Eight years after Adoption Day or when the IAEA has reached the Broader Conclusion that all the nuclear material in Iran remains in peaceful activities, whichever is earlier, the United States will seek such legislative action as may be appropriate to terminate or modify to effectuate the termination of sanctions specified in Annex II.

Implementation Plan

 Finalization Day is the date on which negotiations of this JCPOA are concluded among the E3/EU+3 and Iran, to be followed promptly by submission of the resolution endorsing this JCPOA to the UN Security Council for adoption without delay.

Adoption Day is the date 90 days after the endorsement of this JCPOA by the UN Security Council, or such earlier date as may be determined by mutual consent of the JCPOA participants, at which time this JCPOA and the commitments in this JCPOA come into effect.

 Implementation Day is the date on which, simultaneously with the IAEA report verifying implementation by Iran of the nuclear-related measures described in Sections 15.1 to 15.11 of Annex V, the EU and the United States takes the actions described in Sections 16 and 17 of Annex V.

 Transition Day is day 8 years after Adoption Day or the date on which the Director General of the IAEA submits a report stating that the IAEA has reached the Broader Conclusion that all nuclear material in Iran remains in peaceful activities, whichever is earlier.

 UN Security Council resolution termination day is the date on which the UN Security Council resolution endorsing this JCPOA terminates according to its terms, which is to be 10 years from Adoption Day.

Source: U.S. experts

Sanctions Relief - II

Dispute Resolution Mechanism

 If Iran believed that any or all of the E3/EU+3 were not meeting their commitments under this JCPOA, Iran could refer the issue to the Joint Commission for resolution; similarly, if any of the E3/EU+3 believed that Iran was not meeting its commitments under the JCPOA, any of the E3/EU+3 can do the same. The Joint Commission would have 15 days to resolve the issue, unless the time period was extended by consensus.

 After Joint Commission consideration, any participant could refer the issue to ministers of foreign affairs, if it believed the compliance issue had not been resolved. Ministers would have 15 days to resolve the issue, unless the time period was extended by consensus.

 If the issue has still not been resolved to the satisfaction of the complaining participant, and if the complaining participant deems the issue to constitute significant non-performance, then that participant could treat the unresolved issue as grounds to cease performing its commitments under this JCPOA in whole or in part and / or notify the UN Security Council that it believes the issue constitutes significant non-performance.

Source: U.S. experts

Sanctions that Remain in Force - I

I. U.S. Sanctions

Because the deal only offers relief only from nuclear-related sanctions, a number of U.S. sanctions authorities and designations with respect to Iran will remain in place after Implementation Day, as set out below. This will be accomplished by retaining relevant authorities, including important statutory authorities, the vast majority of Executive orders, and maintaining certain Iranian persons on OFAC's List of Specially Designated Nationals and Blocked Persons (SDN List).1

Primary U.S. Sanctions

 The Government of Iran (GOI) and Iranian financial institutions – including any property in which they have an interest – will remain blocked by the United States. U.S. persons will continue to be broadly prohibited from engaging in transactions or dealings with the GOI and Iranian financial institutions.

 U.S. persons, including U.S. companies, will continue to be broadly prohibited from engaging in transactions with Iran, as well as with Iranian individuals and entities. General prohibitions include: investment in Iran; importing Iranian-origin goods or services; and exporting goods or services to Iran, including clearing U.S. dollars.

 U.S. export controls will also continue to apply to controlled U.S.-origin goods and technology anywhere in the world.

Nonproliferation Sanctions: Statutory sanctions will continue to apply to transfers of WMD and missile technologies and conventional weapons. These sanctions cover items going to Iran's missile program as well as any items that would contribute to an Iranian effort to develop nuclear, chemical, or biological weapons. Statutory sanctions also cover transfers of certain technologies that would contribute to enrichment or reprocessing capabilities or the acquisition of unsafeguarded special nuclear material. In addition, U.S. law will continue to provide for sanctions against the transfer of lethal military equipment or advanced conventional weapons to Iran.

Terrorist List Sanctions: Iran will continue to be listed as a state that has repeatedly provided support for acts of international terrorism. A number of different sanctions laws are keyed to this list, including restrictions on foreign assistance, arms sales, export of certain sensitive technology and dual-use items, nuclear cooperation, and various financial restrictions.

Secondary Sanctions: The United States will also retain secondary sanctions authorities targeting third parties for dealings with Iranian persons on our SDN List, including those designated under our terrorism, counter-proliferation, missile, and human rights authorities. Secondary sanctions target conduct by non-U.S. persons related to sanctioned persons or activities. Anyone worldwide who transacts with or supports individuals or entities sanctioned in connection with Iran's support for terrorism or development of WMD and missiles—as well as any Iranian individual or entity who remains on our SDN List—puts themselves at risk of being cut off from the U.S. financial system. This includes foreign financial institutions, who would risk losing their correspondent accounts with U.S. banks. Sanctions will also continue to apply to persons who provide Iran with specified weapons, dual use goods and related technologies.

Designation Authorities

Missiles: Authorities will remain in place to allow the USG to target Iran's development of missiles and other means to deliver weapons of mass destruction (WMD). For example, Executive Order 13382 and Executive Order 12938, broad counter-proliferation authorities that have been used to designate numerous Iranian-linked targets, would be retained under the JCPOA. More than 130 persons designated pursuant to these authorities for their involvement in Iran's missile program and proliferation activities will remain designated.

Source: U.S. experts

Sanctions that Remain in Force - II

Terrorism: Authorities will remain in place to allow the USG to target Iran's support for terrorism. For example, Executive Order 13224, a broad terrorism authority that has been used to designate approximately 50 Iranian-linked targets, would be retained under the JCPOA. Targets that will remain designated include Iran's Mahan Air, Bank Saderat, and the IRGC-Qods Force. We will also continue aggressively employing this authority against Iran-sponsored terrorist groups such as Hizballah.

Human Rights: Authorities will remain in place to allow the USG to target Iran's human rights abuses and censorship activities. For example, we will retain the GHRAVITY Executive Order (E.O. 13606, April 2012), which targets persons providing information technology to Iran or Syria that could be used by those governments to commit serious human rights abuses. Also remaining in place will be provisions of E.O. 13553 (September 2010), E.O. 13628 (October 2012), the Comprehensive Iran Sanctions, Accountability, and Divestment Act of 2010 (CISADA), and the Iran Threat Reduction and Syria Human Rights Act of 2012 (TRA) targeting human rights abuses.

Regional Destabilization: Authorities will remain in place that allow the USG to target Iran's efforts to destabilize its neighbors and pursue its desire for regional hegemony. Authorities that will remain include those that target:

- Syria: human rights abuses in Syria (E.O. 13572, April 2011) and providing material support to the Government of Syria (E.O. 13582, August 2011). We have used these authorities to target numerous companies and persons involved in such conduct.

- Yemen: threatening the peace, security, or stability of Yemen (E.O. 13611). This authority has been used to target, for example, Iran-backed Houthi militant leaders.

- Iraq: threatening the peace, security, or stability of Iraq. We have employed this authority to target IRGC officials and Iraqis with ties to Iran.

Opposition to Development Assistance: Iran's continued status as a state sponsor of terrorism, moreover, will continue to mean that the U.S. will use its voice and vote in international financial institutions to oppose assistance to Iran.

II. U.N. Security Council (UNSC) Sanctions

UNSC restrictions on Iran's purchases and sales of conventional arms and related materiel and ballistic missile-related items and technology will remain in place for five and eight years, respectively, or until the International Atomic Energy Agency confirms the Broader Conclusion, whichever is earlier.

There are current UN arms embargoes on the Houthis in Yemen, non-state actors in Lebanon (including Hizbullah), Afghanistan (the Taliban), Iraq (including Shi'a militias), North Korea and Libya, as well as on several states in Africa.

1. Approximately 32% of all Iran-related designations (over 200 persons) will remain on OFAC's SDN List after implementation of the JCPOA; these persons will be subject to all applicable primary and secondary sanctions. This group was sanctioned in connection with activities outside the scope of the JCPOA negotiations and associated sanctions relief. The group consists of persons designated in connection with terrorism, human rights abuses and activities in Syria, and more than 130 persons designated in connection to Iran's defense industry and ballistic missile program, which includes the IRGC and its network.

Source: U.S. experts

“Snap Back”

U.S. will maintain the ability to quickly snap back UN, EU and U.S. sanctions if Iran violates its commitments. At the UN, snap back cannot be prevented by China, Russia, or any set of UNSC members. The U.S. can snap back all or part of its powerful unilateral sanctions at any time.

Talking Points

Mechanism for Snap Back - U.S. and EU Sanctions

 No constraints on ability to snap back powerful unilateral sanctions and can do so at any time. The EU also retains the ability to readily reinstate its sanctions. Note that these sanctions could include everything from denying Iran export licenses to restoring sectoral or financial sanctions, to full snap back of current sanctions.

Mechanism for Snap Back - UN Sanctions

 If U.S. believes that there has been a violation – related to access or any other commitment in the JCPOA –can refer the issue to the Joint Commission, which has up to 35 days to consider the issue.

 If U.S. concerns are not resolved to U.S. satisfactionwould notify the UN Security Council. Notification to the UN Security Council would trigger a vote, within 30 days, on a resolution to **continue the sanctions lifting, which we could veto in order to re-instate the sanctions**.

 This process cannot be blocked by any other member of the Security Council.

Basis for Snap Back

 The U.S. or any partner can seek dispute resolution by the Joint Commission and ultimately snap back sanctions over any issue that its believes is a “significant” violation. U.S. full discretion to determine what is and is not significant.

 The JCPOA contains a special provision regarding access to undeclared locations. If Iran fails to grant the IAEA access to an undeclared location within 24 days, it would constitute a violation of the JCPOA.

Contrary to some rumors, however, there is no explicit grandfather clause for existing contracts in a snap-back scenario. Instead, there is language in the resolution that affirms that we will not apply sanctions retroactively to legitimate business activities that take place before snap-back occurs.

 US did, however, clarify that if execution of such contracts is consistent with the previous resolutions – meaning they would not result in sanctionable activity under the current regime – and if those contracts were also consistent with the JCPOA and the new resolution, snapback would not affect those ongoing contracts.

 Specifically, the UNSCR states that sanctions would not be imposed with retroactive effect on individuals and entities for business activities with Iran that were consistent with the JCPOA and the current and previous resolutions prior to the re-imposition of sanctions.

 US has been clear with its partners that we would not provide a blanket exemption - or "grandfather clause" - for contracts that continued after snap-back because it would undermine the credibility of snap-back. We would seek to consult with relevant states on a case-by-case basis in order to address any issues that arise. This is entirely consistent with past US practice when sanctions have been imposed.

Source: U.S. Experts

Views of Administration Experts on Economic Impact of the Agreement

Views of Administration Experts - I

The Administration and the White house have not provided an official view of the economic and energy impact of implementing the agreement, but its experts have provided some key estimates. These estimates have not been supported by the in-depth analysis present in the EIA and World Bank studies, but the key conclusions are that Iran face a wide range of serious pressures that will lead it to spend its added revenue on domestic needs.

These estimates indicate that Iran will be able to freely access slightly more than half – a little over $50 billion. of approximately $100 billion in overseas foreign reserves after sanctions relief.

Over $20 billion is dedicated to projects with China, where it cannot be freely spent, and tens of billions in additional funds are effectively non-performing loans to Iran's energy and banking sector that are unlikely to be repaid, at least not in the next few years.

U.S., UN, EU, and other sanctions imposed with the international community, have had a major impact on Iran's economy:

Iran needs about half a trillion dollars to meet pressing investment needs, including at least:

- ***Energy*: $170 billion to develop oil and gas potential and replace lost capacity**
- ***Agriculture*: $100 billion for agricultural rehabilitation, irrigation, and environmental remediation**
- ***Infrastructure*: $100 billion to complete unfinished infrastructure projects**
- ***Power*: $50 billion over next seven years to satisfy anticipated demand and invest in renewable energy**

Source: U.S. Experts

Views of Administration Experts - II

Iran needs about $100 billion to satisfy pressing government obligations, including unfunded state and military pensions, debts to the domestic banking sector and government contractors, and to plug shortfalls in the National Development Fund.

Iran's economy remains 15-20 percent smaller today than it would have been had it remained on its pre-2011 growth trajectory.

Even if Iran returns to its pre-2012 growth trajectory, it would take until 2020 for Iran's GDP to reach the level it would have been last year had it not been for our oil sanctions.

The $100 billion in Iran's reserves now restricted overseas is unlikely to be repatriated to Iran. As a matter of prudent economic management, Iran will need to keep most of this money overseas to facilitate foreign trade and avoid making its currency too expensive.

Moreover, Ad ministration experts feel the Iranian people – and its leadership – are desperate to see the economic benefits of a deal. Rouhani was elected on a platform of economic revitalization, and faces a political imperative to live up to his promises. When Iran get funds earlier that were released after it agreed to the JPOA, Iran mostly used them to buy gold, prop up its currency and hedge against inflation rather than using them to support terrorists,.

They also feel that Iran's ability to support terrorism relies less on monetary funds, and more on military and other political influence. Terrorism and Iran's efforts to support non-state actors and win influence in Syria and Iraq are not expensive. The constraints on greater Iranian activities in the region are primarily non-financial.

Source: U.S. Experts

The World Oil Market and the Broader Context for Evaluating the Energy Impact of Sanctions and the Agreement

Pre-Agreement Global Production: 2014-2016

	2014				2015				2016				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	2014	2015	2016
Crude Oil															
Algeria	1.15	1.15	1.15	1.15	1.10	1.10	-	-	-	-	-	-	1.15	-	-
Angola	1.63	1.63	1.72	1.73	1.75	1.76	-	-	-	-	-	-	1.68	-	-
Ecudaor	0.55	0.56	0.56	0.56	0.55	0.57	-	-	-	-	-	-	0.56	-	-
Iran	2.80	2.80	2.80	2.80	2.80	2.85	-	-	-	-	-	-	2.80	-	-
Iraq	3.26	3.29	3.28	3.53	3.57	3.92	-	-	-	-	-	-	3.34	-	-
Kuwait	2.60	2.60	2.60	2.48	2.57	2.53	-	-	-	-	-	-	2.57	-	-
Libya	0.38	0.23	0.58	0.69	0.40	0.41	-	-	-	-	-	-	0.47	-	-
Nigeria	2.00	1.97	2.07	1.98	2.03	2.02	-	-	-	-	-	-	2.00	-	-
Qatar	0.74	0.73	0.72	0.68	0.68	0.68	-	-	-	-	-	-	0.72	-	-
Saudi Arabia	9.80	9.65	9.70	9.63	9.73	9.90	-	-	-	-	-	-	9.70	-	-
United Arab Emirates	2.70	2.70	2.70	2.70	2.70	2.70	-	-	-	-	-	-	2.70	-	-
Venezuela	2.40	2.40	2.40	2.40	2.40	2.40	-	-	-	-	-	-	2.40	-	-
OPEC Total	30.01	29.70	30.28	30.34	30.29	30.84	30.87	30.82	30.45	30.52	30.58	30.65	30.08	30.71	30.55
Other Liquids	6.25	6.24	6.24	6.32	6.27	6.38	6.42	6.46	6.51	6.55	6.59	6.63	6.26	6.38	6.57
Total OPEC Supply	36.26	35.94	36.52	36.66	36.57	37.21	37.29	37.28	36.96	37.07	37.17	37.28	36.35	37.09	37.12
Crude Oil Production Capacity															
Africa	5.15	4.97	5.51	5.55	5.31	5.27	5.26	5.35	5.40	5.41	5.43	5.44	5.29	5.30	5.42
South America	2.95	2.95	2.95	2.95	2.95	2.96	2.96	2.96	2.86	2.88	2.87	2.88	2.95	2.96	2.87
Middle East	23.93	23.88	23.86	23.82	23.93	24.26	24.33	24.35	24.32	24.36	24.41	24.45	23.87	24.22	24.38
OPEC Total	32.02	31.80	32.32	32.32	32.19	32.48	32.55	32.66	32.58	32.65	32.71	32.77	32.12	32.47	32.68
Surplus Crude Oil Production Capacity															
Africa	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
South America	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Middle East	2.01	2.09	2.04	1.98	1.86	1.65	1.68	1.84	2.13	2.12	2.13	2.13	2.03	1.76	2.13
OPEC Total	2.01	2.09	2.04	1.98	1.90	1.65	1.68	1.84	2.13	2.12	2.13	2.13	2.03	1.77	2.13
Unplanned OPEC Production Outages	2.32	2.57	2.26	2.43	2.53	2.45	n/a	n/a	n/a	n/a	n/a	n/a	2.40	n/a	n/a
Middle East	1.19	1.17	1.20	1.16	1.19	1.16	1.17	1.15	1.12	1.10	1.10	1.10	1.18	1.17	1.10
Oman	0.96	0.95	0.96	0.94	0.97	1.00	1.03	1.02	0.94	0.94	0.93	0.93	0.95	1.01	0.94
Syria	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.00	0.03	0.04	0.01
Yemen	0.13	0.13	0.13	0.12	0.11	0.05	0.03	0.02	0.10	0.09	0.09	0.08	0.13	0.05	0.09
Egypt	0.70	0.70	0.70	0.72	0.71	0.71	0.70	0.70	0.69	0.68	0.68	0.67	0.71	0.71	0.68
Total non-OPEC liquids	55.64	56.55	57.12	58.35	57.93	58.48	58.60	58.45	57.65	58.42	58.88	59.22	56.92	58.37	58.55
OPEC non-crude liquids	6.25	6.24	6.24	6.32	6.27	6.38	6.42	6.46	6.51	6.55	6.59	6.63	6.26	6.38	6.57
Non-OPEC + OPEC non-crude	61.89	62.78	63.36	64.67	64.21	64.86	65.01	64.91	64.16	64.97	65.47	65.85	63.18	64.75	65.12
Unplanned non-OPEC Production Outages	0.66	0.67	0.60	0.57	0.62	0.77	n/a	n/a	n/a	n/a	n/a	n/a	0.62	n/a	n/a

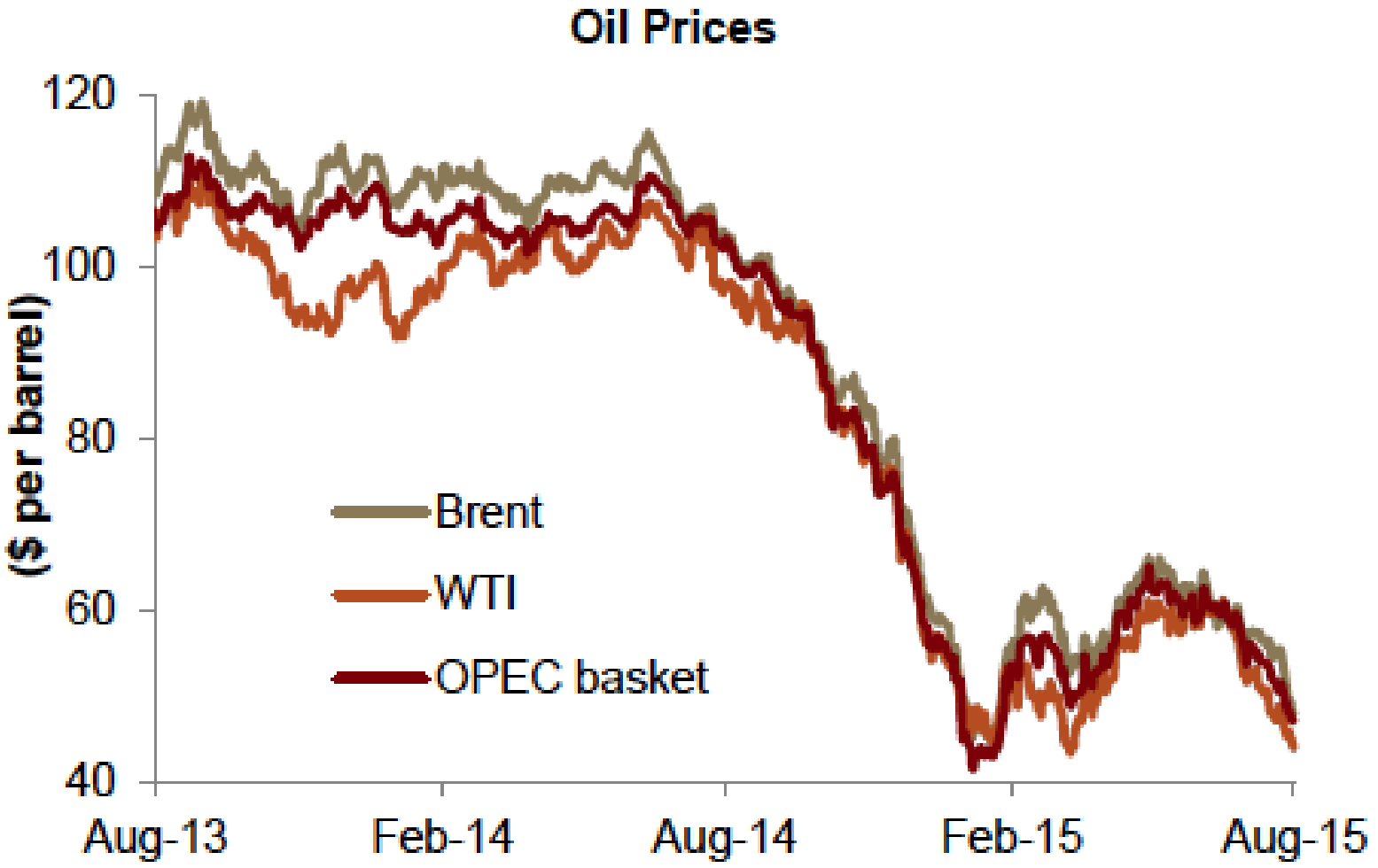
Source: : EIA, *Short Term Energy Projections*, August 2015, http://www.eia.gov/forecasts/steo/query/.

Pre-Agreement OPEC Oil Production: 2011-2016

	2011	2012	2013	2014	2015	2016
OPEC Total Crude Oil Production Capacity	33.03	33.22	32.25	32.12	*32.46*	*32.96*
OPEC South America Crude Oil Production Capacity	2.90	2.90	2.92	2.95	*2.95*	*2.87*
OPEC Middle East Crude Oil Production Capacity	24.58	23.87	23.53	23.87	*24.22*	*24.65*
OPEC Africa Crude Oil Production Capacity	5.55	6.45	5.80	5.29	*5.28*	*5.44*
Crude Oil Production, Algeria	1.27	1.25	1.19	1.15	--	--
Crude Oil Production, Angola	1.70	1.73	1.74	1.68	--	--
Crude Oil Production, Ecuador	0.50	0.50	0.53	0.56	--	--
Crude Oil Production, Iran	3.66	2.99	2.68	2.80	--	--
Crude Oil Production, Iraq	2.60	2.96	3.03	3.34	--	--
Crude Oil Production, Kuwait	2.48	2.58	2.60	2.57	--	--
Crude Oil Production, Libya	0.47	1.37	0.92	0.47	--	--
Crude Oil Production, Nigeria	2.13	2.10	1.95	2.00	--	--
Crude Oil Production, OPEC Total	30.02	31.11	30.12	30.08	*30.86*	*30.83*
Crude Oil Production, Qatar	0.85	0.75	0.73	0.72	--	--
Crude Oil Production, Saudi Arabia	9.42	9.79	9.65	9.70	--	--
Crude Oil Production, United Arab Emirates	2.56	2.68	2.70	2.70	--	--
Crude Oil Production, Venezuela	2.40	2.40	2.40	2.40	--	--
OPEC Total Spare Crude Oil Production Capacity	3.01	2.11	2.13	2.03	*1.60*	*2.13*
OPEC South America Surplus Crude Oil Production Capacity	0	0	0	0	*0*	*0*
OPEC Middle East Surplus Crude Oil Production Capacity	3.00	2.11	2.13	2.03	*1.60*	*2.13*
OPEC Africa Surplus Crude Oil Production Capacity	0.00	0.00	0	0	*0*	*0*
Real U.S. Dollar Exchange Rate	98.37	102.15	105.96	109.79	*120.56*	*122.15*

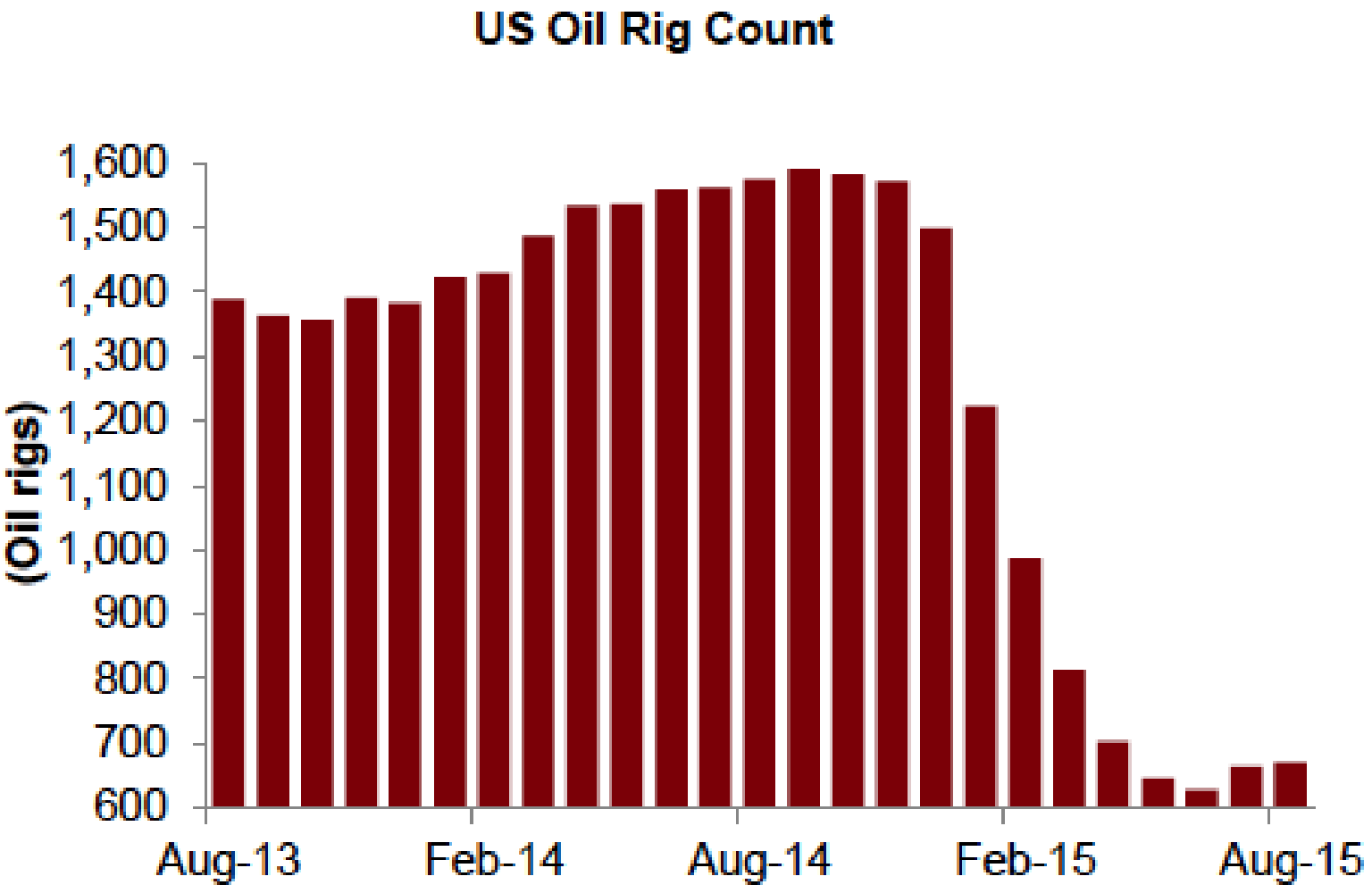
Source: **:** EIA*, Short Term Energy Projections*, August 2015, http://www.eia.gov/forecasts/steo/query/.

Declining Trend in World Oil Prices: 8-13 to 8-15



Source: : Jadwa Investment, ***Saudi Chartbook***, August 2015, p. 8.

Declining U.S. Oil Rig Count: 8-13 to 8-15



Source: : Jadwa Investment, ***Saudi Chartbook***, August 2015, p. 9.

The Impact of Sanctions on Iranian Oil Exports

Estimates of Impact of Sanctions on Iranian Oil Export Revenues

EIA (December 2013)

In 2012, Iran's net oil export revenues were significantly lower than the $95 billion generated in 2011. The upper bound estimate of Iran's net oil export revenues in 2012 was $69 billion, assuming that Iran was able to receive hard currency payments for all of its estimated exports and did not offer discounts despite the application of sanctions by the United States and the E.U. This upper bound estimate may significantly overstate the country's actual net oil export revenues. Oil exports make up 80% of Iran's total export earnings and 50-60% of government revenue, according to The Economist Intelligence Unit.

OPEC (June 2014)

In its 2014 annual statistical report, the Organization of the Petroleum Exporting Countries estimated revenue generated by Iranian petroleum exports fell to $61.92 billion in 2013, down 46% from $114.75 billion in 2011.
International sanctions banning sales of Iranian oil to the European Union and limiting them in Asia cut the country's petroleum exports by 42% in 2013 compared with the previous year. Though oil sales had already fallen in 2012, the drop in volumes had been largely compensated by higher oil prices.

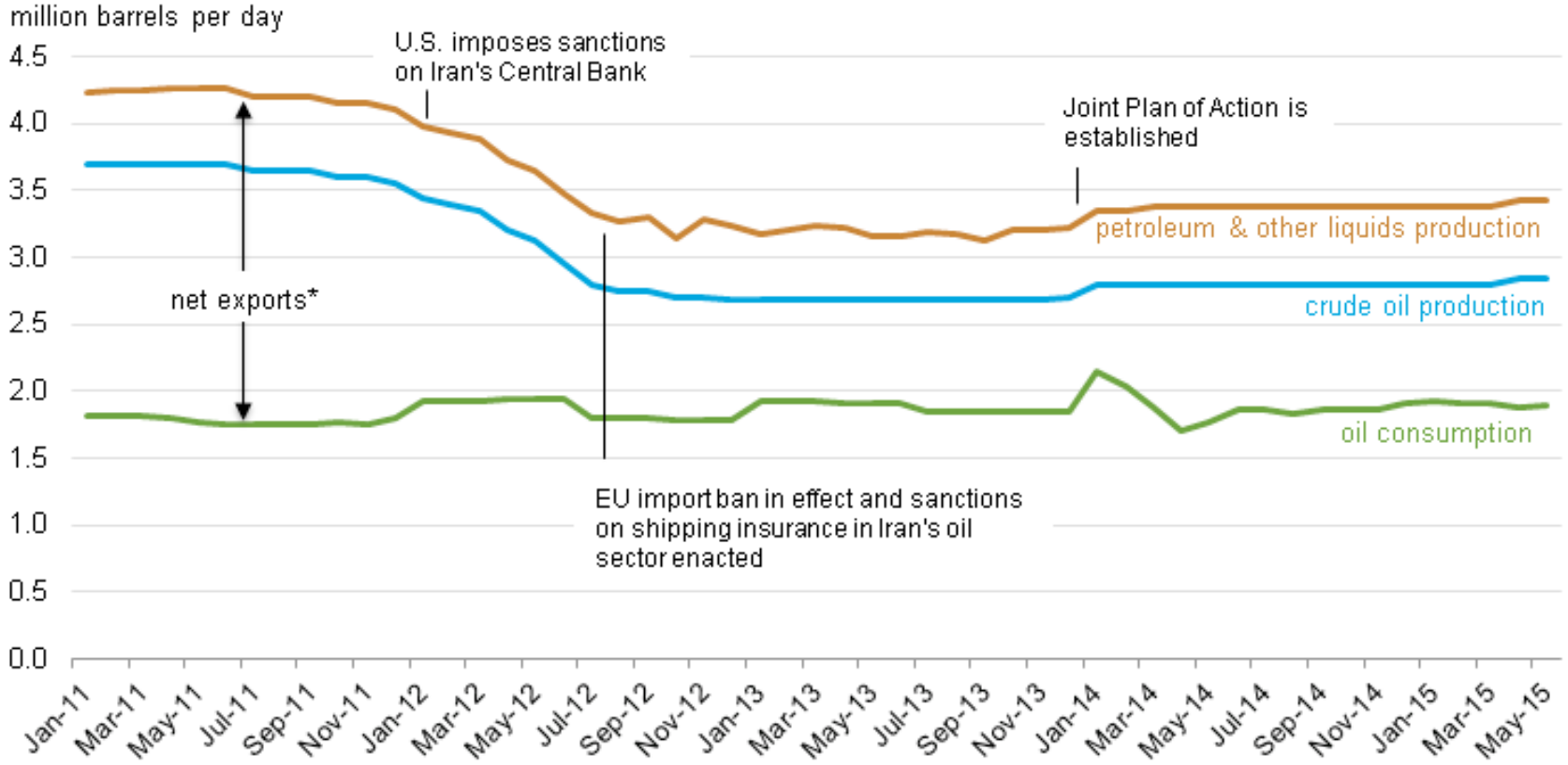
EIA (July 2015)

Iran's oil and natural gas export revenue was $118 billion in the 2011/2012 fiscal year (ending March 20, 2012), according to the International Monetary Fund (IMF) In the 2012/2013 fiscal year, oil and natural gas export revenue dropped by 47% to $63 billion. The IMF estimates that Iran's oil and natural gas export revenue fell again in the 2013/2014 fiscal year by 10% to $56 billion.[1] The revenue loss is attributed to the sharp decline in the volume of oil exports from 2011 to 2013.

Iran's natural gas exports increased slightly over the past few years. However, Iran exports only a small volume of natural gas, because most of its production is domestically consumed. Nonetheless, international sanctions have also affected Iran's natural gas sector. Iran's natural gas sector has been expanding, but production growth has been lower than expected as a result of the lack of foreign investment and technology. However, in 2014, Iran experienced higher production growth than usual because new phases at the South Pars natural gas field came online. The South Pars natural gas field is the largest hydrocarbon upstream project currently being developed in Iran and continues to encounter delays. South Pars, located offshore in the Persian Gulf, holds almost 40% of Iran's proved natural gas reserves.[3] It is now being developed mostly by Iranian companies because most international companies have pulled out. The field's development entails 24 phases.

Sources: http://www.eia.gov/todayinenergy/detail.cfm?id=14111, http://www.wsj.com/articles/sanctions-nearly-halve-iran-oil-export-revenue-in-two-years-opec-says-1405699476, and http://www.eia.gov/beta/international/analysis.cfm?iso=IRN

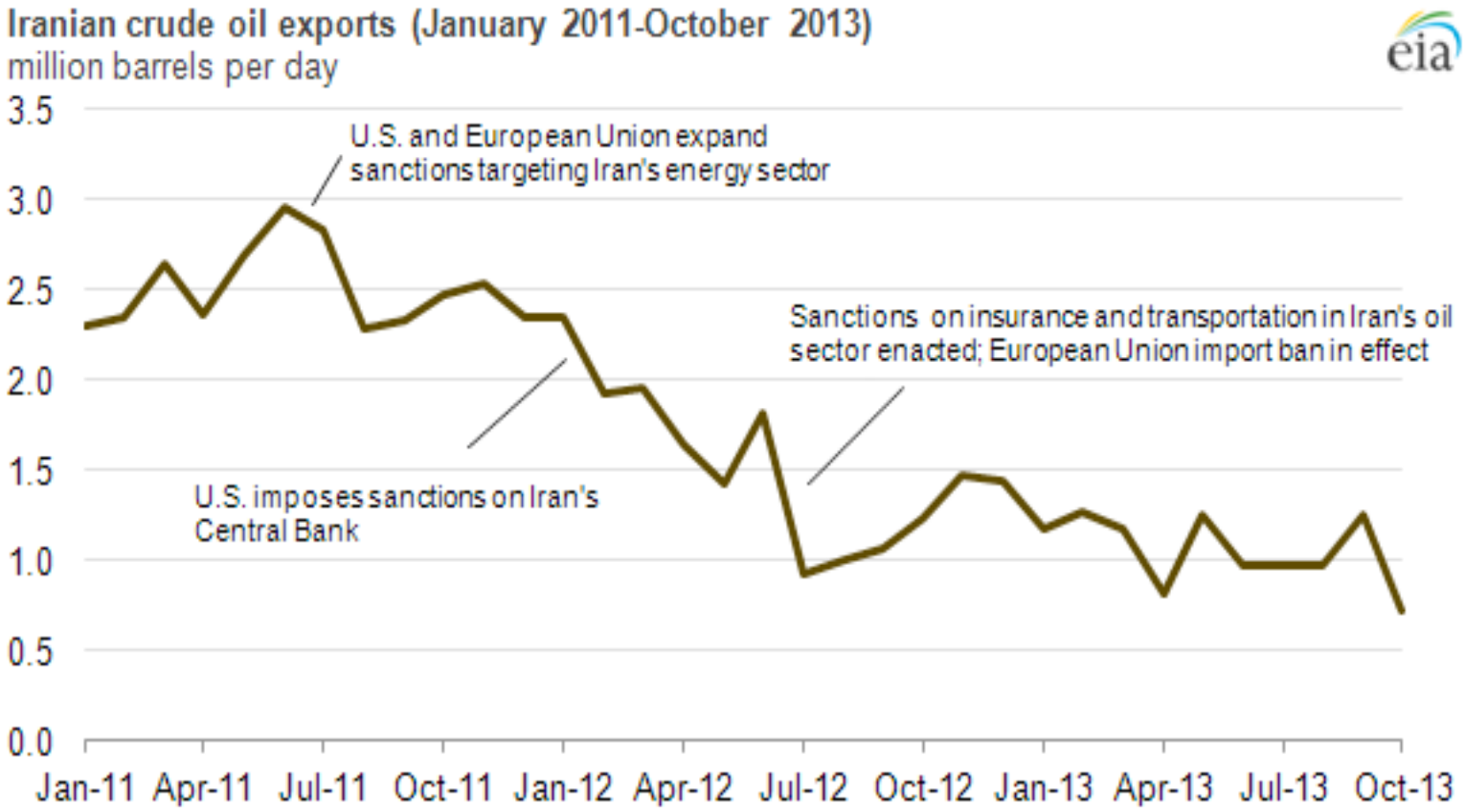
Iranian petroleum and other liquids production and consumption



*Net exports is petroleum and other liquids production minus consumption. It encompasses crude oil, condensate, natural gas plant liquids, and refined oil products.

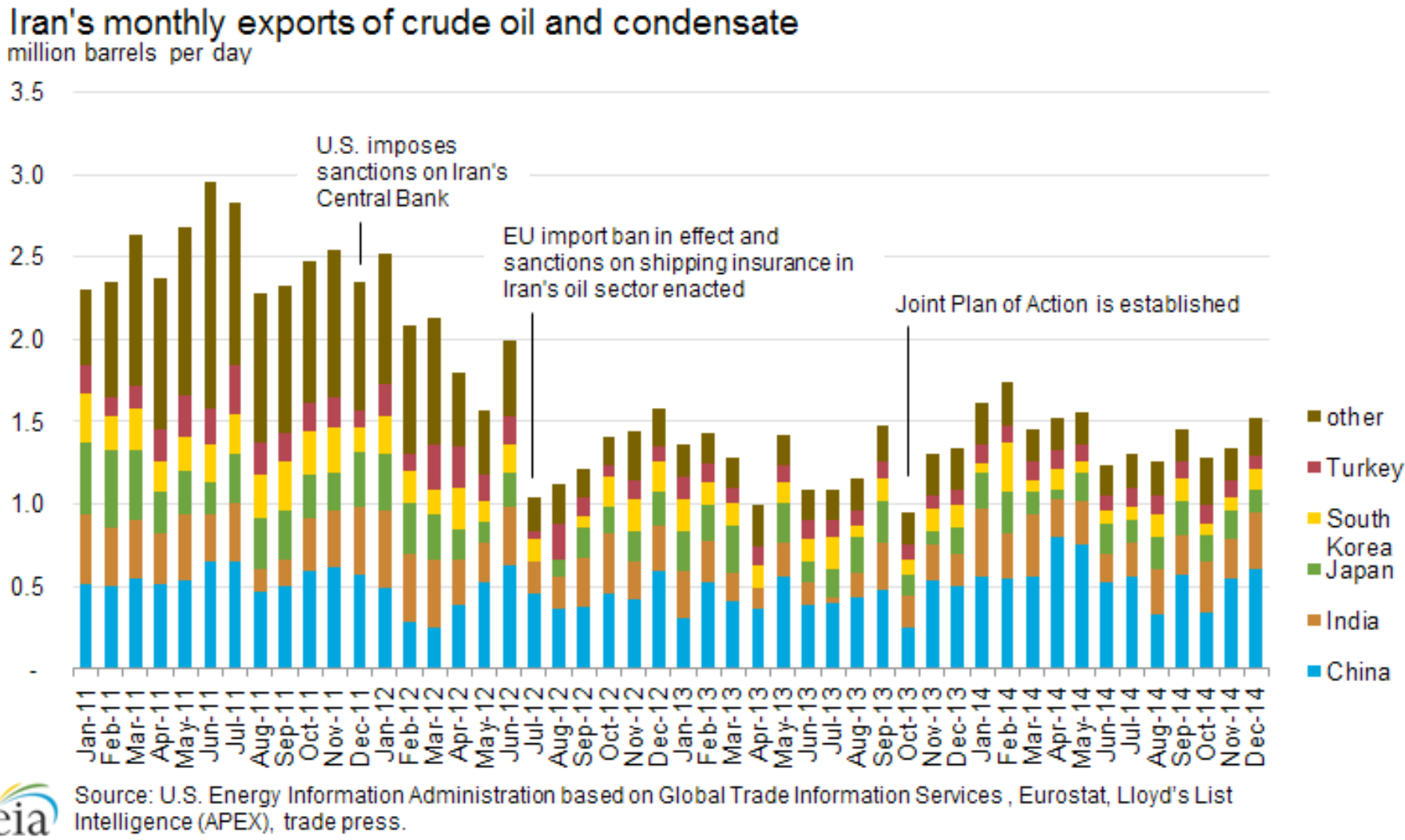
Note: Iran's petroleum and other liquids production includes crude oil, condensate, and natural gas plant liquids (NGPL). The difference between petroleum and other liquids production (blue line) and crude oil production (brown line) is mostly condensate and a smaller volume is NGPL. Oil consumption includes petroleum products and a small volume of direct crude oil burn.

eia Source: U.S. Energy Information Administration.



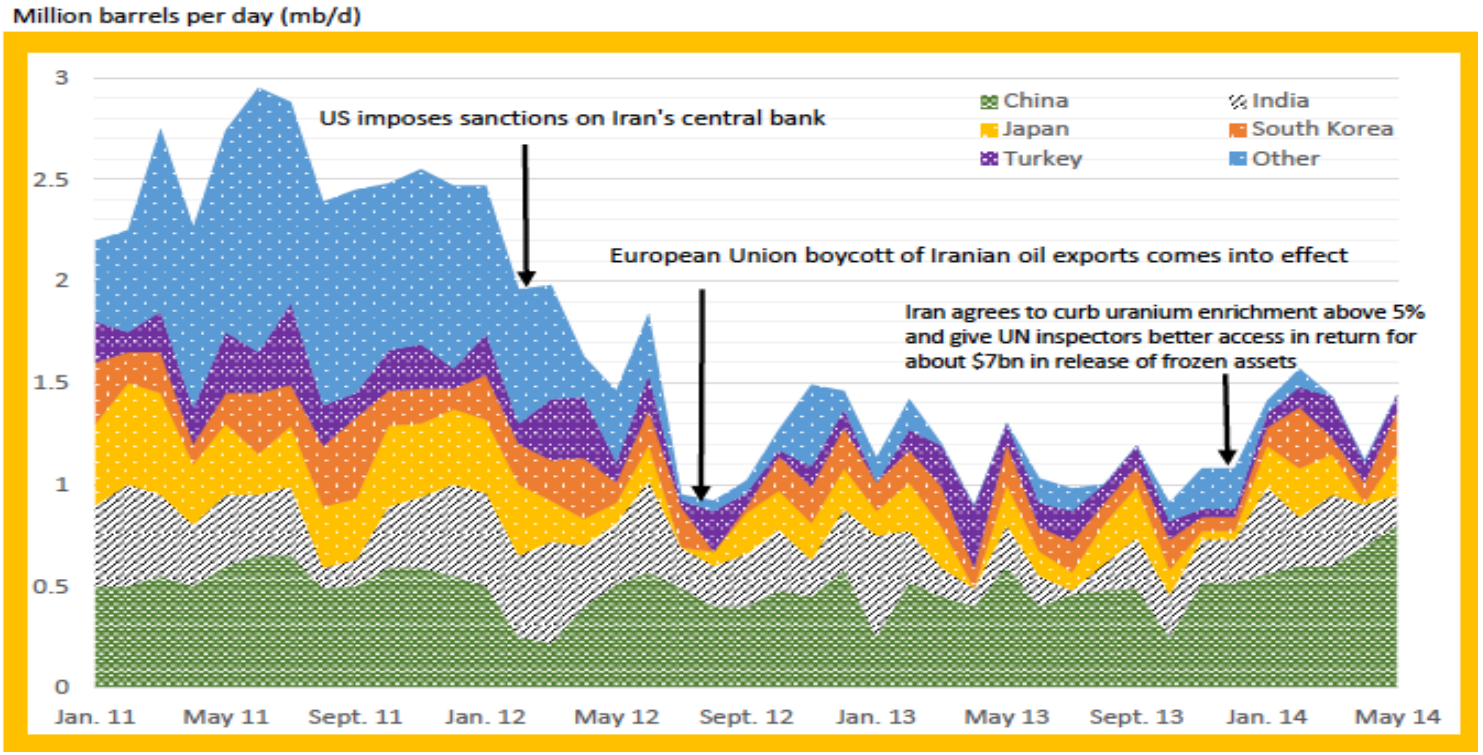
Source: EIA, Iran's oil exports not expected to increase significantly despite recent negotiations, December 10, 2013, http://www.eia.gov/todayinenergy/detail.cfm?id=14111#

Iran's Oil Exports by Major Importer: 2011-2014



Source: : U.S. Energy Information Administration, http://www.eia.gov/beta/international/country.cfm?iso=IRN

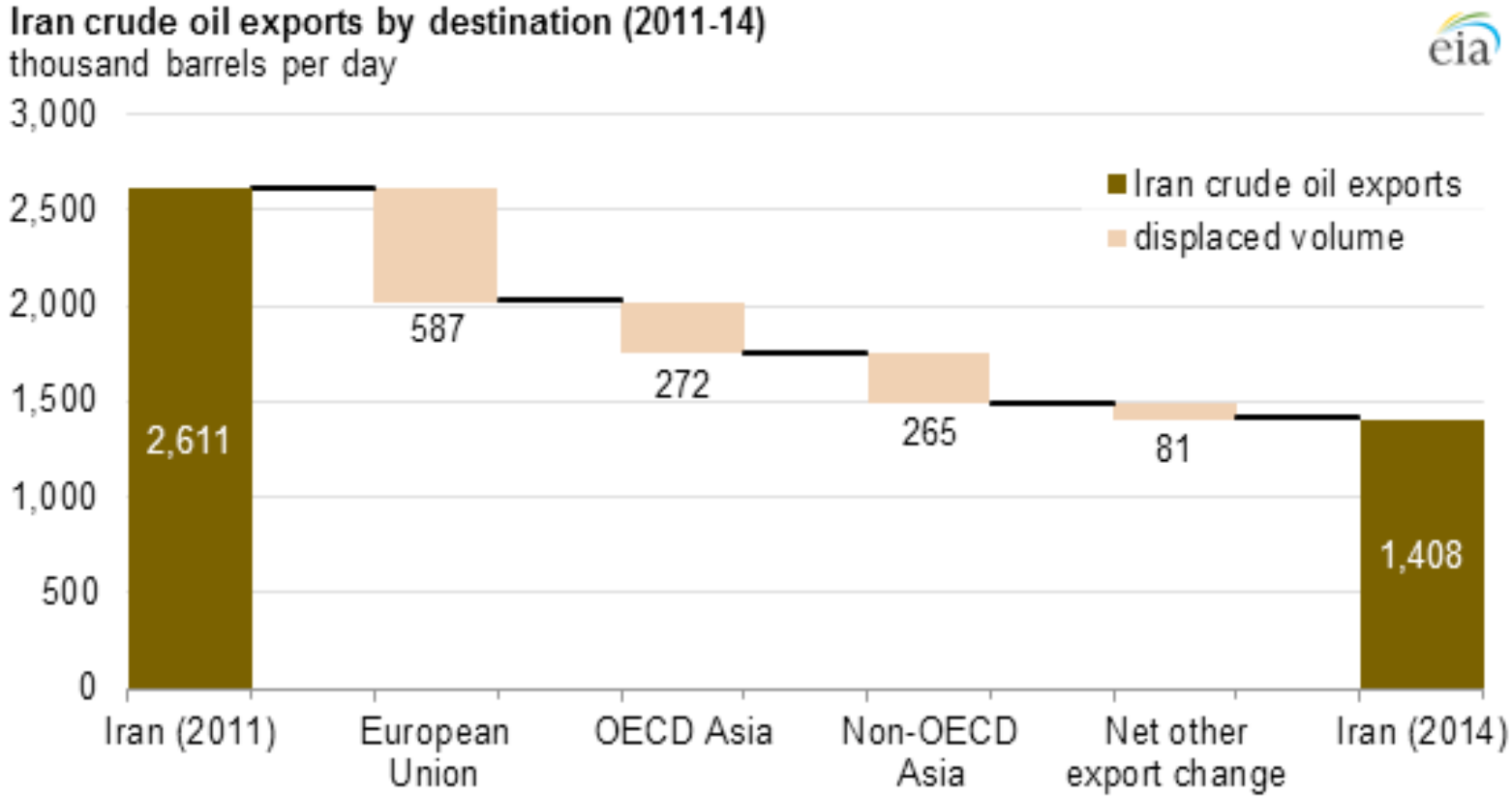
World Bank Estimate of Iran's Crude Oil And Condensate Exports by Major Importer: 2011-2014



The tightening of sanctions in 2012, which banned the purchase and transport of Iranian crude oil and natural gas to the EU, clearly affected the oil sector in Iran. In one year, Iran's oil exports declined from 2.8 mb/d in July 2011 to below 1 mb/d in July 2012. Half of the reduction in oil exports was from European companies' boycott of Iran's oil. The other half was from a decrease in purchases by Asian countries). The ban on European companies' insuring Iranian oil shipments impeded sales of Iranian crude to all of its customers. Since 2014, and with partial sanctions relief, oil exports have recovered slightly as non-EU countries found alternatives to insurance coverage by EU companies. Some Asian countries issued sovereign guarantees for vessels carrying Iranian crude oil and condensate. China and India also began to accept Iranian guarantees on the vessels that shipped oil to their refineries. Today, the largest buyers of Iranian crude and condensate are China, India, Japan, South Korea,and Turkey. Nonetheless, Iranian exports failed to reach pre-sanctions levels

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 3

Iranian Oil Exports 2011-2015



CSIS Energy and National Security Program indicates that May 2015 from IEA and Oil Tracker were in excess of 1.5 for crude and condensate with increases for So. Korea, Japan and even Syria in the mix. It expects further leakage has occurred since the UN resolution vote, though no big increment is predicated until end of 2015 or in 2016. Not clear how the Iranian fields were shut in, but Iran has been pressure testing wells and pipe for several months now. That all said, fields are not geologically complex and similar in many ways to field structures in Eastern Iraq like Majnoon.

Source: **Source:** U.S. Energy Information Administration, based on Lloyd's List Intelligence, Global Trade Information Services, Eurostat, and trade press
Note: Values may not add to the total because of independent rounding. OECD is the Organization for Economic Cooperation and Development.
http://www.eia.gov/todayinenergy/detail.cfm?id=21792

Impacts on Iran’s Oil Production Capacity - I

Iran produced 3.4 million b/d of petroleum and other liquids in 2014, of which 2.8 million b/d was crude oil and the remainder was condensate and natural gas plant liquids. Iran's crude oil production fell dramatically from nearly 3.7 million b/d in 2011 to 2.7 million b/d in 2013 because of sanctions.

Iran is one of the founding members of the Organization of the Petroleum Exporting Countries (OPEC), which was established in 1960. Since the 1970s, Iran's oil production has varied greatly. Iran averaged production of more than 5.5 million b/d of oil in 1976 and 1977, with production topping 6.0 million b/d for most of the period. Since the 1979 revolution, however, a combination of war, limited investment, sanctions, and a high rate of natural decline in production of Iran's mature oil fields has prevented a return to such production levels.

In recent years, a series of sanctions targeting the oil sector have resulted in cancellations of new projects by a number of foreign companies, while also affecting existing projects. Following the implementation of sanctions in late-2011 and mid-2012, Iranian production dropped dramatically from almost 3.7 million b/d in 2011 to 2.7 million b/d in 2013. Although Iran had been subject to four earlier rounds of United Nations sanctions, the tougher measures imposed by the United States and the EU severely hampered Iran's ability to export its oil, which affected Iran's oil production.

The U.S. and EU measures targeted Iran's petroleum exports and imports, prohibited large-scale investment in the country's oil and gas sector, and cut off Iran's access to European and U.S. sources for financial transactions. Further sanctions were implemented against institutions targeting the Central Bank of Iran, while the EU imposed an embargo on Iranian oil and banned European Protection and Indemnity Clubs (P&I Clubs) from providing Iranian oil tankers with insurance and reinsurance.

In 2014, Iran produced almost 3.4 million b/d of petroleum and other liquids (total oil), of which roughly 2.8 million b/d was crude oil, and the remainder was condensate and natural gas plant liquids (NGPL). Iran's total oil production level in 2014 was nearly 200,000 b/d higher than in 2013, but still about 800,000 b/d lower than the production level of 4.2 million b/d in 2011. Sanctions and unfavorable contractual terms have impeded the necessary investment needed to increase Iran's production capacity.

Crude streams and oil fields

Most of Iran's crude oil is generally medium in sulfur content and in the 29° to 36° API gravity range. Two crude streams, Iran Heavy and Iran Light, account for more than 80% of the country's crude oil production capacity. Both crude streams are sourced from onshore fields, many of which are older fields experiencing natural decline.12 According to the International Energy Agency, about half of Iran's production is sourced from oil fields that are more than 70 years old, which include the Ahwaz-Asmari, Marun, and Gachsaran fields.13 The NIOC has been working on offsetting declines at aging fields through the use of EOR techniques, mainly by reinjecting associated gas into oil wells to improve oil recovery rates. Other crude streams include Froozan, Soroush/Norouz, Doroud, Sirri, and the Lavan Blend.

Non-crude liquids production

In 2014, Iran produced about 600,000 b/d of non-crude liquids, of which about 75% was condensate and the remainder was natural gas plant liquids. Iran's non-crude oil production mostly comes from the South Pars natural gas field, with smaller volumes produced at Nar, Kangan, and at other fields.14

In 2011, Iran started a 1,000 b/d pilot gas-to-liquids plant, according to the Arab Oil & Gas Directory. The country planned to build a 10,000-b/d commercial plant fueled by the South Pars natural gas field. The current status of the plant's development is unclear.15

Upstream Projects

Source: **:** U.S. Energy Information Administration, http://www.eia.gov/beta/international/country.cfm?iso=IRN

Impacts on Iran's Oil Production Capacity - II

There were a number of new exploration and development blocks announced over the past several years that could provide Iran with an increase in its crude oil production capacity, but sanctions have negatively affected the Iranian oil industry. Virtually all western companies have halted their activities in Iran, although some Chinese and Russian companies are still participating. The sanctions and lack of international involvement have particularly affected upstream projects, as the lack of expertise, technology, and investment has resulted in delays and, in some cases, cancellations of projects. Nonetheless, development of a few projects continues, albeit at a much slower pace than originally planned.

Slow and Limited Impact of New Upstream Crude Oil Projects

Project	Developer	Plateau output (000 b/d)	Est. plateau year
Yadavaran phase 1	Sinopec	85	2016
Yadavaran phase 2	Sinopec	95	2019-20
Yadavaran phase 3	Sinopec	120	post 2020
Azar phase 1	NIOC subsidiaries	30	2016
North Yaran	Persian Energy	30	2016
South Yaran	NIOC subsidiaries	55	2018
North Azadegan phase 1	CNPC	75	2016-17
North Azadegan phase 2	CNPC	75	2019
South Azadegan phase 1	no developer	150	NA
South Azadegan phase 2	no developer	110	NA
Forouzan	NIOC subsidiaries	100	2017-18
South Pars (oil layer) phase 1	PEDCO	35	2017-18

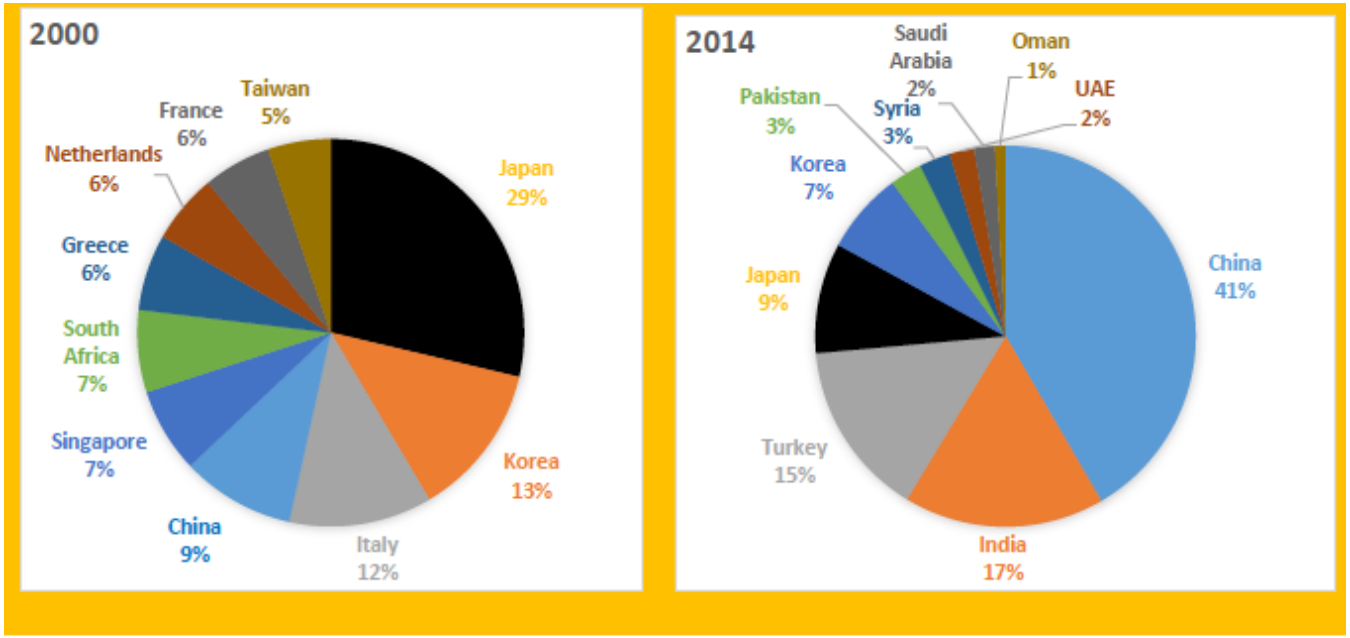
The Yadavaran, South Azadegan, and Forouzan fields are currently producing crude oil, but below their plateau levels.
CNPC is China National Petroleum Corporation. PEDCO is Petroiran Development Company. Sinopec is China Petroleum & Chemical Corporation.
Source: Facts Global Energy

Source: **:** U.S. Energy Information Administration, http://www.eia.gov/beta/international/country.cfm?iso=IRN

The Impact of the Sanctions on the Iranian Economy

World Bank Estimate of Impact of Sanctions on Iran's Exports - I

Iran's top 10 import partners



Source: IMF Direction of Trade Statistics.

During the first half of the 2000s, European countries including Germany, France, Italy and Greece were Iran's major trading partners, accounting for more than one third of Iran's total exports and imports.

This share declined significantly after 2005 under former President Ahmadinejad's foreign policy of "looking to the East". In 2011, China followed by India and South Korea were Iran's major trading partners, while shares of Italy, Greece and Spain in total trade declined sharply. The tightening of sanctions in 2012 shifted the direction of Iran's trade further towards Asia, particularly China and India, as well as Turkey and the United Arab Emirates (UAE)

Iran's exports to the EU were halted in 2012-14, and imports declined by more than 50 percent during the same period. Trade with the U.S. was at minimum levels during 2012-14. Sanctions prohibited almost all US trade with Iran, with exceptions for humanitarian activity including export of medical and agricultural equipment, humanitarian assistance and trade in informational materials.

More than half of Iran's exports in 2014 went to China and India and about three-quarters of its imports were from UAE and China. But even trade with Asian countries showed a slowdown after 2012 due to the sanctions, which limited trade and financial transactions with these countries. Less is known about the quantitative magnitude of the effect of international sanctions onbilateral trade between Iran and its trading partners.

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 5

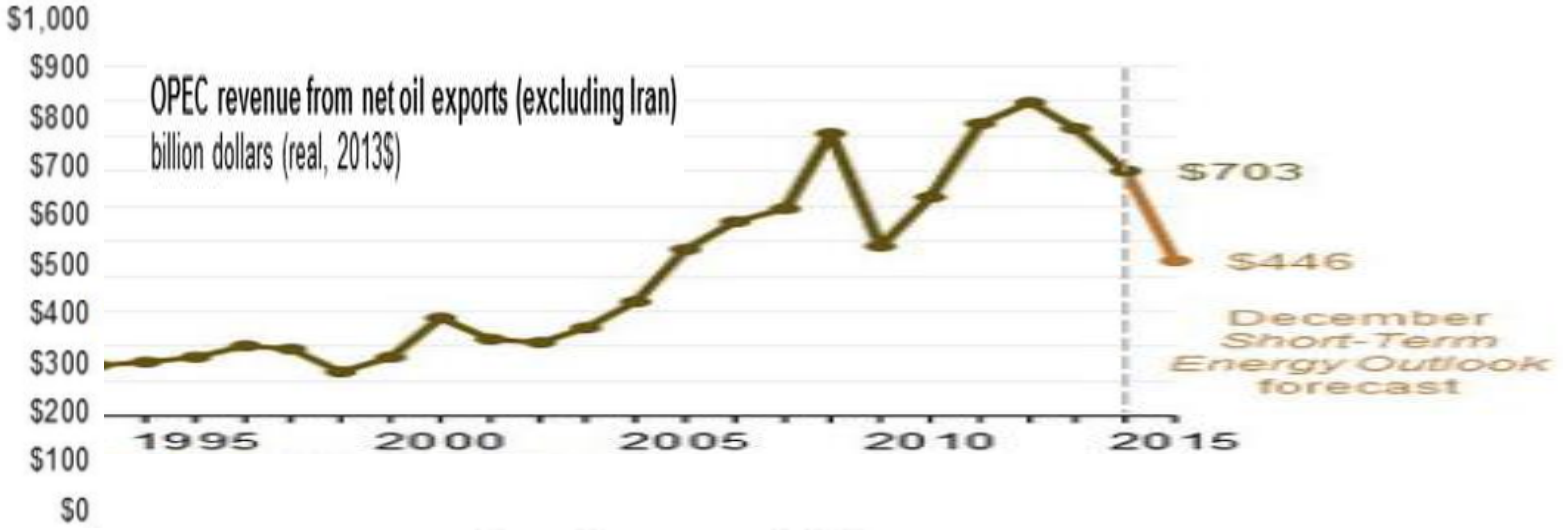
World Bank Estimate of Impact of Sanctions on Iran's Exports - II

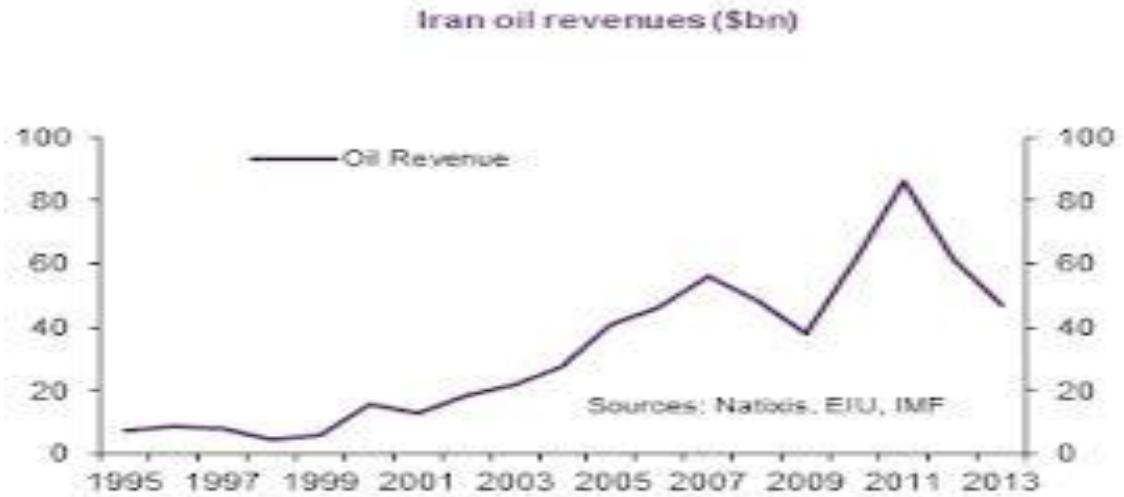
Global	Exports in 2011 US$ million	Estimated coefficient on sanctions	Estimated loss of exports in 2012-14 US$ million
Japan	11,688	-0.5	7,542
South Korea	10,303	-0.3	4,403
Italy	6,762	-2.1	2,899
Singapore	2,022	-3.8	979
Germany	907	-0.8	535
France	2,225	-3.6	214
US	1	-2.8	4
UK	525	-1.1	165
Netherlands	2,000	-3.4	307
MENA region			
Morocco	10	-5.0	3
Qatar	58	-0.6	57
Tunisia	8	-0.7	7
Total			**17,114**

Source: Mottaghi (2015). The percentage change in trade is calculated by taking the exponent of the coefficient value for the dummy and subtracting 1. For example the coefficient on sanctions for Japan is-0.5. The value of the natural number e taken to the exponent -0.5 is 0.60. This indicates that bilateral trade was only 0.61 times as large, or 40 percent lower, between the two countries due to tightening of sanctions than it would have been if the sanctions were not in place.

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 7

Rough Estimate of OPEC vs. Iranian Oil Export Revenues: Oil Prices Played Critical Role as Well as Sanctions

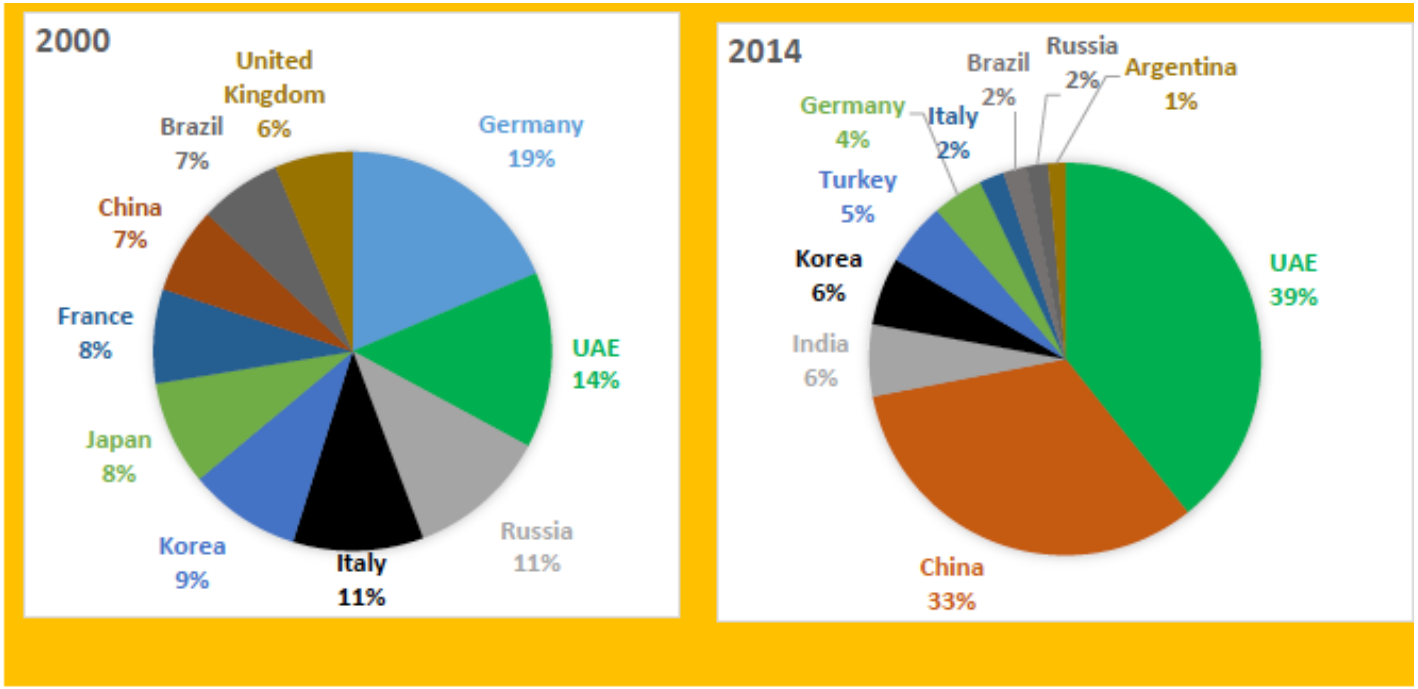




Data are not truly comparable. Estimate for OPEC less Iran is EIA STEO estimate in constant 2013 dollars. Data for Iran are result of Google search and do not have full source or definition.

World Bank Estimate of Impact of Sanctions on Iran's Imports

Iran's top 10 import partners



Source: IMF Direction of Trade Statistics.

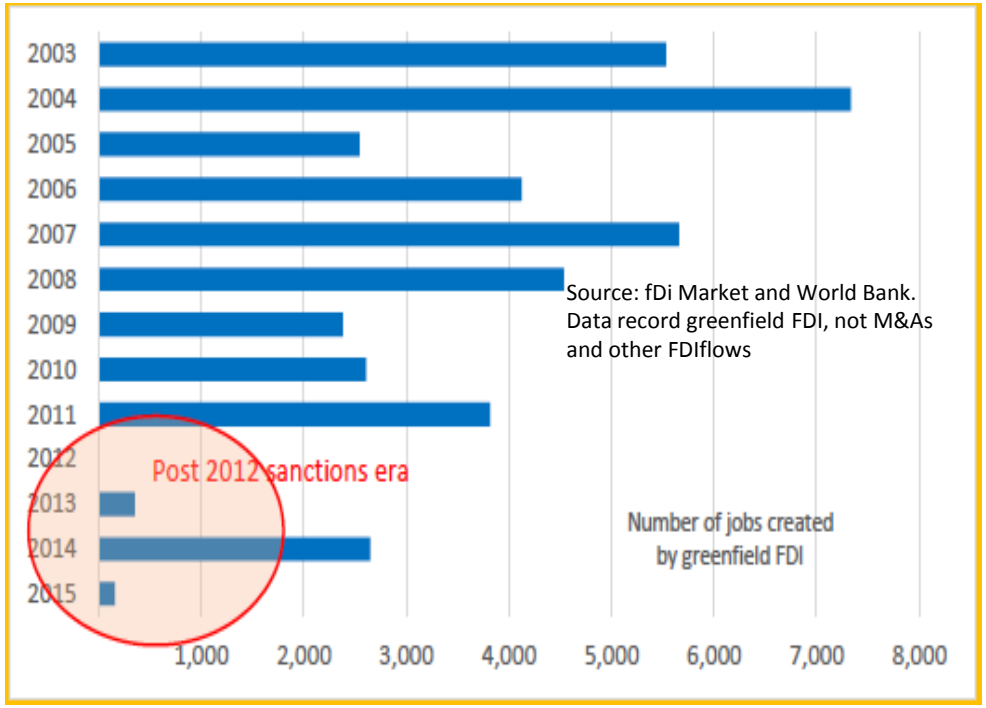
…the tightening of US and EU sanctions led to a loss of $17.1 billion in export revenues during 2012-14, equivalent to 13.5 percent of total export earnings and about 4.5 percent of its GDP .

In particular, Iran lost approximately $7.5 billion in export earnings to Japan, followed by $4.4 billion to South Korea and $3.9 billion in total exports to European countries.

In Europe, exports to Italy were hardest hit, losing $2.9 billion followed by Germany and France. Only a few countries in the wider MENA region, Central Asia and South Asia saw their trade altered. In particular, trade with Morocco, Qatar and Tunisia slowed down during the same period

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 6

World Bank Estimate of Impact of Sanctions on Iran's Foreign Direct Investment



Source: fDi Market and World Bank. Data record greenfield FDI, not M&As and other FDIflows

Prior to 2011, FDI to the Iranian economy averaged about $4 billion a year in the form of greenfield investment.

The extractive sector (oil and gas) and manufacturing were the two major sectors receiving large amounts of FDI.

Within these, oil and gas industries attracted more than half of total FDI inflows, followed by metal and manufacturing sectors

. However, in terms of job creation, of the 42,000 jobs created during 2003-15, only 6,000 came from the oil and gas sector and the rest were created in the manufacturing, metal and services sectors.

This is not surprising as the oil and gas sector is highly capital intensive compared to the other sectors.

Data on greenfield FDI inflows to Iran shows that during 2011, foreign investment in real estate created 10 times more jobs than FDI inflows in the extractive industry.

The tightening of international sanctions adversely affected FDI inflows to Iran, particularly in the oil sector. While FDI inflows to Iran declined sharply following the financial crisis in 2008, Iran still received about $4 billion in 2010 mostly in the manufacturing and oil sectors.

Estimates by *fDi market* show that greenfield FDI inflows to Iran came to a complete halt in 2012, after sanctionswere intensified, and only resumed slowly in 2015).

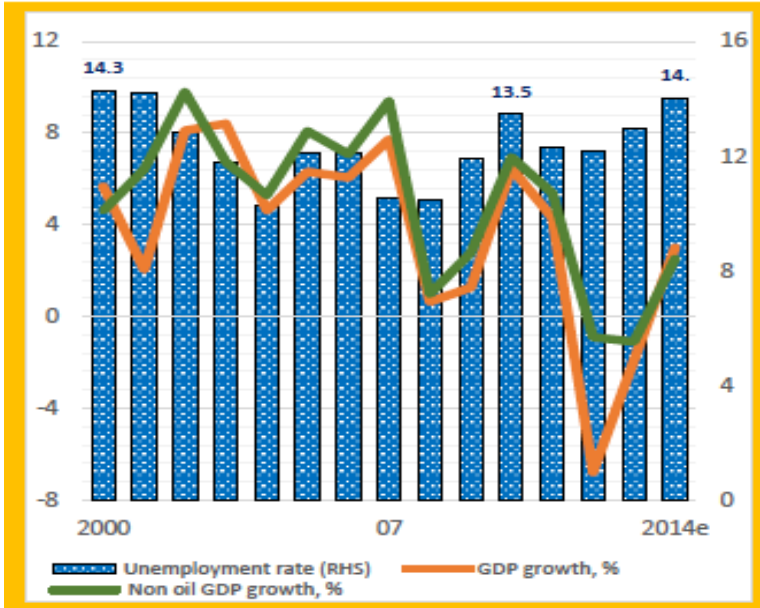
The decline in foreign investment hurt the oil industry the most, as sanctions cut Iran's access to technology, knowhow and investment. The production capacity of oil and gas fields became restricted.

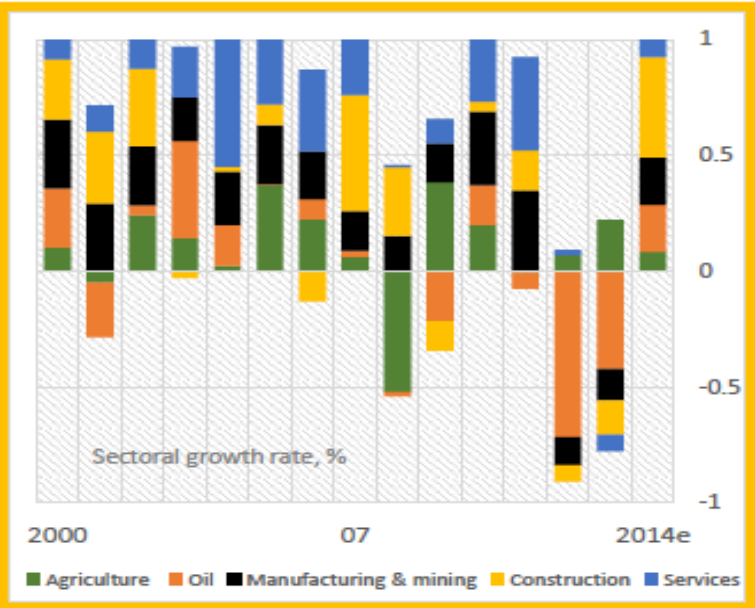
There are rough estimates that Iran lost billions of dollars in investment in the sector following the tightening of the sanctions in 2012 as international firms pulled out from some of their Iran projects, declined to make further investments, or resold their investments to other companies. To develop its oil fields, Iran has had to depend on local and a few Asian companies.

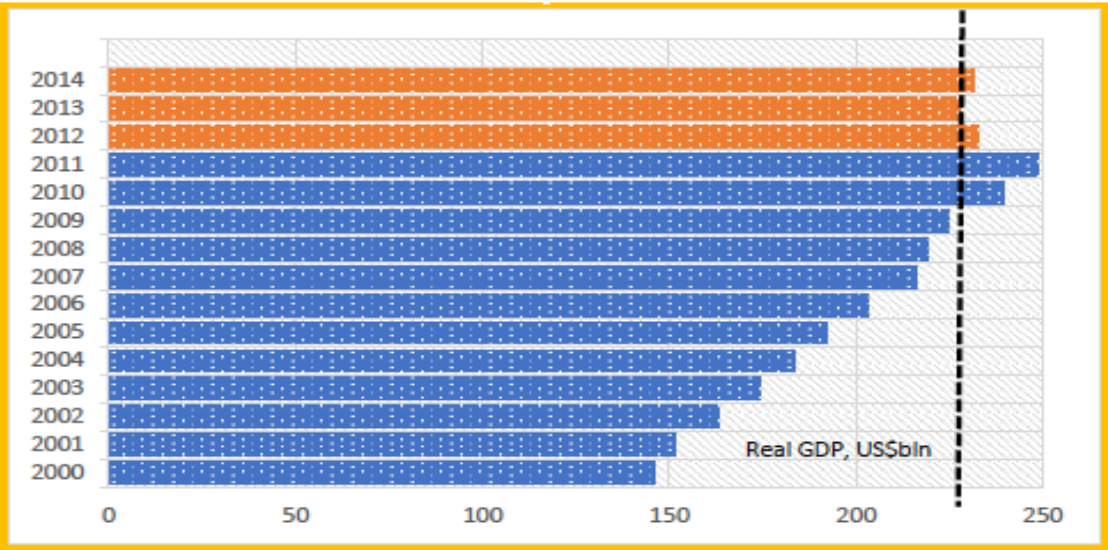
Chinese and Russian companies are the only ones directly or indirectly involved with developing oil fields. These countries, however, have reduced their investment due to restrictions on trade with Iran

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 8

World Bank Estimate of Macroeconomic Impact of Sanctions - I







Source: World Bank, Statista and Central Bank of Iran. Fiscal year ending March 21.

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 11

World Bank Estimate of Macroeconomic Impact of Sanctions - II

Until last year, the Iranian economy had been in recession for more than two years. Growth dropped to negative 6.8 and 1.9 percent in 2012 and 2013, respectively.

Although the economy rebounded in 2014, the level of GDP was the same as in 2009 (Figure 4). The largest slowdown was observed in the oil sector, which has been under tight sanctions since 2012, where production and exports declined dramatically over these two years.

In FY 2010/11, prior to the sanctions, oil production was close to 3.7 mb/d of which 2 mb/d were exported. In 2012/13, soon after sanctions were tightened, both crude oil production and exports dropped by 1 mb/d.

The construction sector and auto industry, the main sectors (along with services) for job creation, also contracted sharply.

Production in the auto industry declined by half and in the construction sector by 3.6 and 3.1 percent in 2012 and 13, mostly as a result of lower imports of materials and equipment and also lower investment following a halt in FDI inflows.

Demand for construction permits declined by an average 3 percent over this period.

While official unemployment rates do not reflect these job losses, unofficial estimates point to an increase by 2 percentage points inthe unemployment rate standing at 14 percent in 2014.

The new administration has taken some steps recently to tighten fiscal and monetary policies, lowering inflation, while boosting growth through capital investment.

Central Bank data show that growth in the third quarter of 2014/15 (September 21-November 21, fiscal year ended March 21st 2015) has reached 3 percent (compared to -1.8 percent in the same quarter of last year) driven by a pickup in activity in the manufacturing, mining and services sectors .

Despite low oil prices and oil production, the real GDP growth rate is estimated at about 3 percent.

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 11

Estimates of Impact of Sanctions on Iranian Oil Export Revenues

EIA (December 2013)

In 2012, Iran's net oil export revenues were significantly lower than the $95 billion generated in 2011. The upper bound estimate of Iran's net oil export revenues in 2012 was $69 billion, assuming that Iran was able to receive hard currency payments for all of its estimated exports and did not offer discounts despite the application of sanctions by the United States and the E.U. This upper bound estimate may significantly overstate the country's actual net oil export revenues. Oil exports make up 80% of Iran's total export earnings and 50-60% of government revenue, according to The Economist Intelligence Unit.

OPEC (June 2014)

In its 2014 annual statistical report, the Organization of the Petroleum Exporting Countries estimated revenue generated by Iranian petroleum exports fell to $61.92 billion in 2013, down 46% from $114.75 billion in 2011.
International sanctions banning sales of Iranian oil to the European Union and limiting them in Asia cut the country's petroleum exports by 42% in 2013 compared with the previous year. Though oil sales had already fallen in 2012, the drop in volumes had been largely compensated by higher oil prices.

EIA (July 2015)

Iran's oil and natural gas export revenue was $118 billion in the 2011/2012 fiscal year (ending March 20, 2012), according to the International Monetary Fund (IMF) In the 2012/2013 fiscal year, oil and natural gas export revenue dropped by 47% to $63 billion. The IMF estimates that Iran's oil and natural gas export revenue fell again in the 2013/2014 fiscal year by 10% to $56 billion.[1] The revenue loss is attributed to the sharp decline in the volume of oil exports from 2011 to 2013.

Iran's natural gas exports increased slightly over the past few years. However, Iran exports only a small volume of natural gas, because most of its production is domestically consumed. Nonetheless, international sanctions have also affected Iran's natural gas sector. Iran's natural gas sector has been expanding, but production growth has been lower than expected as a result of the lack of foreign investment and technology. However, in 2014, Iran experienced higher production growth than usual because new phases at the South Pars natural gas field came online. The South Pars natural gas field is the largest hydrocarbon upstream project currently being developed in Iran and continues to encounter delays. South Pars, located offshore in the Persian Gulf, holds almost 40% of Iran's proved natural gas reserves.[3] It is now being developed mostly by Iranian companies because most international companies have pulled out. The field's development entails 24 phases.

Sources: http://www.eia.gov/todayinenergy/detail.cfm?id=14111, http://www.wsj.com/articles/sanctions-nearly-halve-iran-oil-export-revenue-in-two-years-opec-says-1405699476, and http://www.eia.gov/beta/international/analysis.cfm?iso=IRN

World Bank Summary of Iranian Economy and Impact of Sanctions: 3/2015 - I

Iran is the second largest economy in the Middle East and North Africa (MENA) region after Saudi Arabia, with an estimated Gross Domestic Product (GDP) of US$D 406.3 billion in 2014. It also has the second largest population of the region after Egypt, with an estimated 80.8 million people as of individuals in July 2014. Iran's economy is characterized by a large hydrocarbon sector, small scale agriculture and services sectors, and a noticeable state presence in manufacturing and financial services. Iran ranks second in the world in natural gas reserves and fourth in proven crude oil reserves. Aggregate GDP and government revenues still depend to a large extent on oil revenues and are therefore intrinsically volatile.

Iranian authorities have adopted a comprehensive strategy encompassing market-based reforms as reflected in the government's 20-year vision document and Iran's fifth Five-Year Development Plan (FYDP, 2011–15). The Iranian state continues to play a key role in the economy, however, owning large public and quasi-public enterprises which partly dominate the manufacturing and commercial sectors. The financial sector is also dominated by public banks. Moreover, the business environment remains a challenge with the country ranking 130th out of the 189 countries surveyed in the 2015 Doing Business Report. Algeria, Djibouti, Iraq, Libya, the Syrian Arab Republic, West Bank and Gaza, and Yemen rank lower among MENA countries.

The Iranian government has implemented a major reform of its indirect subsidy system on key staples such as petroleum products, water, electricity and bread, which has resulted in a moderate improvement in the efficiency of expenditures and economic activities. The overall indirect subsidies, which were estimated to be equivalent to 27% of GDP in 2007/2008 (approximately US$D 77.2 billion), have been replaced by a direct cash transfer program to Iranian households. Domestic fuel prices have risen in parallel, thereby contributing toward reducing the deficit of the Targeted Subsidies Organization (TSO) which still remains substantial (estimated at 1.3% of GDP). A second phase of subsidy reform is being considered which would improve the targeting of the cash transfers to low-income households.

The Iranian economy rebounded out of recession, with growth estimated at 3.0% in 2014 compared to a contraction of 1.7% in 2013. This comes as a result of the temporary and partial easing of sanctions imposed on Iran's oil exports, on the supply chain in key sectors of the economy—such as in the automobiles industry—and on the transactions of international and domestic banks, as well as a rise in consumer and business confidence that a comprehensive agreement between Iran and the P5+1 is within reach.

The Joint Plan of Action (JPA) has resulted in a gradual increase in oil exports, with Asian countries estimated to have increased their imports from Iran by 19.8 percent% in 2014, with the average of the four main clients (i.e. China, India, Japan and South Korea) reaching 1.12 million barrels per day (mbpd).

The economy has also benefitted from the real exchange rate depreciation through improved international competitiveness in the agriculture, manufacturing, and non-oil exports. Data from Iran's Customs Administration show that Iran's non-oil exports rose 24.2 percent% in the first ten months of the current Iranian calendar year (i.e., March 21-January 20, 2015) compared to the same period last year. Furthermore, the depreciation of the real exchange rate has improved the competitiveness of the agriculture, manufacturing, and non-oil exports sectors, as well as of the hydrocarbons industry. Inflationary pressures on the economy have eased from a year-on-year peak of 35% in 2013 to 15% in 2014. This was facilitated by a number of factors including the appreciation of the Iranian Rial, the decline in global prices for key staples, and the easing of international sanctions.

Sources: http://www.worldbank.org/en/country/iran/overview.

World Bank Summary of Iranian Economy and Impact of Sanctions: 3/2015 - II

Unemployment remains elevated and is expected to be a central challenge for the government. According to the Statistical Center of Iran, the unemployment rate was estimated at 10.3% in 2013. Unofficial sources, however, estimate the overall unemployment rate to be as high as 20%. The unemployment rate is particularly worrisome among women, the female (20.3%,) and youth, populations (24%). The incidence of underemployment has also become highly prevalent. The weakness seen in the labor market comes within a context in which only 36.7% of the population is economically active.

Tight labor market conditions are exacerbated by the rise in the participation rate of women and the large number of youth entering the labor market. This trend is expected to be maintained in line with the evolving socio-economic profile of the country which is increasingly characterized by higher educational attainment rates for women—which exceed rates for their male counterparts— and a relatively low household formation rate. Similarly, the demographic profile of the country is characterized by a disproportionately high youth population (with over 60% of Iran's population estimated to be under the age of 30). As a result, some 750,000 youth are estimated to enter the labor market every year, with a large portion becoming unemployed, abandoning their job search and joining the ranks of the economically inactive population.

Not surprisingly, it is estimated that some 150,000 Iranians with tertiary education leave the country every year. The government estimates that the country must create some 8.5 million jobs over the next two years with stated of objective to reduce the unemployment rate to 7% by 2016. This projection assumes a constant labor force participation rate. The labor force participation rate is likely to rise, however, with a large number of discouraged workers returning to the labor force. This suggests that the unemployment rate might remain elevated for the foreseeable future even if the government's job creation target is met.

In 2005, poverty was 1.45% in Iran using a poverty line of US$1.25 per day (PPP). World Bank projections estimate that only 0.7% of the population (or half a million people) lived under this poverty line in 2010, although a large proportion of people are living close to it. Indeed, raising the poverty line by US$0.5 (from US$2 to US$2.50 and from US$3 to US$3.50) could put 4%-6% of the population – over 4.5 million people - in poverty. This suggests that many individuals are vulnerable to changes in their personal disposable income and to the persistent rise in the cost of living.

With a view to improving the prospects for the economy, the Iranian government has announced several measures including: raising the productive capacity of the non-oil segment of the economy, giving greater autonomy to the Central Bank, broadening the tax base, stabilizing and unifying the domestic currency in the market, reinstating the Management and Planning Organization which was in charge of drafting the government budget and the country's five year development plans, and opening up the oil sector to foreign companies for investment and technical assistance. The economic outlook has improved since last year in line with the interim measures adopted by Iran and the P5+1 group (United States, United Kingdom, France, Russia, China and Germany) under the Joint Plan of Action.

The government has expressed commitment to having sanctions on Iran eased and taming inflationary pressures on the economy. These initiatives would ultimately increase the country's export potential, raise the purchasing power of consumers, and support consumption and business investment through improved consumer and business confidence. The 2015 forecast, which assumes continuously low oil prices and a marginal decline in oil export volumes starting in July 2015, suggests that the economy will expand by 0.6%. The inflation is forecast to remain relatively contained at 17.3%.

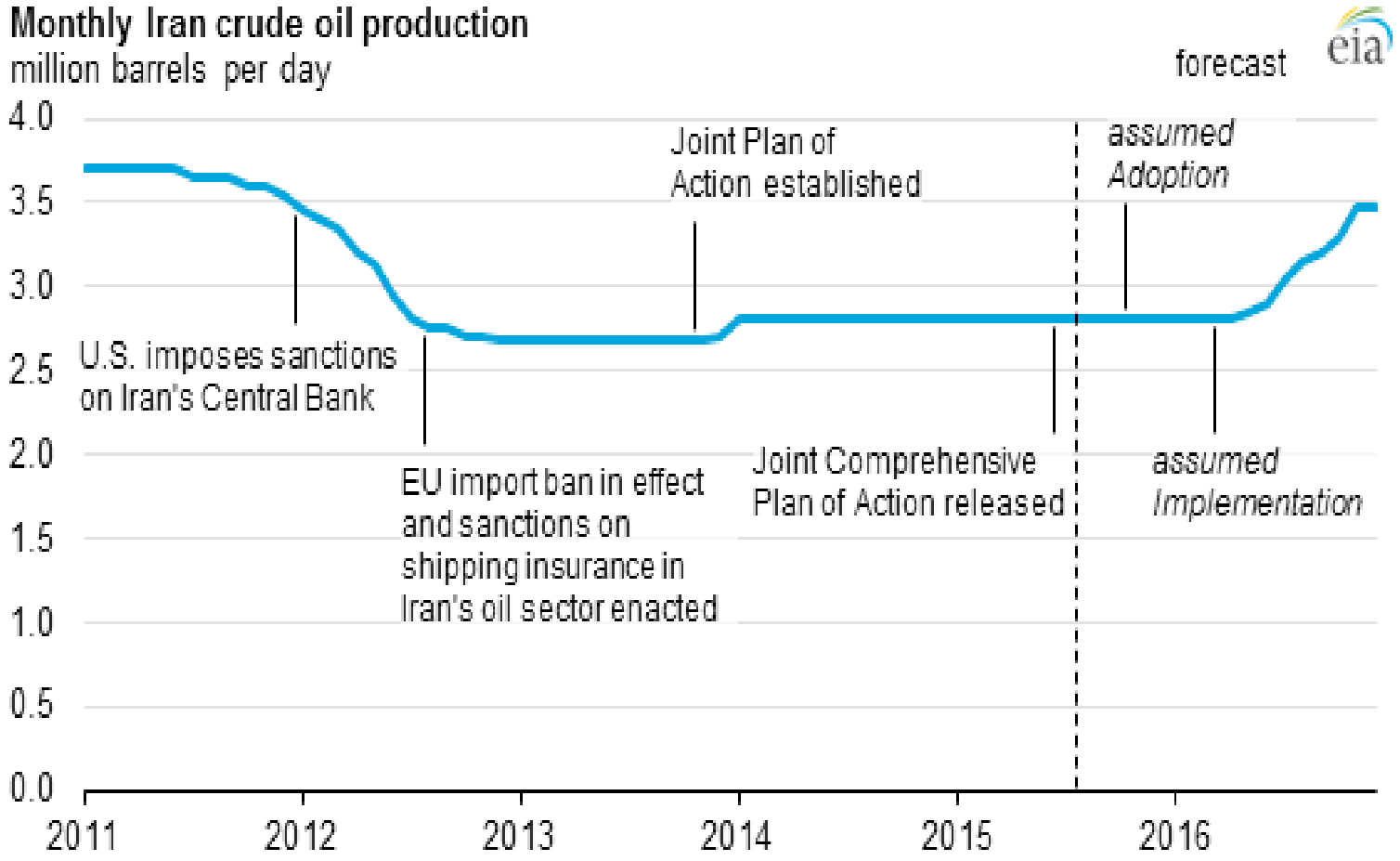
Sources: http://www.worldbank.org/en/country/iran/overview.

The Impact of the Nuclear Agreement on Iranian Oil Exports

(Post Agreement and Past Estimates)

Restoring Iran's Oil Exports - Post Agreement EIA Estimate in August 2015 - I

Nuclear accord creates potential for additional crude oil production from Iran



Source: : U.S. Energy Information Administration. Aiugust 13, 2015, http://www.eia.gov/todayinenergy/detail.cfm?id=22492&src=email#

Restoring Iran's Oil Exports - Post Agreement EIA Estimate in August 2015 - II

On July 14, the P5+1 (the five permanent members of the United Nations Security Council and Germany) and Iran announced an agreement that could result in relief from United States and European Union nuclear-related sanctions (which include some oil-related sanctions). If the agreement is implemented and sanctions relief occurs, it will put additional Iranian oil supplies on a global market that has already seen oil inventories rise significantly over the past year.

These additional Iranian supplies, along with relatively higher global oil production and comparatively slower global oil consumption growth, will contribute to large inventory builds next year, resulting in lower oil prices than previously expected. The North Sea Brent crude oil price, which averaged $57 per barrel in July, is expected to rise to an average of $59/barrel (b) in 2016, according to EIA's August 2015 Short-Term Energy Outlook (STEO). The previous outlook, published before the Joint Comprehensive Plan of Action (JCPOA) was announced on July 14, had anticipated 2016 prices at $67/b. Crude oil price forecasts are subject to significant uncertainty, as described in EIA's Market Prices and Uncertainty Report.

The initial effect of the JCPOA on oil markets will come from the release of Iranian inventories**. Of the estimated 30 million barrels held in storage, more than half is condensate, and the rest is mainly medium, sour crude oil. The volumes in storage could boost total global supply by about 100,000 barrels per day (b/d) by the end of 2015. This estimate reflects the difficulties of finding buyers for the stored condensate, although much higher volumes may be sold should Iran provide discounts to encourage purchases**.

The pace of the sales of oil from storage remains highly uncertain and will depend on the pace of sanctions relief and the availability of customers for Iranian oil and condensate. Iran may find it challenging to find buyers for the condensate, as current condensate prices indicate that consuming markets, particularly in Asia, are well supplied. By contrast, the crude oil held in storage could be sold more quickly, as price differences currently indicate more demand for medium, sour crude compared to lighter, sweeter crude. There is evidence that initial volumes are already moving out of floating storage.

Iran is also expected to increase production as sanctions are lifted. EIA estimates that Iran has the technical capability to increase crude oil production by about 600,000 b/d by the end of 2016. The pace and magnitude at which additional production volumes reach the market depend on how quickly Iran meets conditions triggering sanction relief and how successful Iran is in production and marketing operations**. EIA expects most of this increase would occur in the second half of 2016. These additional Iranian volumes are expected to put downward pressure on global oil prices in 2016, as Saudi Arabia and the rest of producers in the Organization of the Petroleum Exporting Countries (OPEC) are not expected to make production cuts to accommodate additional Iranian volumes in a well-supplied global oil market**.

Lower world oil prices in 2016 likely will result in lower non-OPEC production and slightly higher consumption, largely offsetting the higher Iranian production. Non-OPEC producers are expected to see their output fall as a result of high inventory builds and lower prices. In particular, EIA's outlook for U.S. crude oil production was revised downward by about 400,000 b/d in 2016. Internationally, producers operating in high-cost areas, such as the North Sea and deep offshore in the Americas, are also expected to reduce output in 2016.

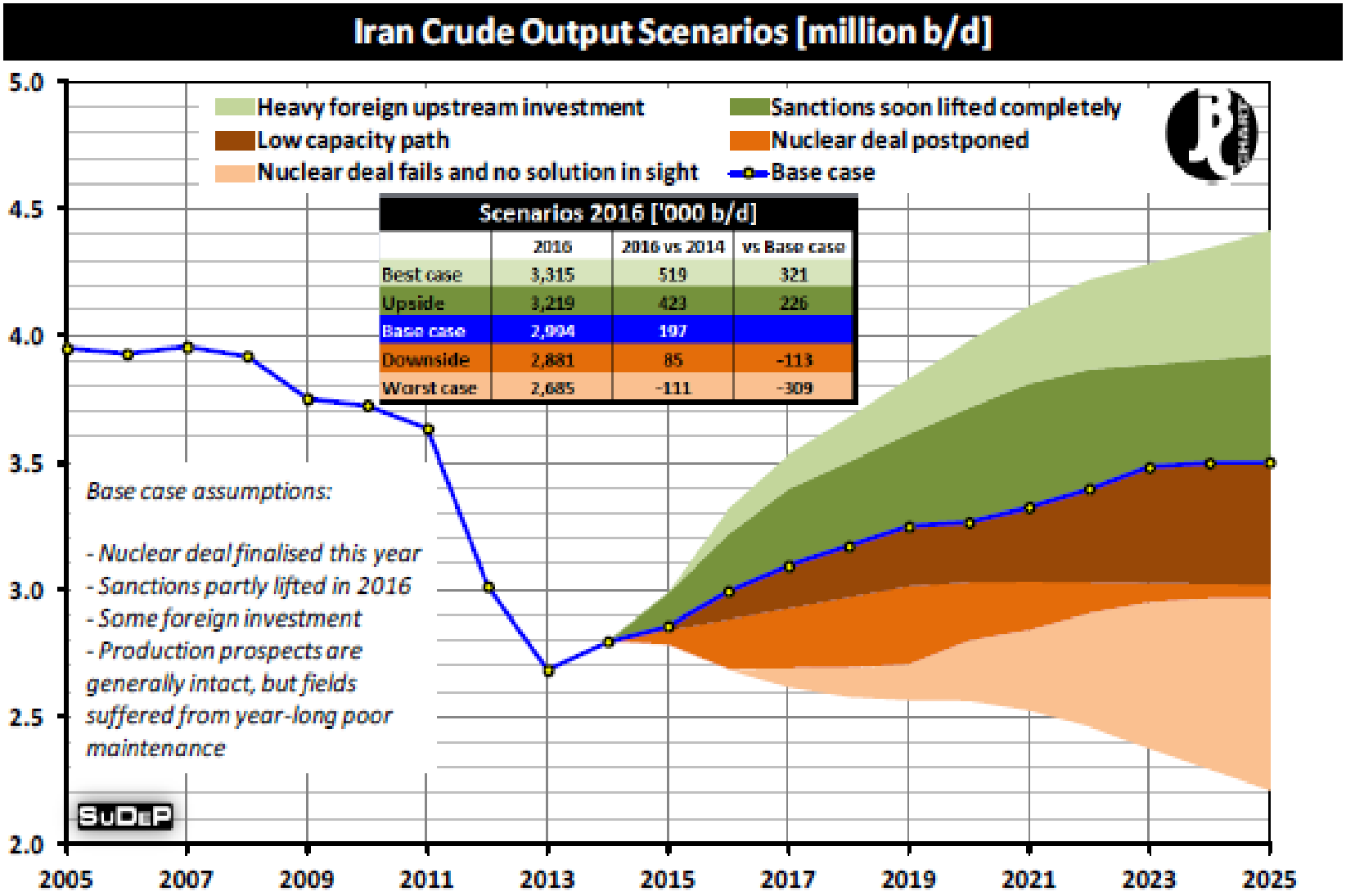
Source: **:** U.S. Energy Information Administration. Aiugust 13, 2015, http://www.eia.gov/todayinenergy/detail.cfm?id=22492&src=email#

Restoring Iran's Oil Exports - Post Agreement EIA Estimate in August 2015 - III

However, the biggest declines in production among non-OPEC producers from lower oil prices are likely to occur beyond 2016, reflecting the effect of reduced capital expenditures and investment in conventional development projects with longer payback periods than projects with shorter payback times, such as tight oil drilling. Reductions in capital expenditures are most likely to affect producers in areas outside of the shale plays in the United States.

Source: **:** U.S. Energy Information Administration. Aiugust 13, 2015, http://www.eia.gov/todayinenergy/detail.cfm?id=22492&src=email#

Possible Range of Future Iranian Oil Production: 2015-2025



Source: CSIS Energy and National Security Program

Earlier EIA Estimate of Lifting of Sanctions in 2013

The U.S. Energy Information Administration (EIA) does not anticipate an immediate impact on global liquid fuels supply following the November 24 announcement of a Joint Plan of Action (JPA) between Iran and the five permanent members of the United Nations Security Council (the United States, United Kingdom, France, Russia, and China) plus Germany (P5+1) on Iran's nuclear program. The JPA does not directly allow for additional Iranian oil sales, although it does suspend sanctions on associated insurance and transportation services to those countries already granted import waivers.

The imposition of sanctions on associated insurance and transportation services by the European Union (E.U.) had a significant effect on Iran's exports when implemented in July 2012, but Iran has been able to create arrangements that allow it to export limited quantities of oil to several countries. EIA does not anticipate those countries significantly increasing their oil imports from Iran, so without an easing of sanctions covering Iran's ability to sell additional oil, the country is unlikely to significantly increase its production or exports in the short term.

Iran's total liquids production and exports declined significantly as a result of sanctions imposed on its energy sector, and the recent JPA is not expected to significantly impact the existing sanctions regime for at least the next six months, according to official U.S. Department of State statements. EIA estimates Iranian crude oil production was 2.8 million barrels per day (bbl/d) in November 2013, down from an annual average of 3.7 million bbl/d in 2011 and 3 million bbl/d in 2012. Crude oil exports averaged just 1.1 million bbl/d over the first nine months of 2013, down from 2.5 million bbl/d in 2011 and 1.5 million bbl/d in 2012, according to the International Energy Agency.

Existing United States and E.U. sanctions target Iran's petroleum exports and imports, prohibit large-scale investment in the country's oil and gas sector, and cut off Iran's access to European and U.S. sources of financial transactions. Additional sanctions target the Central Bank of Iran, while the E.U. imposed an embargo on Iranian oil and in July 2012 banned European Protection and Indemnity (P&I) Clubs from providing Iranian oil carriers with insurance and reinsurance.

European insurers underwrite the majority of insurance policies for the global tanker fleet, covering about 95% of tankers worldwide. The insurance ban particularly affected Iranian oil exports as lack of adequate insurance impeded sales of Iranian crude to all of its customers. Iranian exports dropped to less than 1.0 million bbl/d in July 2012 as Japanese, Chinese, South Korean, and Indian buyers encountered difficulties in finding insurance alternatives. By August and September of 2012, Iranian exports recovered somewhat as Japan, South Korea, and India began to issue sovereign guarantees for vessels carrying Iranian crude oil and condensate, and China and India began to accept Kish P&I Club—an Iranian insurer—guarantees on the vessels that shipped oil to their refineries. While the recent JPA suspends the shipping insurance ban, many of the countries currently importing Iranian oil are already using alternative insurers, thereby limiting Iran's ability to significantly increase exports.

In 2012, Iran's net oil export revenues were significantly lower than the $95 billion generated in 2011. The upper bound estimate of Iran's net oil export revenues in 2012 was $69 billion, assuming that Iran was able to receive hard currency payments for all of its estimated exports and did not offer discounts despite the application of sanctions by the United States and the E.U. This upper bound estimate may significantly overstate the country's actual net oil export revenues. Oil exports make up 80% of Iran's total export earnings and 50-60% of government revenue, according to The Economist Intelligence Unit.

Source: EIA, Iran’s oil exports not expected to increase significantly despite recent negotiations, December 10, 2013, http://www.eia.gov/todayinenergy/detail.cfm?id=14111#

Earlier EIA Estimate of Impact of Lifting Sanctions in June 2015

In early April this year, Iran and the five permanent members of the United Nations Security Council plus Germany (P5+1) reached a framework agreement to guide negotiations targeting a comprehensive agreement by June 30. The comprehensive agreement could result in the lifting of crude oil-related sanctions against Iran, which in turn could result in an increase in Iran's crude oil production and exports. However, the ultimate decision and the timing that sanctions could be lifted are highly uncertain.

Sanctions imposed by the United States and the European Union (EU) at the end of 2011 and during the summer of 2012, respectively, led to the displacement of more than 1.0 million barrels per day (b/d) of Iranian crude oil on the global market. Iran's main buyers in Asia, Europe, and elsewhere have replaced Iranian crude oil with barrels from other members of the Organization of the Petroleum Exporting Countries (OPEC). If oil-related sanctions are lifted, Iran will look to regain export market share, competing with other OPEC members with similar crude oil grades.

Iranian crude oil and lease condensate purchases. Iran's crude oil and condensate exports averaged 1.4 million b/d in 2014. In 2011, prior to sanctions, Iran exported 2.6 million b/d, most of which went to Asia, particularly China (550,000 b/d), India (320,000 b/d), Japan (315,000 b/d), and South Korea (250,000 b/d).

The EU was the second-largest regional buyer of Iranian oil in 2011, purchasing nearly 600,000 b/d of crude oil and condensate. Turkey (185,000 b/d), South Africa (75,000 b/d), and the United Arab Emirates (95,000 b/d) were also significant buyers.

In 2012, as the United States and the EU imposed sanctions, almost all of Iran's buyers either reduced their purchases or halted them. By 2013, Iran's crude oil and condensate exports dropped to just below 1.3 million b/d, with the main importers being China, India, Japan, South Korea, Turkey, UAE, and Syria. Iran's exports grew by almost 150,000 b/d in 2014, reflecting increased imports by China and India.

Displacement of Iranian oil. Iranian light and heavy crude oils are the country's two main crude oil export grades. Countries that reduced or halted imports from Iran replaced those barrels with similar quality crude grades from Saudi Arabia, Kuwait, Nigeria, Angola, and Iraq. Asian countries, which were mostly purchasing Iranian heavy crude oil, increased their purchases of similar crude grades from Saudi Arabia and Kuwait after 2011.

In particular, China increased purchases of oil from Angola and Iraq, while other Asian countries imported more from Nigeria. The EU, which mostly purchased Iranian light crude oil until the embargo in 2012, substantially increased imports from Nigeria and Saudi Arabia. South Africa, which also halted Iranian imports in 2012, has replaced those volumes mostly with supplies from Saudi Arabia, Nigeria, and Angola.

Differences in crude oil quality characteristics. Replacing Iranian crude oil with other grades does not necessarily result in a one-for-one exchange. Differences in crude oil quality characteristics (mainly density and sulfur content) can affect the volumes of petroleum products that are produced in a refinery, also known as refinery yield.

Crude oil that is light and sweet more easily and cheaply produces highly desirable petroleum products, such as gasoline and diesel fuel, usually resulting in higher prices for light crude than for heavy, sour crude oil.

Although other factors, such as transportation costs, contribute to price differences, the main factors affecting refinery operations are the quality and characteristics of the crude oil itself. The decision to import more costly light, sweet oil or cheaper heavy, sour oil can depend on a refinery's level of complexity and ability to manipulate the natural yields of crude oil and maximize production of more desirable products that sell at a premium.

Source: **:** U.S. Energy Information Administration, http://www.eia.gov/beta/international/country.cfm?iso=IRN

EIA 6.15 Estimate of Restoring Iran's Oil Exports - I

Iran's exports of crude oil and condensate dropped from 2.6 million b/d in 2011 to almost 1.3 million b/d in 2013 as a result of U.S. and European Union sanctions that targeted Iran's oil exports. Iran's exports increased by nearly 150,000 b/d to 1.4 million b/d in 2014. The largest buyers of Iranian crude and condensate are China, India, Japan, South Korea, and Turkey.

According to EIA estimates based on data from Eurostat, Global Trade Information Services, Lloyd's List Intelligence (APEX), and trade press reports, Iran's crude oil and condensate exports averaged 1.4 million b/d in 2014, 1.2 million b/d less than the volume exported in 2011 but almost 150,000 b/d above the 2013 export level. China and India accounted for nearly all of the year-over-year increase. Iran's ability to sell oil was substantially impeded by new sanctions imposed by the United States and the European Union, that went into effect in the summer of 2012.

Effects of 2011-12 sanctions

The decline of Iran's crude oil and condensate exports is attributed to new sanctions imposed by the United States and the EU at the end of 2011 and during the summer of 2012. Iran's ability to sell crude oil was particularly affected by the EU ban on all Iranian petroleum imports as well as the imposition of insurance and reinsurance bans by European P&I Clubs effective July 1, 2012. European insurers underwrite the majority of insurance policies for the global tanker fleet. The insurance ban particularly affected Iranian oil exports, as lack of adequate insurance impeded the sales of Iranian crude to all of its customers, including those in Asia. Iranian exports dropped to about 1.0 million b/d in July 2012 as Japanese, Chinese, South Korean, and Indian buyers scrambled to find insurance alternatives. Adding to the insurance difficulties was continued pressure imposed by the U.S. sanctions on Iranian oil customers to decrease their purchases.

Iran and the countries that are continuing to import Iranian oil have since been able to find alternatives to P&I coverage from EU companies. By the last quarter of 2012, Iranian exports recovered somewhat as Japan, South Korea, and India began to issue sovereign guarantees for vessels carrying Iranian crude oil and condensate. China and India began to accept the Iranian Kish P&I Club guarantee on vessels that shipped oil to its refineries. Nonetheless, Iranian exports have failed to reach export levels that existed before the latest sanctions.

In 2012, sanctions were not the only driver of export decreases. For example, commercial interests contributed to the decrease in China's imports, as Chinese buyers were engaged in a contractual dispute with Iran in the first quarter of 2012. Chinese refiners significantly decreased their purchases of Iranian crude and condensate as a result of a dispute over the terms of annual purchase contracts. Although Unipec (the trading arm of China's largest refiner Sinopec Corporation) eventually signed a supply contract with NIOC for volumes comparable to those imported in 2011, the contract did not allow NIOC to make up for the oil sales that were not delivered to China in the first quarter of that year.

Petroleum product exports

In addition to crude oil and condensate, Iran also exports petroleum products. According to FGE, Iran exported almost 300,000 b/d of petroleum products in 2014, more than 50,000 b/d higher than in 2013 but about 100,000 b/d lower than in 2011 because U.S. and EU sanctions affected Iran's ability to sell petroleum products as well.16 Iran mostly exports fuel oil, LPG, and naphtha to Asian markets.

Oil terminals

The terminals at Kharg, Lavan, and Sirri Islands, located in the Persian Gulf, handle almost all of Iran's crude oil exports. Iran also has two small crude oil terminals at Cyrus and Bahregansar, one terminal along the Caspian Sea, and other terminals that handle mostly refined product exports and imports. Condensate from the South Pars natural gas field is exported from the Assaluyeh terminal.

Source: **:** U.S. Energy Information Administration, http://www.eia.gov/beta/international/country.cfm?iso=IRN

EIA 6.15 Estimate Restoring Iran's Oil Exports - II

Kharg Island is the largest and main export terminal in Iran. Most of Iran's exports are sent via Kharg. The terminal processes all onshore production (the Iranian Heavy and Iranian Light Blends) and offshore production from the Froozan field (the Froozan Blend). Kharg Island's oil storage capacity is about 28 million barrels.17

Lavan Island mostly handles exports of the Lavan Blend sourced from offshore fields. Lavan is Iran's highest-quality export grade and one of Iran's smallest streams. Lavan's storage capacity is 5.5 million barrels.18

Sirri Island serves as a loading port for the Sirri Blend that is produced in the offshore fields off the island. Its storage capacity is 4.5 million barrels.19

Neka is Iran's Caspian Sea port that was built in 2003 to receive crude oil imports from the Caspian region producers under swap agreements. The port has a storage capacity of 1 million barrels and can handle 100,000 b/d of crude oil, according to FGE.20 The terminal, which has not operated since 2011, was previously used to facilitate swap agreements with Azerbaijan, Kazakhstan, and Turkmenistan. Under these agreements, Iran received crude oil at its Caspian Sea port of Neka, which was processed in the Tehran and Tabriz refineries. In return, Iran exported the same amount of crude oil through its Persian Gulf ports.21 There have been talks to revive the swaps, but it is unclear when they might restart.

The export terminals Bandar Mahshahr and Abadan (also known as Bandar Imam Khomeini) are near the Abadan refinery and are used to export refined product from the Abadan refinery. Bandar Abbas, located near the northern end of the Strait of Hormuz, is Iran's main fuel oil export terminal.

Source: **:** U.S. Energy Information Administration, http://www.eia.gov/beta/international/country.cfm?iso=IRN

Restoring Iran's Oil Exports - New STEO Estimate in July 2015 - I

EIA estimates that OPEC crude oil production averaged 30.1 million b/d in 2014, unchanged from the previous year. Crude oil production declines in Libya, Angola, Algeria, and Kuwait offset production growth in Iraq and Iran. EIA forecasts OPEC crude oil production to increase by 0.6 million b/d in 2015 and decrease by 0.2 million b/d in 2016. Iraq is expected to be the largest contributor to OPEC production growth in 2015. At the OPEC meeting on June 5, the group did not change its 30 million b/d crude oil production target. EIA forecasts OPEC crude oil production will continue to exceed that target over the forecast period, contributing to expected global inventory builds.

On April 2, Iran and the five permanent members of the United Nations Security Council plus Germany (P5+1) reached a framework agreement to guide negotiations targeting a comprehensive agreement by June 30. Negotiations continued beyond the June 30 target, and July 7 was agreed as the new target date for a comprehensive agreement. However, no agreement had been reached by the time of this writing. A comprehensive agreement could result in the lifting of oil-related sanctions against Iran and a subsequent increase in Iran's crude oil production and exports, although the timing and details of any suspension of sanctions are uncertain. EIA has not changed its short-term projection for Iranian crude oil production, which assumes that production will stay close to the current level.

Iran produced 3.6 million b/d of crude oil in late 2011, before the recent round of sanctions was enacted. The sanctions forced Iran to shut in a substantial portion of its production, lowering output to an estimated 2.9 million b/d in June 2015. Iran's ability to bring online previously shut-in volumes and increase exports depends on several factors, including the current condition of oil fields and infrastructure that were shut in, the pace of sanctions relief, and the ability of Iran to find buyers in the present market. If a comprehensive agreement is reached, EIA estimates that the re-entry of more Iranian oil could result in a $5/b-$15/b lower baseline STEO price forecast for 2016 (see the analysis box on page 5 of the April 2015 STEO for further discussion).

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If a comprehensive agreement that results in the lifting of Iranian oil -related sanctions is reached, then this could significantly change the STEO forecast for oil supply, demand, and prices. However, the timing and order that sanctions could be suspended is uncertain. In addition, the pace and volume at which more Iranian oil can re –enter the market is uncertain and depends on how quickly Iran can move oil out of storage and ramp up production.

Given the preliminary nature of the recent developments, EIA has not changed its short- term projection for Iranian production, which assumes that production will stay close to the current level. However, if a comprehensive deal is reached, the re-entry of more Iranian barrels could result in a $5 - $15/bbl lower baseline STEO price projection in 2016 compared with the current STEO.

Iran is believed to hold at least 30 million barrels in storage. It is possible that Iran will attempt to move oil out of storage more quickly sometime during the second half of 2015 in preparation to increase production if discussions on sanctions show progress. As a result, the global market may see incremental increases in Iran's crude oil exports before seeing a substantial increase to Iran's production, but the pace at which oil in storage could be withdrawn is uncertain.

EIA believes that Iran has the technical capability to ramp up crude oil production by at least 700,000 bbl/d by at least the end of 2016, of which 600,000 bbl/d represents capacity that was previously shut in and 100,000 bbl/d is new capacity.

EIA's current STEO projects that growth in global inventories declines from 1 million bbl/d in 2015 to 100,000 bbl/d in 2016. If Iran ramps up production by 700,000 bbl/d by at least the end of 2 016,then this could result in an annual average growth of about 500,000 bbl/din global inventories in 2016, which would stress storage capacity limits and put downward pressure on prices

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EIA 6.15 Estimate of Restoring Iran's Oil Exports - July 2015 - II

The potentially large inventory build in 2016 implies that production growth outside of Iran could be lower or that global consumption growth could be higher than projected in the current STEO. Although the timing and volume of Iran' s exports remain uncertain, the market perception surrounding increased future supplies will apply downward price pressure to near-term crude oil prices. Overall, North Sea Brent crude oil prices could be lower by about $1-$3/bbl in 2015, decreasing the 2015 annual Brent price from the current projection in the high $50/bbl range. If and when significantly increased volumes of Iranian barrels start entering the market, the price effect could be greater. The uncertainty of the impact lies in the secondary effects on production outside of Iran,

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OPEC noncrude liquids production, which averaged 6.3 million b/d in 2014, is expected to increase by 0.1 million b/d in 2015 and by 0.2 million b/d in 2016, led by production increases in Qatar, Iran, and Kuwait.

In June, unplanned crude oil supply disruptions among OPEC producers averaged 2.5 million b/d, unchanged from May. Higher disruptions in May in Kuwait and Saudi Arabia extended into June. Production at the Wafra field, located in the Neutral Zone that straddles Kuwait and Saudi Arabia, ceased in mid-May as the operators attempted to resolve a contract dispute. The continued suspension of Wafra's production increased disruptions in June by a total of 0.1 million b/d, split between Kuwait and Saudi Arabia. This suspension came after the previous production shut-in at the Khafji field in the Neutral Zone.

EIA expects OPEC surplus crude oil production capacity, which is concentrated in Saudi Arabia, to decrease to an average of 1.8 million b/d in 2015 and increase to 2.1 million b/d in 2016, after averaging 2.0 million b/d in 2014. Surplus capacity is typically an indication of market conditions, and surplus capacity below 2.5 million b/d is an indicator of a relatively tight oil market, but the current and forecast levels of global inventory builds make the projected low surplus capacity level in 2015 less significant.

EIA estimates global consumption of petroleum and other liquids grew by 1.1 million b/d in 2014, averaging 92.4 million b/d for the year. EIA expects global consumption of petroleum and other liquids to grow by 1.3 million b/d in 2015 and by 1.4 million b/d in 2016. Projected real gross domestic product (GDP) weighted for oil consumption, which increased by an estimated 2.8% in 2014, is projected to grow by 2.5% in 2015 and by 3.1% in 2016.

Consumption of petroleum and other liquids outside Organization for Economic Cooperation and Development (OECD) countries grew by 1.4 million b/d in 2014 and is projected to grow by 0.8 million b/d in 2015 and by 1.1 million b/d in 2016. Lower forecast growth for non-OECD consumption in 2015 mostly reflects a 0.2 million b/d decline in Russia's consumption as a result of the country's economic downturn. Russia's oil consumption is expected to decline by a similar amount in 2016, although it is offset by growth elsewhere. China's economic growth slowed in the second half of 2014 and in the beginning of 2015. However, China remains the main source of non-OECD oil consumption growth, with a projected annual average increase of 0.3 million b/d in both 2015 and 2016, down from growth of 0.4 million b/d in 2014. India's economic and manufacturing growth continued to rise in the first half of 2015, and EIA projects India's petroleum and other liquids consumption will increase by 0.2 million b/d in 2015 and 2016, compared with 0.1 million b/d in 2014.

OECD petroleum and other liquids consumption, which fell by 0.4 million b/d in 2014, is expected to grow by 0.4 million b/d in 2015 and by 0.3 million b/d in 2016. Japan and Europe accounted for nearly all of the 2014 decline in OECD oil consumption. Japan's consumption is expected to continue declining over the next two years, albeit at a slower rate than in 2014, while Europe's consumption is expected to grow slowly. The United States is the leading contributor to projected OECD consumption growth in 2015, with U.S. consumption increasing by 0.4 million b/d, while consumption in both the United States and Europe increases by about 0.1 million b/d in 2016. The degree to which global oil demand responds to lower oil prices is only beginning to become apparent in the data, and, if that response deviates from forecast values, it could affect market balances and prices.

Source: **:** U.S. Energy Information Administration. STEO, July 7, 2015www.eia.gov/forecasts/steo/report/global_oil.cfmN

The Impact of the Nuclear Agreement on The Iranian Economy

World Bank Summary Estimate

Iran and the Permanent Members of the UN Security Council and Germany (P5+1) reached a deal on July 14, 2015 that limits Iranian nuclear activity in return for lifting all international sanctions that were placed on Iran.

The most significant change will be Iran's return to the oil market**. The World Bank estimates that the eventual addition of one million barrels a day (mb d) from Iran, assuming no strategic response from other oil exporters, would lower oil prices by 14 percent or $10 per barrel in 2016.**

Oil importers, including the European Union (EU) and United States (US), will gain while oil exporters, especially the Gulf countries, will lose.

Secondly, once sanctions and restrictions on financial transactions are relaxed, Iran's trade, which had both declined in absolute terms and shifted away from Europe towards Asia and the Middle East, will expand**. The World Bank estimates that sanctions reduced Iranian exports by $17.1 billion during 2012-14, equivalent to 13.5 percent of total exports in that period.**

…the countries that will see the largest post-sanctions increase in trade with Iran include Britain, China, India, Turkey, and Saudi Arabia.

Thirdly, the Iranian economy, which was in recession for two years, will receive a major boost from increased oil revenues—conservatively estimated at about $15 billion in the first year—and lower trade costs.

In addition, there are estimates that Iran holds about $107 billion worth of frozen assets (including LCs and oil exports earnings) overseas, of which an estimated $29 billion will be released immediately after sanctions removal.

Finally, foreign direct investment (FDI), which had declined by billions of dollars following the tightening of sanctions in 2012, is expected to pick up. There has already been some interest shown by foreign multinationals since the April 2015 framework agreement, especially in the oil and gas sectors.

The World Bank expects FDI to eventually increase to about $3 - 3.5 billion in a couple of years, double the level in 2015 but still below the peak in 2003.

In addition to slowing down, the Iranian economy underwent a structural shift during the sanctions era, with the oil, automobile, construction and financial sectors declining the most.

As sanctions are lifted, these sectors are likely to see an expansion of output. All these changes to the economy involve shifting resources from one use to another. The most significant aspect of sanctions relief is that it enables resources to be shifted to where they are more productive, that is, for the economy to produce more efficiently. For example, Iran can now produce and export those goods in which it has a comparative advantage, and import goods in which it does not.

In short, sanctions relief can be thought of as an economic windfall to the Iranian economy. The World Bank estimates the size of this windfall as a welfare gain of $13 billion or 2.8 percent of current welfare.

Like all windfalls, however, they have to be properly managed in order that they sustainably benefit the population. In particular, as oil revenues enter the economy, the exchange rate will appreciate. While this will make imports cheaper, it will also make nonoil exports less competitive

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 1-2

World Bank Estimate of Macroeconomic Impact of Sanctions Relief - I

Estimated GDP Real Growth in Percent

					Estimates		Projections	
Fiscal year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
GDP growth	5.9	3.0	-6.8	-1.9	3.0	3.3	5.1	5.5

Source: Mottaghi (2015a). Fiscal year ending March 21st.

With the removal of sanctions following a nuclear deal, the Iranian economy is expected to expand significantly in 2016 and the following year, through increased oil production and exports, auto production, and expansion of trade Assuming sound macroeconomic policies are in place, this could boost economic growth. It will also create ample fiscal space (up to $15 billion annually in oil export earnings, equivalent to 3.5 percent of GDP) for the government to take on investment projects. The World Bank's estimates show that in an upside scenario of complete removal of sanctions, real GDP growth could reach 5.1 and 5.5 percent in 2016/17 and 2017/18 respectively, approaching that of the pre-sanction period.

While all sectors could benefit from an opening up of the economy, the automotive and pharmaceutical industries are expected to get a significant boost. Iran's car industry, comprising the major companies of the Bahman Group, Iran Khodro and Saipa, is one of the largest industrial sectors, accounting for more than 10 percent of GDP. After the tightening of sanctions in 2012, the production of cars declined sharply and reached 700,000 cars annually compared to 1.6 million prior to the sanctions (Figure 5). The main reasons for the slowdown in the auto industry were the depreciation of the national currency, which increased the cost of imported parts and components, and the ban on imports of material and equipment. Car sales revenues fell by half, costing the industry billions of dollars annually. Data are not available but estimates show that the decline in auto production led to layoffs in this sector, which accounts for 4 percent of the workforce and is considered one of the main job-creating sectors in Iran.

If sanctions are lifted and international companies resume cooperation with Iran, the expectation is that automobile

Source: : Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 13

World Bank Estimate of Macroeconomic Impact of Sanctions Relief - II

production will get a boost and reach somewhere close to its pre-sanctions level within the next two years.

Production in the pharmaceutical industries will also rise, as these firms will now be able to import parts and machinery that have been subject to sanctions in the past two years. It is expected that pharmaceutical exports to Europe, which were worth $2.5

billion prior to 2012, will resume after sanctions are removed. Exports to Asia and Africa have not suffered a substantial decline as a result of sanctions, but even exports to these continents are expected to increase with the reduction of restrictions on sea cargo transportation and cargo insurance.

During the sanctions era, the labor market worsened. There are estimates that about 800,000- 900,000 Iranians enter the labor market each year. Even before the 2012 tightening of sanctions, the economy was able to create only 200,000 jobs a year. That number has since declined substantially.

As the immediate impact of removing sanctions will be increased production in the oil industry, which employs a negligible share of the Iranian workforce, the demand for labor is unlikely to be directly affected.

By contrast, demand for capital will rise; the CGE model estimates that the real price of capital will increase by about 8 percent in the medium term. However, demand for labor will grow through the effects of spending from increased oil revenues, and growth in labor-intensive sectors such as automobiles, pharmaceuticals, construction, tourism, banking and communications.

The World Bank estimates that the Iranian economy needs to create five million jobs over the next 5 years, under the assumption of a 5.5 percent GDP growth rate, to be able to keep the unemployment rate at 10 percent.

This means an increase of one million jobs every year in an economy that has been creating less than one fifth that amount. As the labor-intensive sectors grow, the unemployment rate should begin to decline and wages rise. Simulations with the CGE model suggest that, in the medium-run, wages of skilled workers will rise by 2 percent in real terms, and those of unskilled workers by 0.5

percent.

The removal of sanctions could impact the distribution of income through the labor market in different ways. The reintegration of the Iranian economy into world markets could increase the returns to skills and talent and widen income gaps, as has happened in some countries in the process of globalization. There is a possibility that the revival of investment in the non-oil sectors

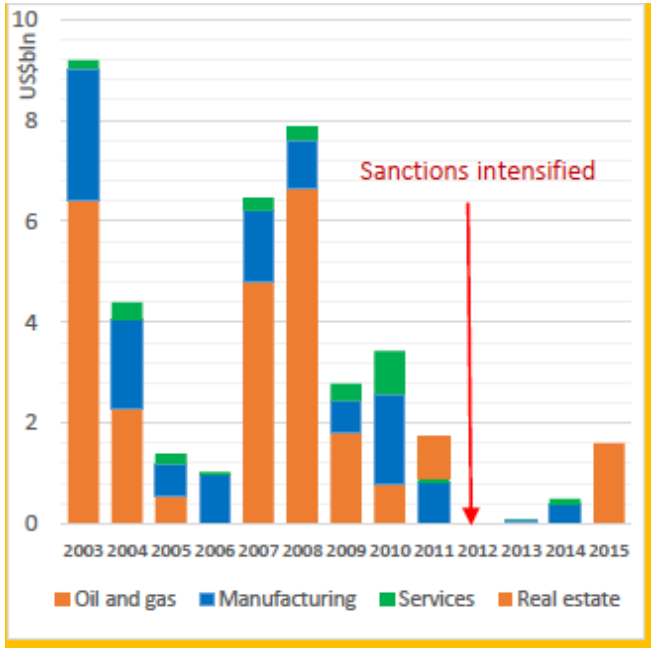
could expand the demand for labor more generally and help raise wage rates relative to returns to capital.

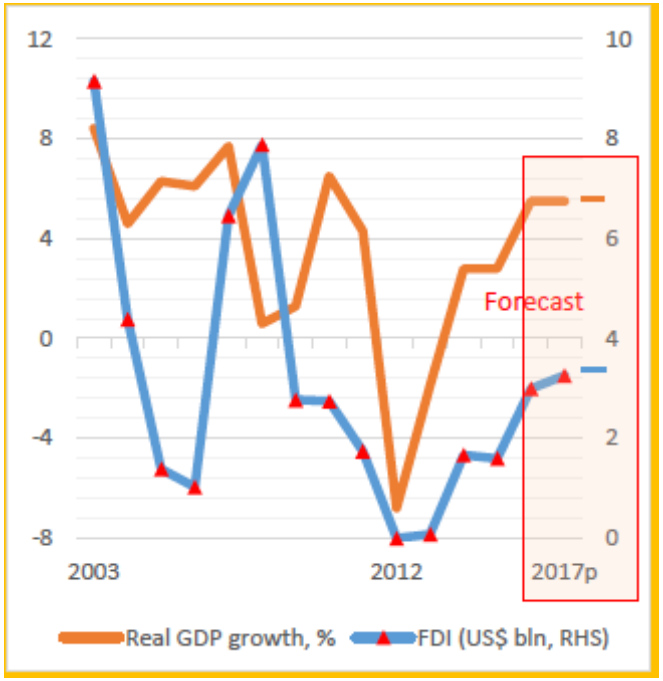
Some types of labor may gain and some may lose in relative terms. One key consideration is the relative position of females versus males in the labor market. Women's labor force participation (LFP) rate in Iran has been on a declining trend and their unemployment rates have risen sharply in the past several years…The economic windfall after removing sanctions could likely cause real exchange rate appreciation (See Box 2), which could put pressure on agriculture and industry and encourage

the service sector. This could be disruptive for men who have greater dependency on tradable sectors, while women have been finding better job matches in the service sector. This could likely lead to a surge in female labor force participation (LFP) as their job opportunities expand

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 13-14

World Bank Estimate of Impact of Agreement on Iran's Foreign Direct Investment





Since the nuclear framework agreement of April 2, 2015, there has been renewed interest from foreign multinationals seeking to invest in the oil and gas sector.

Iranian officials estimate that the oil and gas sector needs $130 - 145 billion in new investment by 2020 to keep oil production capacity from falling, of which the large South Pars gas field alone requires $100 billion.

The World Bank estimates that FDI inflows could range between about $3 - 3.2 billion in 2016 and 2017 respectively, if international sanctions are lifted and economic growth rebounds to 5.5 percent in 2017

This is twice as much FDI inflows as in 2015 but one-third of the peak in 2003. India, China and Russia, which were the top 3 investors in the 2000s, are expected to be joined by the US and some European countries, particularly Italy, and the UAE.

Most of the FDI inflows are expected to go into the oil and energy sector, which sorely needs it, followed by the automobile and pharmaceutical industries in the manufacturing sector.

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 9

World Bank Estimate of Impact of Agreement on Iran's Foreign Trade

If sanctions are removed and trade picks up, World Bank estimates show that exports will increase substantially for those trading partners with an income elasticity of exports greater than one. These countries include Britain, China, India, Turkey, and Saudi Arabia.

A one percent increase in national income will expand exports to these countries by more than 1 percent. These could likely include a surge in oil and gas exports to India and China (they have also made major investments in Iran). A resumption of trade with Britain will also include a

reopening of oil and gas exports which was halted previously. Trade with Russia, South Korea, Tajikistan, Pakistan, and Hong Kong will likely increase post-sanctions, but by less than the magnitude of the first group, since their income elasticities of exports are between 0.7 and 0.8.

Elasticities for the rest of the countries including France, Germany, Italy and UAE are within the range of 0.2 - 0.6, meaning that trade with these countries will increase, but with a lesser magnitude than the other two groups, after sanctions are removed.

The UAE, China, India, South Korea and Turkey were the top 5 import partners of Iran in 2013, while the US and European countries' shares (except for Germany) were literally zero.

The findings of this study show that trade could shift towards the latter countries in the post sanctions era. The coefficients on the dummy variables for European countries for the list of countries have a negative sign and are statistically significant, indicating that sanctions had reduced imports from these countries.

If the Iranian economy opens up and trade resumes, imports will likely shift towards the US, Germany, Netherlands, and in Asia towards South Korea, China, and Singapore, all with income elasticities of imports between 0.5-0.8 compared to the rest of the countries on our list with elasticities below 0.3 , except for Hong Kong with an income elasticity of 1.4.

Within the wider MENA area, imports will likely increase from UAE, Turkey, Oman, and Pakistan, all having income elasticities of imports close to or greater than 14. Expansion in exports and imports could also affect Iran's bilateral trading partners' economies, particularly UAE, positively and could boost their growth

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., pp. 6-7

Key World Bank Caveats on Impact of Sanctions Relief - I

The end of international sanctions will enable Iran to access billions of dollars of blocked assets, which are sizable given that Iran has little foreign debt. The relief from sanctions will also reduce the foreign trade costs for Iran and enable it to export more than its current level of about $130

billion. The trade costs in some cases add up to about a third of the value of the goods being traded and half to be borne entirely by the Iranian side. Removing this extra burden may not affect non-oil exports by much in the short run. But it can lower the costs of imports, investment, and production, enabling Iranian exporters and service providers to become more competitive in the medium run. Iran is likely to receive a major investment boost in its oil and gas fields, which could eventually raise the country's exports close to 3 million barrels per day. Even if oil prices remain the same or fall somewhat, Iran's revenues will increase

In addition, the inflow of foreign investment is likely to rise sharply in response to the enormous market opportunities anticipated as the Iranian economy sheds the constraints imposed on it by the sanctions, particularly in the context of the slowdown in other emerging market economies and the historically low returns in advanced countries).

In short, the Iranian economy stands to reap a substantial windfall. Simulations with the CGE model show that the pure efficiency gain from sanctions removal is about 2.8 percent of welfare.

Whether this windfall translates to sustained economic growth and employment depends critically on the underlying policies and institutions of the government, especially those that support exports and diversification. Iran's track record with past windfalls is mixed...

At least three pitfalls should be avoided.

First, as the new funds enter the foreign exchange market in Iran, the rial will substantially appreciate in real terms. This could be disruptive to the economy's tradable sector, especially non-traditional exports. Between 2002 and 2012, when the real exchange rate appreciated

(thanks to high commodity prices), non-oil exports also rose. But this was because the government used oil rents to promote the petrochemicals, plastics and some food industries, which also enjoyed subsidized fuel. When government funds found other uses, these exports quickly dwindled. To counter the harmful effects of the inexorable real exchange rate appreciation, the government needs to improve the supply of nontradables in the economy.

Second, Iran's investment needs are substantial. Currently, investment is about 5 percent of GDP, or $20 billion dollars, below the level that had allowed the economy to grow at an average of 5-6 percent per year between the late 1990s and late-2000s. To grow faster and to make up for the lost growth during the past several years, investment needs to increase substantially. But to do so, the government needs to avoid the temptation to spend large parts of the windfall on consumption. In addition, investment projects should be scrutinized carefully, to prevent the waste that often accompanies large investment booms.

- The first is to give priority to governance, particularly transparency, administrative effectiveness, and control of corruption. This helps build confidence in the government and enables it to carry out policies, including public investment decisions, in the public interest that would otherwise be struck down by rent-seekers who want the government to shape policies in their favor. Another important benefit is that efficient public services lower the cost of production of nontradables, thus ensuring competitiveness despite large inflows of foreign exchange.

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 16-17

Key World Bank Caveats on Impact of Sanctions Relief - II

- The second is to carefully manage the Stabilization Wealth Fund (SWF). The current nuclear deal seems to generate more confidence that Iran can use its assets as any other country. With proper arrangements for its management, the SWF can help augment transparency, while helping tosmooth revenues and protect investment.

The third is to address potential infrastructure bottlenecks. Iran's infrastructure is extensive in many dimensions, but lacks quality in some areas and could develop bottlenecks when the economy gathers speed. The road system has been growing in the past two and a half decades,but road quality is often poor, manifested in the fact that Iran has the highest number of road accident deaths in the world (World Health Organization, 2012).

The Internet and telecoms services have expanded fast in recent years but transmission speeds are very slow, which puts Iranian businesses at a disadvantage vis-à-vis those in other emerging markets. Given Iran's educated labor force and access to resource rents, its chances of gaining comparative advantage in low technology industries are low since Iranian labor is going to be too expensive for such industries. Therefore, it is imperative to promote high-tech industries and support innovation and research and development in those industries. This should be a central part of any plan aimed at turning the country's natural resource assets into human capital with lasting productivity

Consequences.

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 17

The Impact of the Nuclear Agreement on Global Oil Supply and Demand

World Bank Estimate of Impact of the Nuclear Agreement on Iran's Crude Oil And Condensate Exports, World Production, and Prices

With the nuclear deal and lifting of sanctions, Iran could gradually step up oil exports. While it will take time to resume oil production because of under investment in the sector, most observers predict that in 8 to 12 months, Iran's crude oil exports can reach pre-2012 levels.

This means an extra 1 mb/d of crude oil hitting the oil market. Simulations with a multi-country, multisector computable general equilibrium (CGE) model show that, without any policy interventions by OPEC members and other oil producers, international oil prices will drop by 14 percent

Assuming that the futures oil price for delivery in December 2015 stands at $66 per barrel, this will reduce oil prices to an estimated $56. The World Bank estimates that a drop of $10 in oil prices could worsen the fiscal balances of major oil exporters in the MENA region, to the tune of 5 percent of GDP in Saudi Arabia and 10 percent of GDP in Libya. This amounts to a loss of $40 billion for Saudi Arabia and $5 billion for Libya in annual oil export revenues.

Iran will be the least affected oil-exporting country as the additional revenues from increased exports of oil will outweigh the negative impacts of falling oil prices. The current account balances of all MENA oil exporters will also worsen. Meanwhile, oil importers will benefit from the reduction in world oil prices.

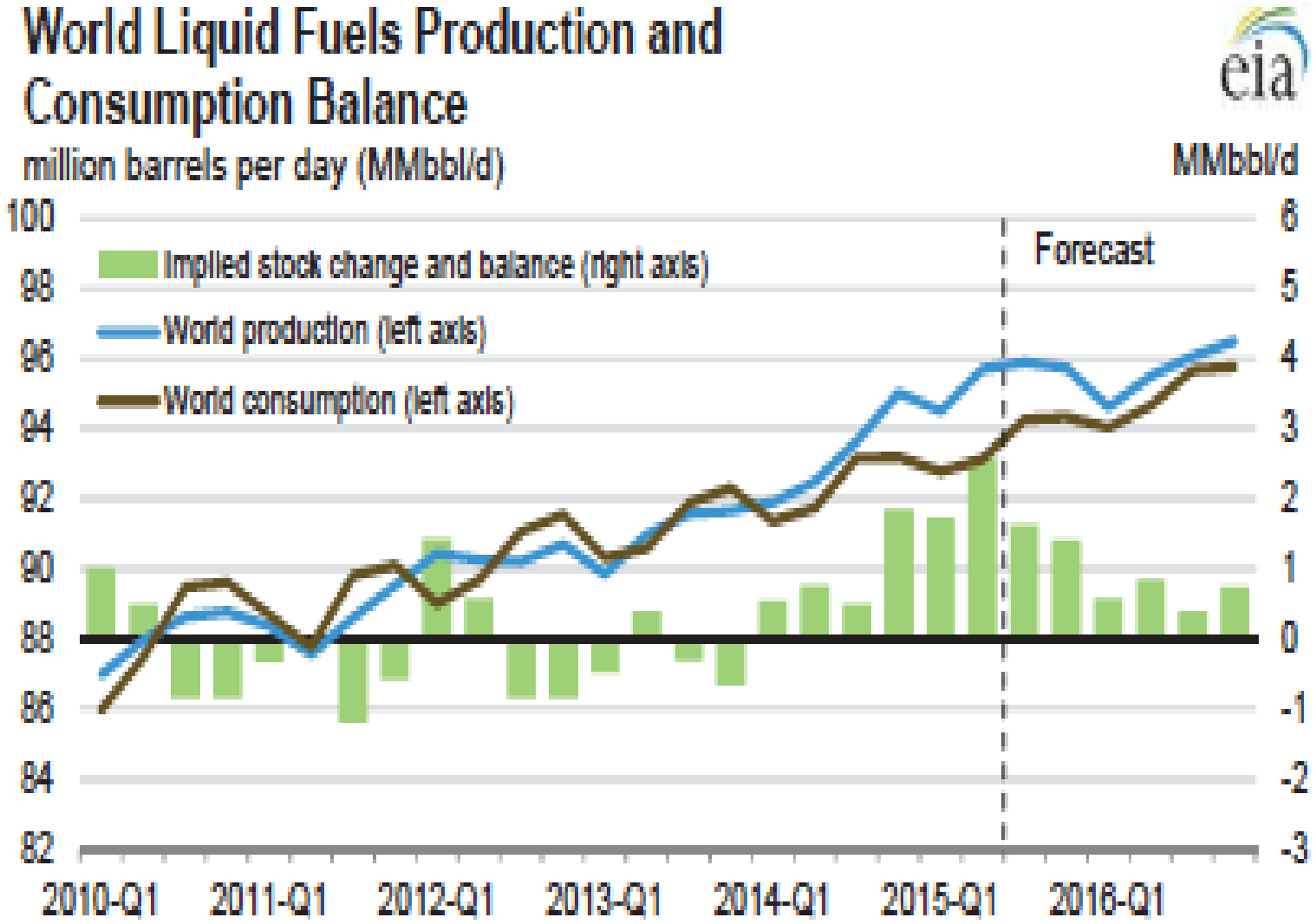
Being the largest oil importers, the EU and US will gain the most in absolute terms, although not much as a share of their GDP. Countries with significant petrochemicals industries, including the US, Russia and Israel, as well as those in the EU, will see an increase in their production (Ianchovichina et al., 2015).

While the resumption of Iran's oil exports to pre-2012 levels will take time, the immediate reaction of the oil market could be to take into account Iran's 30-40 million barrels of stockpiled crude oil and condensate stored in the Persian Gulf.2 Many observers believe that Iran couldi mmediately export about 400,000 – 500,000 barrels per day from this stockpile - which would then last for about three months - and get ready in a few months to increase oil exports substantially.

Thus, the short term impacts on oil prices will still be a decline but less than what is estimated when Iran's exports get back to full throttle.

Source: **:** Shanta Devarajan, Lili Mottaghi. 2015 "Economic Implications of Lifting Sanctions on Iran" Middle East and North Africa Quarterly Economic Brief, (July), World Bank, Washington, DC., p. 3-4

Global Balance of Supply and Demand



Note: Estimates predate full EIA analysis of impact of final Iran nuclear agreement.

Source: : EIA, *Short Term Energy Projections*, August 2015, http://www.eia.gov/forecasts/steo/pdf/steo_full.pdf.

EIA Estimate of Global Production Trends: August 2015 - I

OPEC Petroleum and Other Liquids Supply. EIA estimates that OPEC crude oil production averaged 30.1 million b/d in 2014, unchanged from the previous year. Crude oil production declines in Libya, Angola, Algeria, and Kuwait offset production growth in Iraq and Iran. EIA

forecasts OPEC crude oil production to increase by 0.6 million b/d in 2015 and decrease by 0.2 million b/d in 2016. Iraq is expected to be the largest contributor to OPEC production growth in 2015.

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comprehensive agreement by June 30. Negotiations continued beyond the June 30 target, andJuly 7 was agreed as the new target date for a comprehensive agreement.

However, no agreement had been reached by the time of this writing. A comprehensive agreement could result in the lifting of oil-related sanctions against Iran and a subsequent increase in Iran's crude oil production and exports, although the timing and details of any suspension of sanctions are

uncertain. EIA has not changed its short-term projection for Iranian crude oil production, which assumes that production will stay close to the current level.

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OPEC noncrude liquids production, which averaged 6.3 million b/d in 2014, is expected to increase by 0.1 million b/d in 2015 and by 0.2 million b/d in 2016, led by production increases in Qatar, Iran, and Kuwait.

In June, unplanned crude oil supply disruptions among OPEC producers averaged 2.5 million b/d, unchanged from May. Higher disruptions in May in Kuwait and Saudi Arabia extended into June. Production at the Wafra field, located in the Neutral Zone that straddles Kuwait and Saudi Arabia, ceased in mid-May as the operators attempted to resolve a contract dispute. The continued suspension of Wafra's production increased disruptions in June by a total of 0.1 million b/d, split between Kuwait and Saudi Arabia. This suspension came after the previous

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Source: **:** EIA*, Short Term Energy Projections*, August 2015, http://www.eia.gov/forecasts/steo/pdf/steo_full.pdf.

EIA Estimate of Global Production Trends: August 2015 - II

Non-OPEC Petroleum and Other Liquids Supply. EIA estimates that non-OPEC petroleum and other liquids production grew by 2.3 million b/d in 2014, which mainly reflects production growth in the United States.

EIA expects non-OPEC production to grow by 1.4 million b/d in 2015 and by 0.2 million b/d in 2016.

After remaining relatively flat in 2015, production in Eurasia is projected to decline by 0.1 million b/d in 2016. The projected decline reflects reduced investment in Russia's oil sector stemming from low oil prices and international sanctions.

Unplanned supply disruptions among non-OPEC producers averaged about 0.8 million b/d in June 2015, unchanged compared with the previous month as May outages in Canada extended into June. Wildfires in western Canada that started in the second half of May led to oil sands

production outages averaging about 0.1 million b/d for May and June.

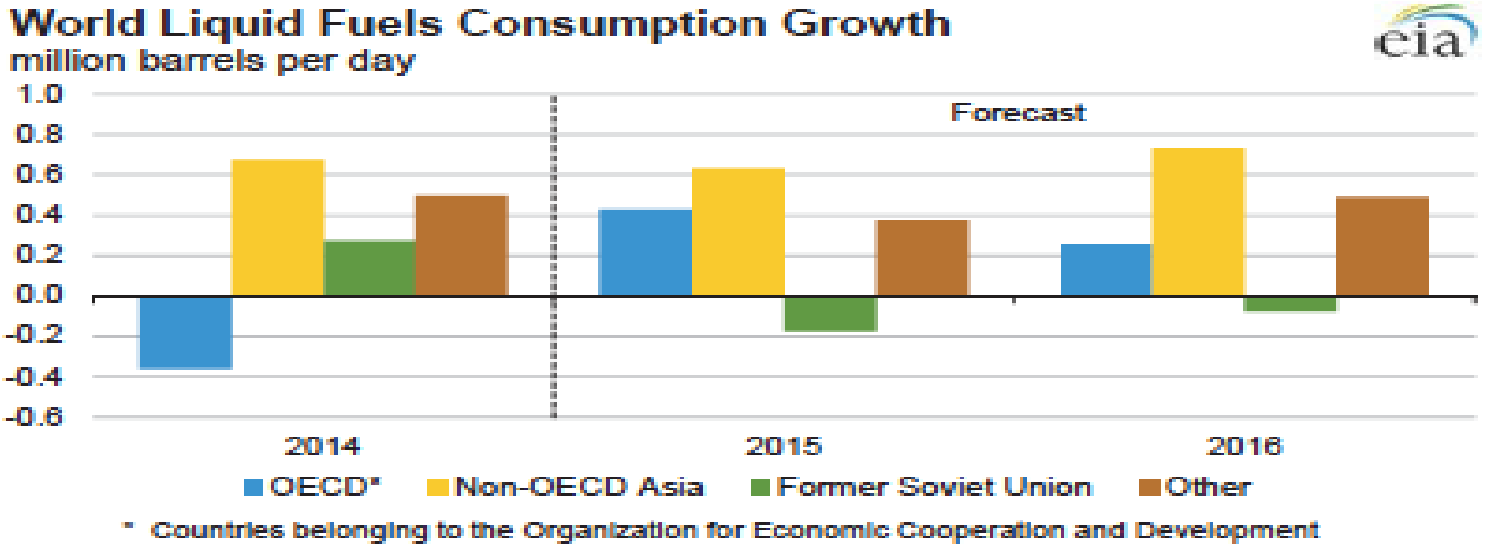
Oil sands projects that had been shut down because of the fires resumed production in the second week of June.

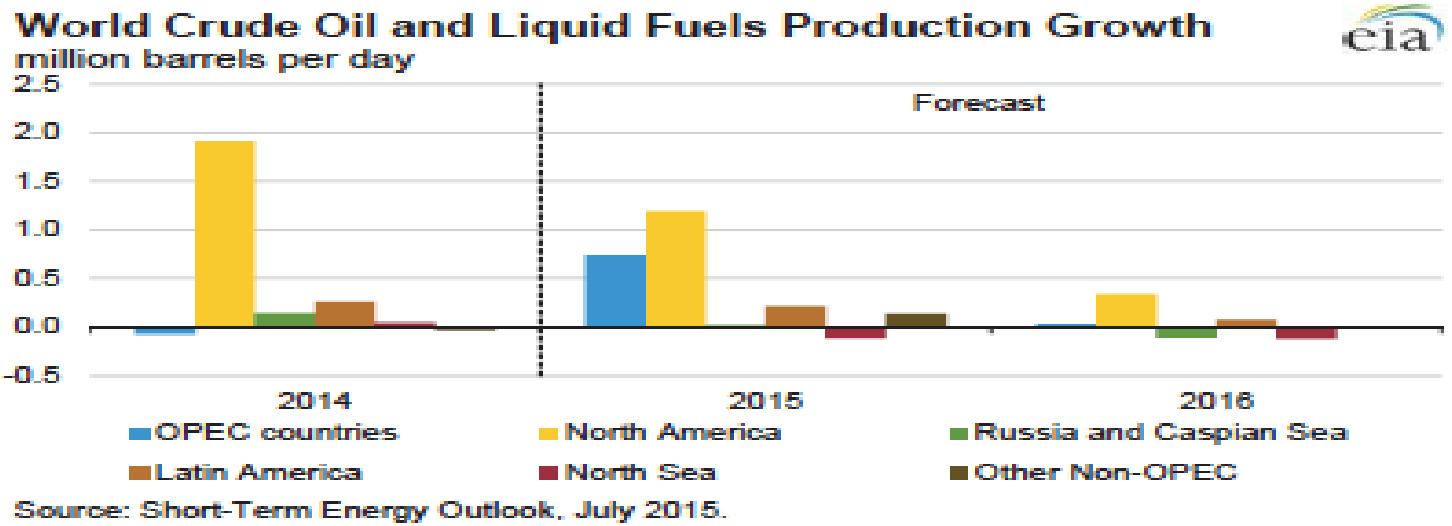
Recent violence in Yemen continues to interrupt operations at an oil port and refinery. South Sudan, Syria, and Yemen accounted for more than 75% of total non-OPEC supply disruptions in June.

Note: Estimates predate full EIA analysis of impact of final Iran nuclear agreement.

Source: **:** EIA*, Short Term Energy Projections*, August 2015, http://www.eia.gov/forecasts/steo/pdf/steo_full.pdf.

Global Increases in Liquid Fuels

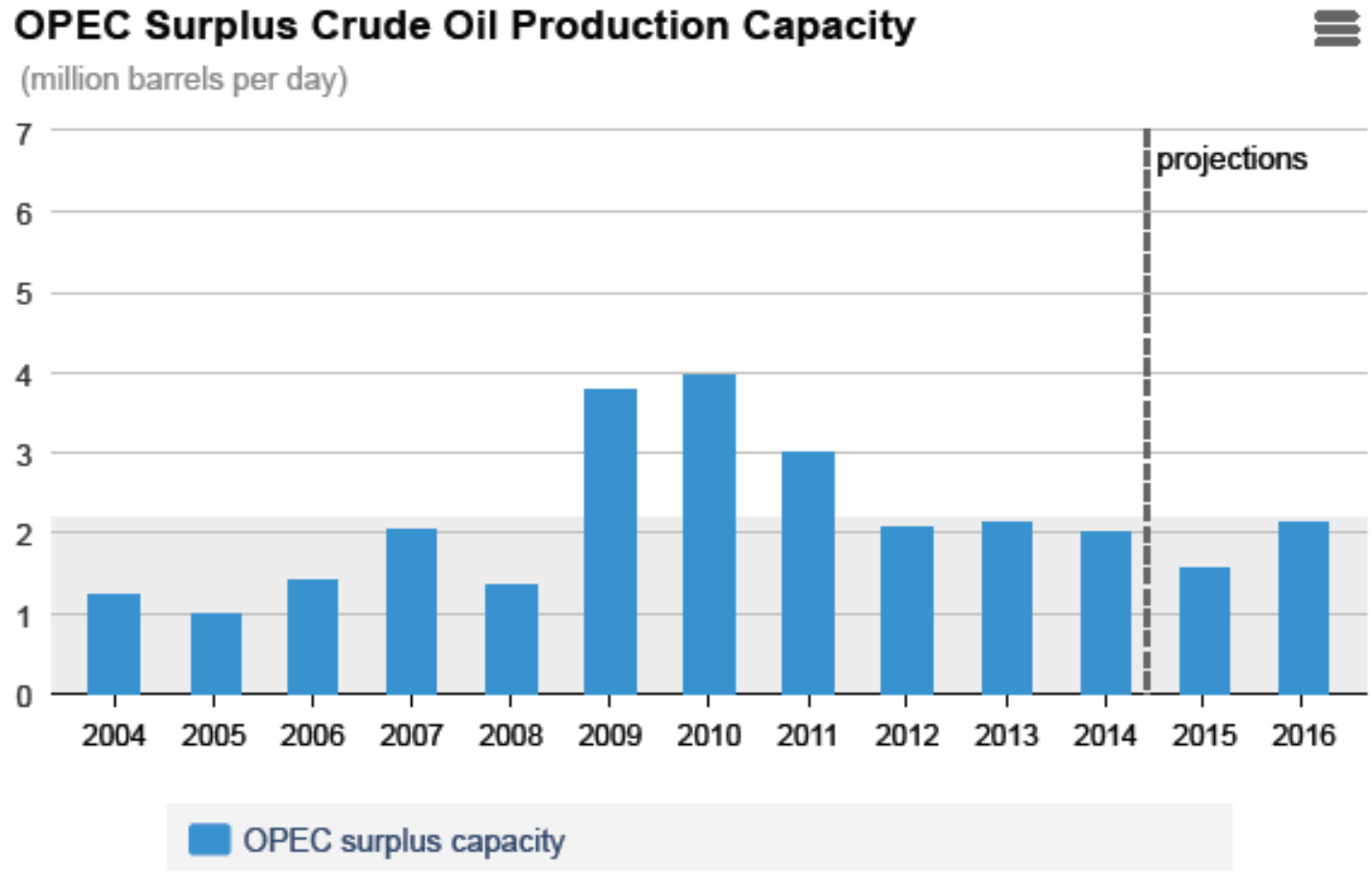




Note: Estimates predate full EIA analysis of impact of final Iran nuclear agreement.

Source: : EIA, *Short Term Energy Projections*, August 2015, http://www.eia.gov/forecasts/steo/pdf/steo_full.pdf.

Surplus Oil Production Capacity

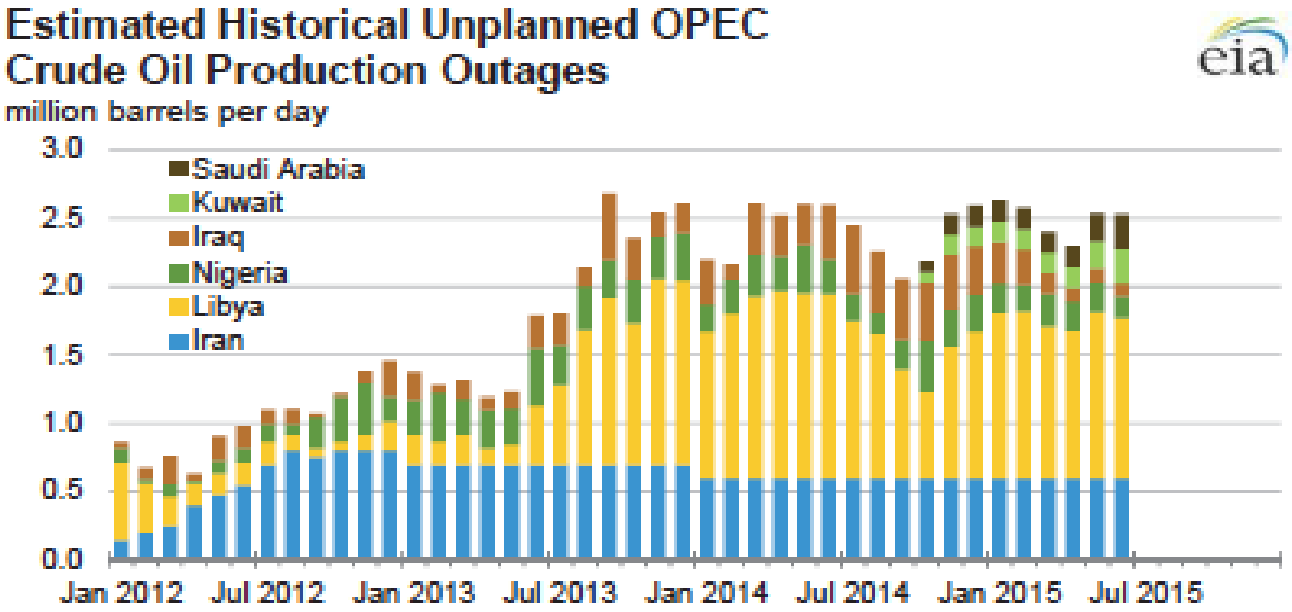


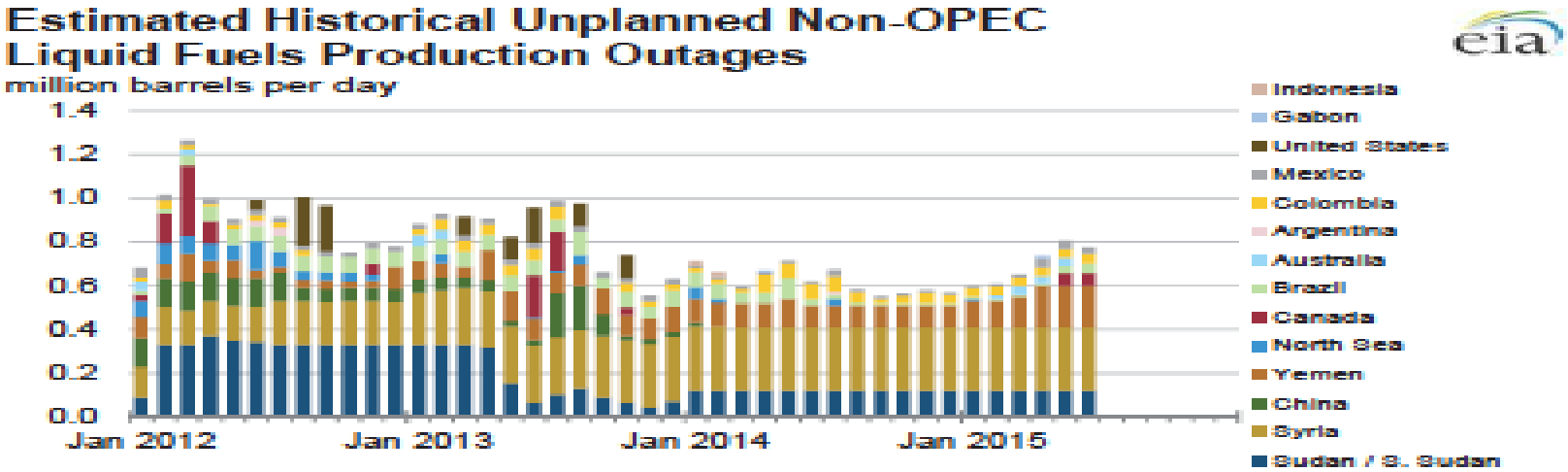
eia Source: Short-Term Energy Outlook, August 2015

Note: Shaded area represents 2004-2014 average (2.2 million barrels per day)

Source: : EIA, *Short Term Energy Projections*, August 2015,
http://www.eia.gov/forecasts/steo/report/global_oil.cfm

Other Outages Can Alter Impact of Iranian Production





Note: Estimates predate full EIA analysis of impact of final Iran nuclear agreement.

Source: : EIA, *Short Term Energy Projections*, August 2015, http://www.eia.gov/forecasts/steo/pdf/steo_full.pdf.

EIA Estimate of Global Consumption Trends: August 2015

Global liquids production continues to exceed consumption, resulting in inventory builds. Global oil inventory builds are estimated to have averaged 2.2 million b/d through the first half of 2015 and are projected to average 1.5 million b/d during the second half of the year. The slowing

increases in inventory reflect rising demand and slowing production growth outside of the Organization of the Petroleum Exporting Countries (OPEC), particularly in the United States.

The expected inventory builds in 2015 are on top of an estimated 0.9 million b/d increase in 2014. By 2016, inventory builds are expected to moderate to 0.6 million b/d.

EIA estimates global consumption of petroleum and other liquids grew by 1.1 million b/d in 2014, averaging 92.4 million b/d for the year.

EIA expects global consumption of petroleum and other liquids to grow by 1.3 million b/d in 2015 and by 1.4 million b/d in 2016. Projected real gross domestic product (GDP) weighted for oil consumption, which increased by an estimated 2.8% in 2014, is projected to grow by 2.5% in 2015 and by 3.1% in 2016.

Consumption of petroleum and other liquids outside Organization for Economic Cooperation and Development (OECD) countries grew by 1.4 million b/d in 2014 and is projected to grow by 0.8 million b/d in 2015 and by 1.1 million b/d in 2016. Lower forecast growth for non-OECD consumption in 2015 mostly reflects a 0.2 million b/d decline in Russia's consumption as a result of the country's economic downturn.

OECD petroleum and other liquids consumption, which fell by 0.4 million b/d in 2014, is expected to grow by 0.4 million b/d in 2015 and by 0.3 million b/d in 2016. Japan and Europe accounted for nearly all of the 2014 decline in OECD oil consumption.

Japan's consumption is expected to continue declining over the next two years, albeit at a slower rate than in 2014, while Europe's consumption is expected to grow slowly.

Russia's oil consumption is expected to decline by a similar amount in 2016, although it is offset by growth elsewhere.

China's economic growth slowed in the second half of 2014 and in the beginning of 2015. However, China remains the main source of non-OECD oil consumption growth, with a projected annual average increase of 0.3 million b/d in both 2015 and 2016, down from growth of 0.4 million b/d in 2014.

India's economic and manufacturing growth continued to rise in the first half of 2015, and EIA projects India's petroleum and other liquids consumption will increase by 0.2 million b/d in 2015 and 2016, compared with 0.1 million b/d in 2014.

The United States is the leading contributor to projected OECD consumption growth in 2015, with U.S. consumption increasing by 0.4 million b/d, while consumption in both the United States and Europe increases by about 0.1 million b/d in 2016.

The degree to which global oil demand responds to lower oil prices is only beginning to become apparent in the data, and, if that response deviates from forecast values, it could affect market balances and prices

Note: Estimates predate full EIA analysis of impact of final Iran nuclear agreement.

Source: **:** EIA*, Short Term Energy Projections*, August 2015, http://www.eia.gov/forecasts/steo/pdf/steo_full.pdf.

Oil Price Trends: EIA August 2015 Estimate

Brent crude oil spot prices decreased by $5/b in July to a monthly average of $57/b. Prices fell further at the end of July and into early August, with Brent spot prices settling at $48/b on August 7. Continuing increases in global liquids inventories put significant downward pressure on prices.

Inventories rose by an estimated 2.3 million b/d through the first seven months of 2015, compared with an average build of 0.6 million b/d over the same period last year. Inventory builds are projected to moderate somewhat in the coming months, but are expected to remain high compared with previous years.

Concerns over the pace of economic growth in emerging markets and the possibility of increasing volumes of Iranian crude oil on the market also contributed to the recent oil price decline.

The monthly average WTI crude oil spot price fell to an average of $51/b in July, down $9/b from June. Crude oil inventories at Cushing, Oklahoma, despite having decreased by 5.0 million barrels from their record high of 62.2 million barrels on April 17, remain about 40 million barrels higher than at the same time last year. U.S. crude oil inventories remain elevated compared with historical levels, despite strong U.S. refinery runs , which in recent weeks reached record highs over 17 million b/d.

EIA projects the Brent crude oil price will average $54/b in 2015 and $59/b in 2016, $6/b and $8/b lower than in July's STEO, respectively. WTI prices in both 2015 and 2016 are expected to average $5/b less than the Brent crude oil price. EIA's updated projection remains subject to significant uncertainties as the oil market moves toward balance.

During this period of price discovery, oil prices could experience periods of heightened volatility. ***The oil market faces a host of uncertainties heading into 2016 including the pace and volume at which Iranian oil reenters the market, the strength of oil consumption growth, and the responsiveness of non-OPEC production to low oil prices***. In the more immediate future, there is potential downward price pressure heading into the fourth quarter if refinery runs drop by more than expected during the fall maintenance season.

The current values of futures and options contracts continue to suggest high uncertainty in the price outlook. WTI futures contracts for November 2015 delivery, traded during the five-day period ending August 6, averaged $47/b, while implied volatility averaged 37%.

These levels established the lower and upper limits of the 95%confidence interval for the market's expectations of monthly average WTI prices in November 2015 at $34/b an$64/b, respectively. The 95% confidence interval for market expectations widens over time, with lower and upper limits of $27/b and $103/b for prices in December 2016. Last year at this time, WTI for November 2014 delivery averaged $96/b, and implied volatility averaged 16%. The corresponding lower and upper limits of the 95% confidence interval were $84/b and $111/b.

Source: **:** EIA*, Short Term Energy Projections*, August 2015,
http://www.eia.gov/forecasts/steo/report/global_oil.cfm

EIA Estimate of Global Consumption Trends: August 2015

Global Petroleum and Other Liquids Consumption. EIA estimates global consumption of petroleum and other liquids grew by 1.1 million b/d in 2014, averaging 92.4 million b/d for the year.

EIA expects global consumption of petroleum and other liquids to grow by 1.3 million b/d in 2015 and by 1.4 million b/d in 2016. Projected real gross domestic product (GDP) weighted for oil consumption, which increased by an estimated 2.8% in 2014, is projected to grow by 2.5%

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consumption in 2015 mostly reflects a 0.2 million b/d decline in Russia's consumption as a result of the country's economic downturn. Russia's oil consumption is expected to decline by a similar amount in 2016, although it is offset by growth elsewhere.

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Source: **:** EIA*, Short Term Energy Projections*, August 2015, http://www.eia.gov/forecasts/steo/pdf/steo_full.pdf.

Key Trends in Saudi Arabia, Iraq, and Libya: “Oil Wars” to Come?

EIA Estimate of Impact on OPEC and Saudi Production - I

EIA estimates that OPEC crude oil production averaged 30.1 million b/d in 2014, unchanged from the previous year. Crude oil production declines in Libya, Angola, Algeria, and Kuwait offset production growth in Iraq and Iran. EIA forecasts OPEC crude oil production to increase by 0.8 million b/d in 2015 and remain relatively flat in 2016. Iraq is expected to be the largest contributor to OPEC production growth in 2015. In 2016, additional OPEC crude oil supply is expected to come from Iran, which is forecast to boost production if international sanctions targeting its oil sector are suspended.

On July 14, the P5+1 and Iran announced an agreement that could result in relief from United States and European Union nuclear-related sanctions (which include some oil-related sanctions). Sanctions relief is contingent on verification by the International Atomic Energy Agency that Iran has complied with key nuclear-related steps. The sanctions relief would put additional Iranian oil supplies on a global market that has already seen oil inventories rise significantly over the past year.

The JCPOA is currently undergoing a congressional review. As of the time of writing, Congress had not voted on the agreement, but for the purposes of this STEO, EIA assumes sanctions relief could occur in mid-2016. If sanctions relief occurs, EIA forecasts Iranian crude oil supplies will increase by about 0.3 million b/d on average in 2016, with most of the growth occurring in the second half of the year. While much uncertainty remains as to the timing of sanctions relief, EIA's updated Iran projection assumes that adoption takes place by the end of October 2015, with implementation occurring in the second quarter of 2016, clearing the way to easing of the sanctions.

Iran produced 3.6 million b/d of crude oil in late 2011, before the recent round of sanctions was enacted. The sanctions forced Iran to shut in a substantial portion of its production, with production currently averaging about 2.8 million b/d. Iran's ability to bring online previously shut-in volumes and increase exports depends on several factors, including the current condition of oil fields and infrastructure that were shut in and the pace of sanctions relief.

Saudi Arabia and other OPEC member countries are not expected to cut production to accommodate additional Iranian volumes, although some producers will see production declines in the near term. For example, Saudi Arabia's production is expected to respond to lower direct crude burn for electric power generation as seasonal power demand abates. However, there is considerable uncertainty regarding Iraq's ability to sustain its higher production and export levels, particularly in light of infrastructure constraints in the southern terminals.

OPEC noncrude liquids production, which averaged 6.3 million b/d in 2014, is expected to increase by 0.2 million b/d in 2015 and by 0.3 million b/d in 2016, led by production increases in Iran, Qatar, and Kuwait.

In July, unplanned crude oil supply disruptions among OPEC producers averaged 2.6 million b/d, remaining roughly unchanged compared with the previous month. Kuwait and Saudi Arabia continue to have a total of 0.5 million b/d disrupted at the Wafra and Khafji fields in the Neutral Zone that straddles the two countries

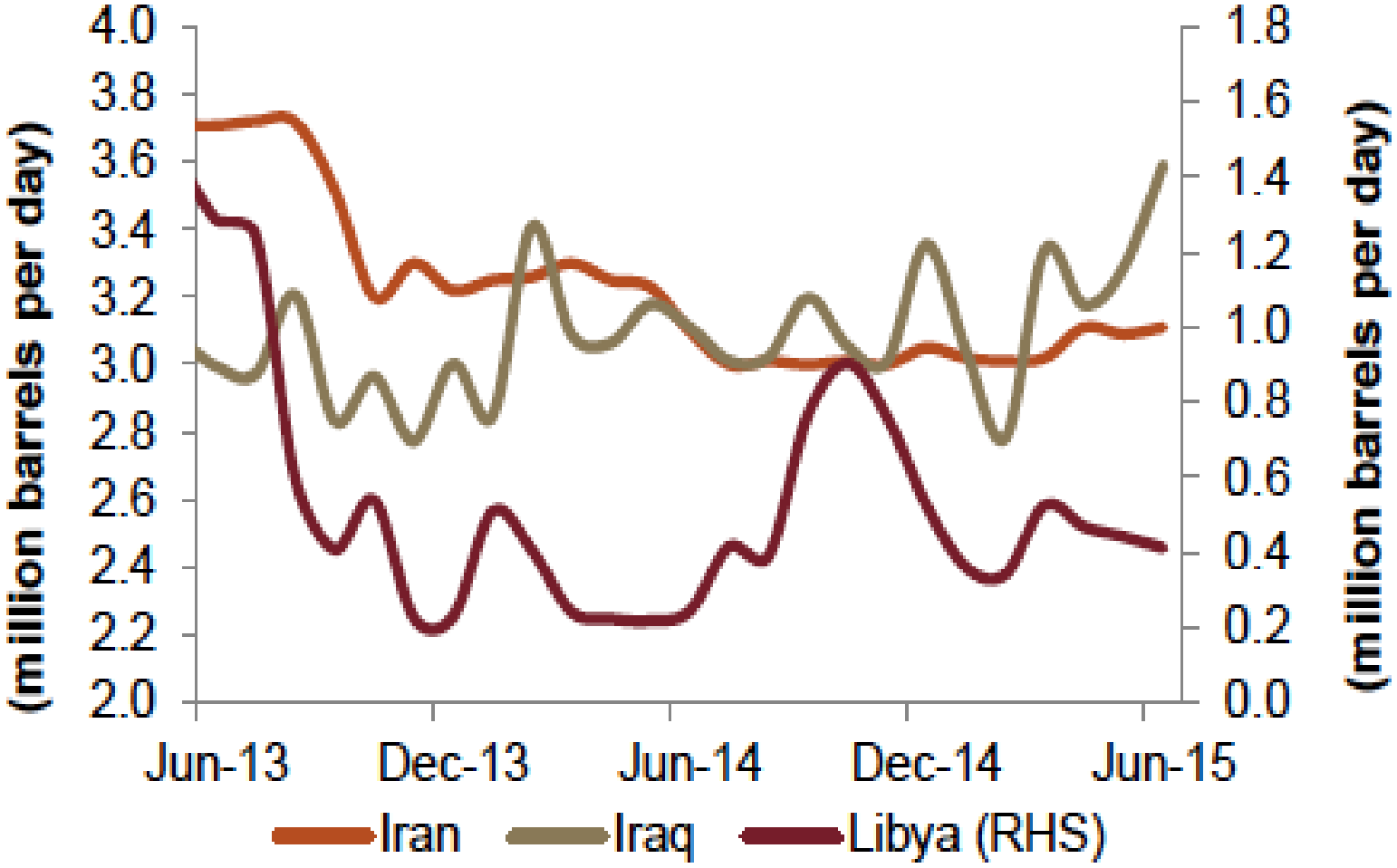
Source: **:** EIA*, http://www.eia.gov/forecasts/steo/report/global_oil.cfm*.

EIA Estimate of Impact on OPEC and Saudi Production - II

EIA expects OPEC surplus crude oil production capacity, which is concentrated in Saudi Arabia, to decrease to an average of 1.6 million b/d in 2015 and increase to 2.1 million b/d in 2016, after averaging 2.0 million b/d in 2014. Surplus capacity is typically an indicator of market conditions, and surplus capacity below 2.5 million b/d indicates a relatively tight oil market, but the current and forecast levels of global inventory builds make the projected low surplus capacity level in 2015 less significant. EIA does not expect any Iranian spare capacity to be available throughout the forecast period despite increases in effective capacity, as Iran is expected to produce crude oil at the maximum available level through the end of 2016 if and when sanctions are lifted.

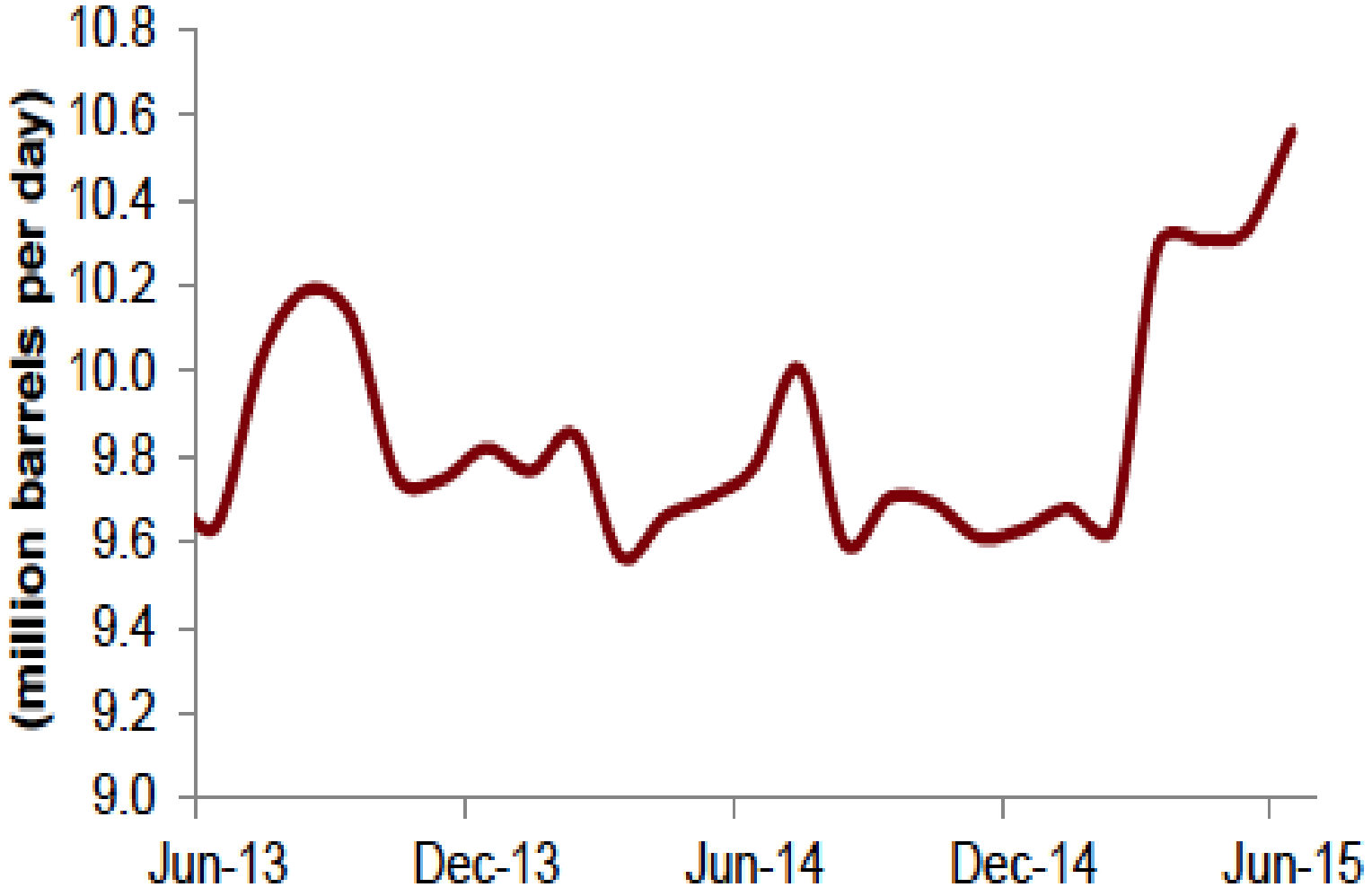
Source: **:** EIA*, http://www.eia.gov/forecasts/steo/report/global_oil.cfm*.

Iran, Iraq, Libya Crude Production: 6-13 to 8-15



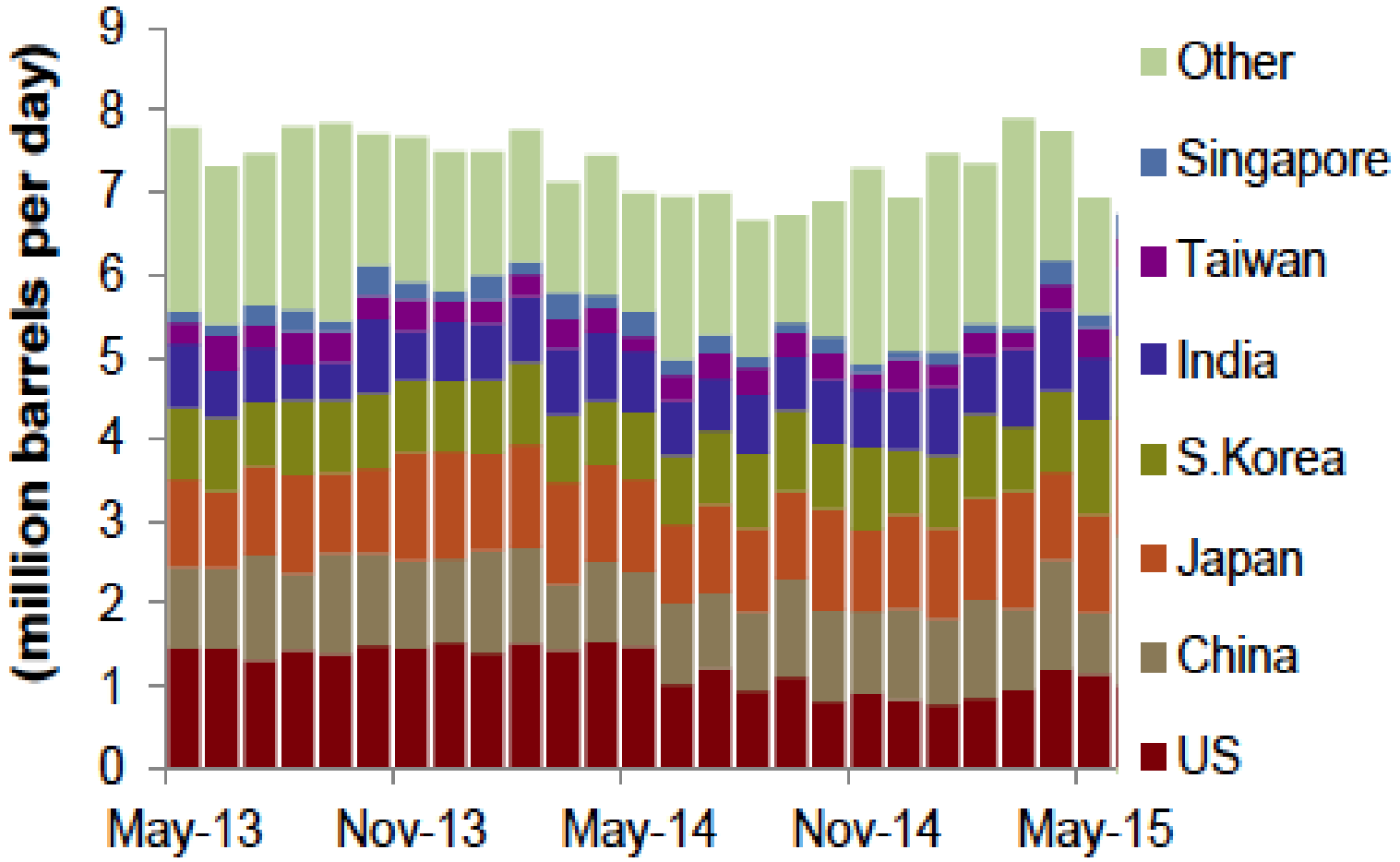
Source: : Jadwa Investment, ***Saudi Chartbook***, August 2015, p. 9.

Saudi Crude Production: 6-13 to 8-15



Source: : Jadwa Investment, ***Saudi Chartbook***, August 2015, p. 8.

Saudi Export Destinations: 6-13 to 8-15



Source: **:** Jadwa Investment***, Saudi Chartbook***, August 2015, p. 9.

Real and Forecast Saudi Export Income: 2008-2016

	2008	2009	2010	2011	2012	2013	2014 E	2015 F	2016 F
External trade indicators ($ billion)									
Oil export revenues	284.1	166.9	215.2	317.6	337.5	323.1	285.0	171.8	182.1
Total export revenues	313.5	192.3	251.1	364.7	388.4	375.9	342.3	231.7	247.6
Imports	101.5	87.1	97.4	120.0	141.8	153.3	158.5	160.1	159.3
Trade balance	212.0	105.2	153.7	244.7	246.6	222.6	183.9	71.6	88.3
Current account balance	132.3	21.0	66.8	158.5	164.8	135.4	76.9	-24.7	-7.6
(% GDP)	25.5	4.9	12.7	23.7	22.4	18.2	10.3	-3.7	-1.1
Official reserve assets	442.7	410.1	445.1	544.0	656.6	725.7	732.4	650.0	637.3

Source: : Jadwa Investment, ***Saudi Chartbook***, August 2015, p. 16.

Reference Data on Iranian Oil Production Facilities and Reserves

Key Iranian Energy Data

Iran's Key Energy Statistics

		world rank
Total Primary Energy Production 2012	13.644 Quadrillion Btu	8
Total Primary Energy Consumption 2012	9.645 Quadrillion Btu	11
Crude Oil Proved Reserves 2014	157 Billion Barrels	4
Total Petroleum and Other Liquids Production 2014	3,375 Thousand Barrels Per Day	7
Proved Reserves of Natural Gas 2014	1,193 Trillion Cubic Feet	2

Iran holds the world's fourth-largest proved crude oil reserves and the world's second-largest natural gas reserves. Despite the country's abundant reserves, Iran's crude oil production has substantially declined, and natural gas production growth has been slower than expected over the past few years. International sanctions have profoundly affected Iran's energy sector and have prompted a number of cancellations or delays of upstream oil and gas projects.

The state-owned National Iranian Oil Company (NIOC) is responsible for all upstream oil and natural gas projects. The Iranian constitution prohibits foreign or private ownership of natural resources. However, international oil companies (IOCs) can participate in the exploration and development phases through buyback contracts.

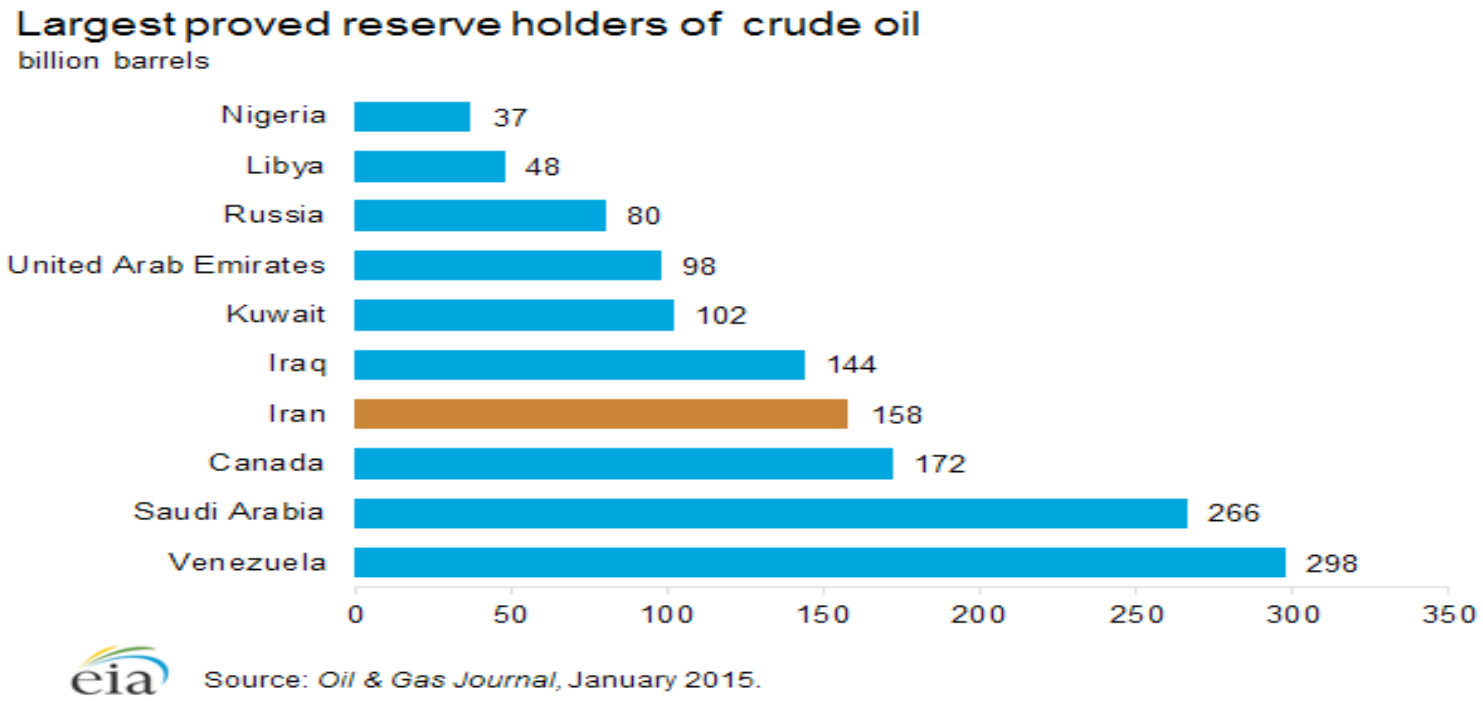
Iran is planning to change its oil contract model to allow IOCs to participate in all phases of an upstream project, including production. However, international sanctions have affected foreign investment in Iran's energy sector, limiting the technology and expertise needed to expand capacity at oil and natural gas fields.

Iran holds almost 10% of the world's crude oil reserves and 13% of OPEC reserves. About 70% of Iran's crude oil reserves are located onshore, with the remainder mostly located offshore in the Persian Gulf. Iran also holds proved reserves in the Caspian Sea, although exploration has been at a standstill.

Iran produced 3.4 million b/d of petroleum and other liquids in 2014, of which 2.8 million b/d was crude oil and the remainder was condensate and natural gas plant liquids. Iran's crude oil production fell dramatically from nearly 3.7 million b/d in 2011 to 2.7 million b/d in 2013 because of sanctions.

Source: **:** U.S. Energy Information Administration,http://www.eia.gov/beta/international/country.cfm?iso=IRN

Iran's Oil Reserves



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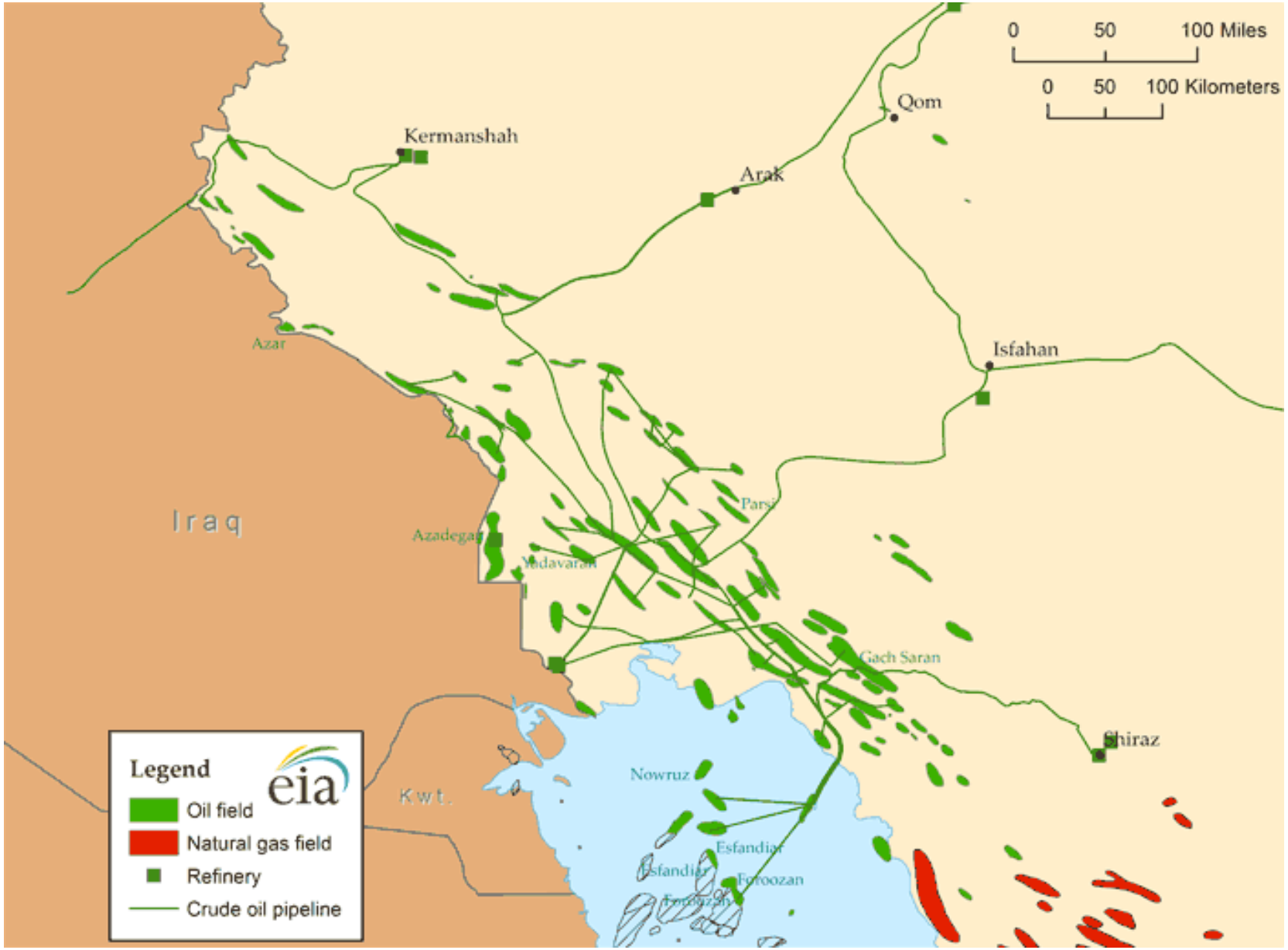
According to the *Oil & Gas Journal*, as of January 2015 Iran has an estimated 158 billion barrels of proved crude oil reserves, representing almost 10% of the world's crude oil reserves and 13% of reserves held by the Organization of the Petroleum Exporting Countries (OPEC).[9] Most of Iran's reserves were discovered decades ago. According to a report by Clyde & Co, roughly 80% of Iran's reserves were discovered before 1965.[10]
According to FGE, approximately 70% of Iran's crude oil reserves are located onshore and the remainder offshore, mostly in the Persian Gulf.[11] Iran also has proved and probable oil reserves of approximately 500 million barrels mostly offshore in the Caspian Sea, but exploration and development of these reserves have been at a standstill because of territorial disputes with neighboring Azerbaijan and Turkmenistan. Iran also shares a number of onshore and offshore fields with neighboring countries, including Iraq, Qatar, Kuwait, and Saudi Arabia.

Source: : U.S. Energy Information Administration, http://www.eia.gov/beta/international/country.cfm?iso=IRN

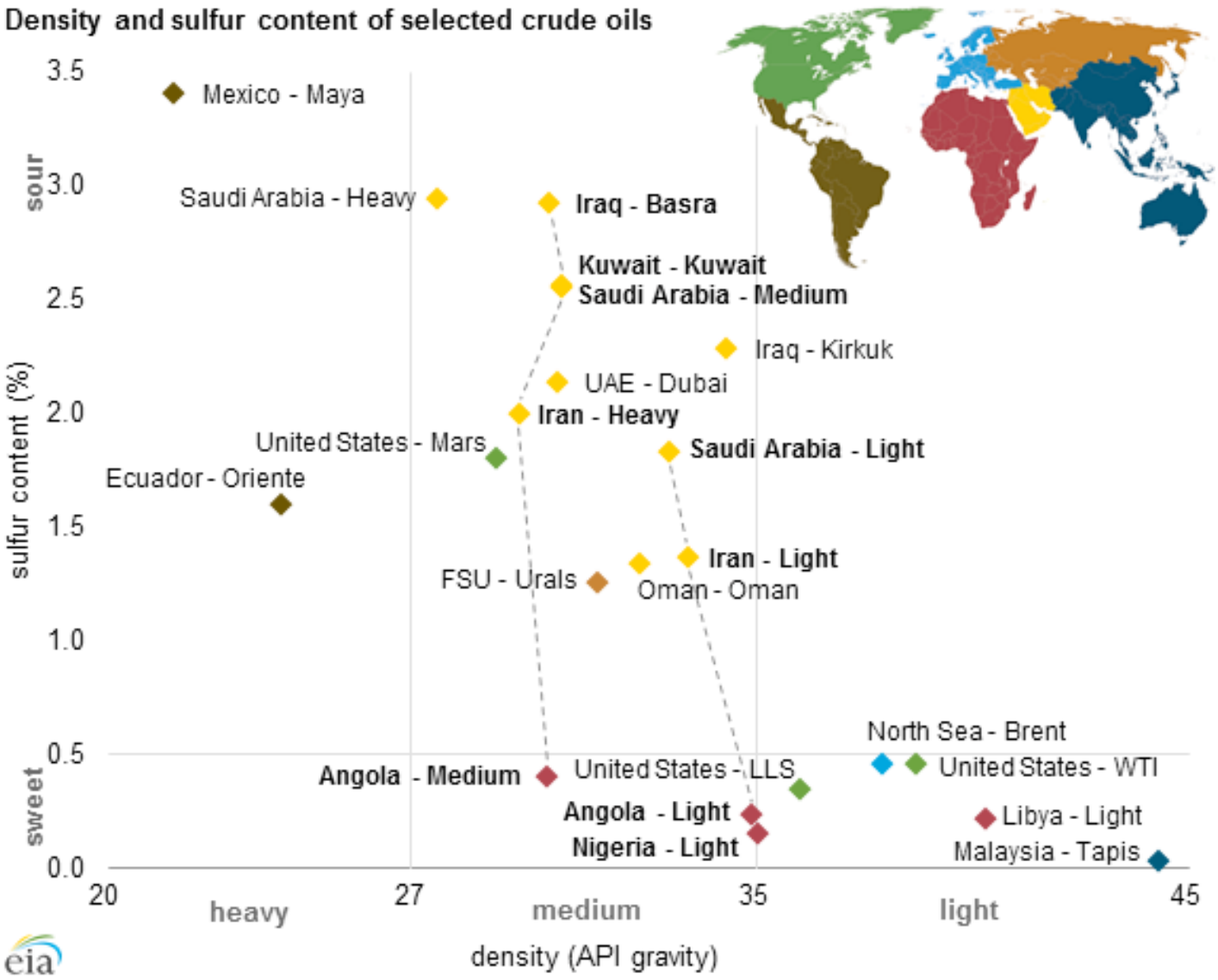
Iran's Largest Oil Fields



Source: : U.S. Energy Information Administration, http://www.eia.gov/beta/international/country.cfm?iso=IRN

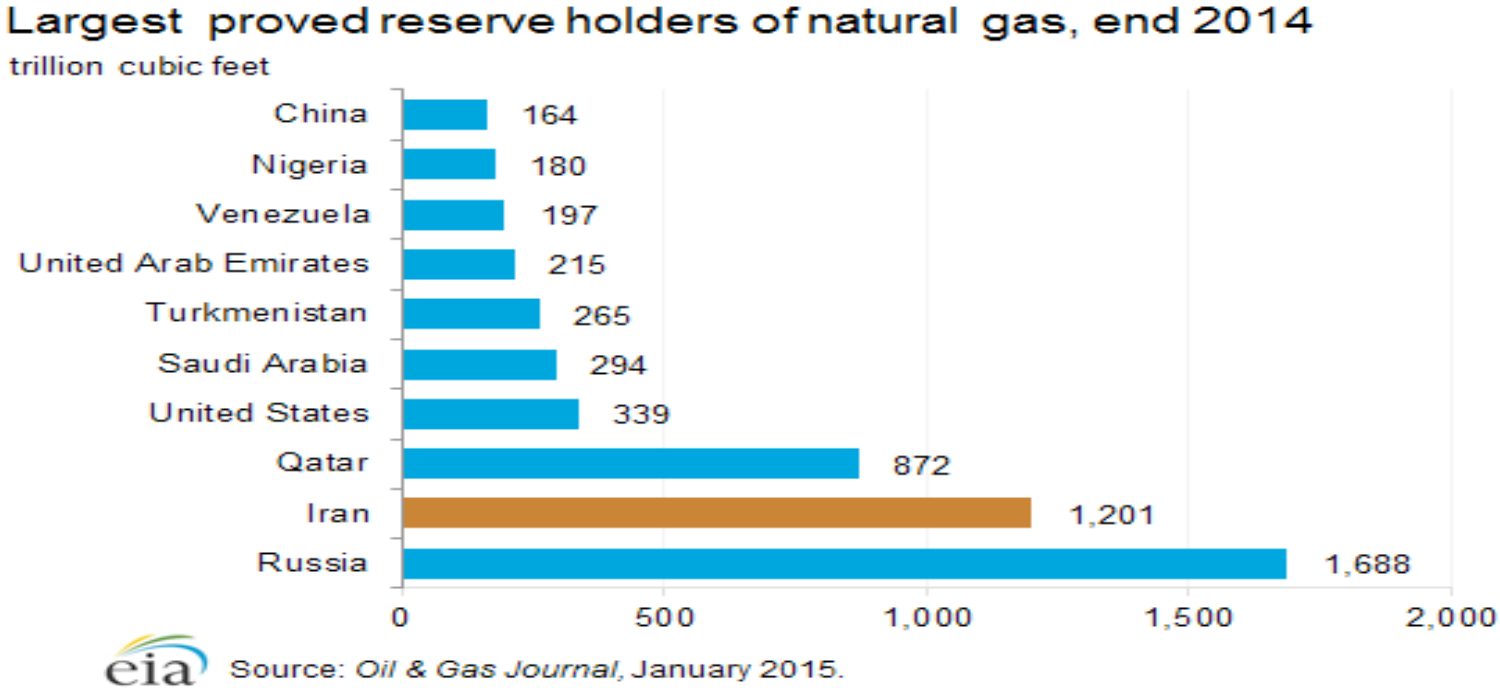
Iran's Major Oil Infrastructure

Source: : U.S. Energy Information Administration, http://www.eia.gov/beta/international/country.cfm?iso=IRN


Density and sulfur content of selected crude oils
sulfur content (%)
sour
sweet
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mexico - Maya
Saudi Arabia - Heavy
Iraq - Basra
Kuwait - Kuwait
Saudi Arabia - Medium
Iraq - Kirkuk
UAE - Dubai
Iran - Heavy
United States - Mars
Saudi Arabia - Light
Ecuador - Oriente
Iran - Light
FSU - Urals
Oman - Oman
North Sea - Brent
United States - WTI
Angola - Medium
United States - LLS
Libya - Light
Angola - Light
Nigeria - Light
Malaysia - Tapis
20
27
35
45
heavy
medium
light
density (API gravity)
eia

Reference Data on Iran's Gas Production and Export Potential

Iran's Natural Gas Resources



Iran is the second-largest proved natural gas reserve holder in the world, behind Russia. Iran holds 17% of the world's proved natural gas reserves and more than one-third of OPEC's reserves. Iran's largest natural gas field, South Pars, is estimated to hold almost 40% of Iran's gas reserves. Most of Iran's natural gas reserves are undeveloped.

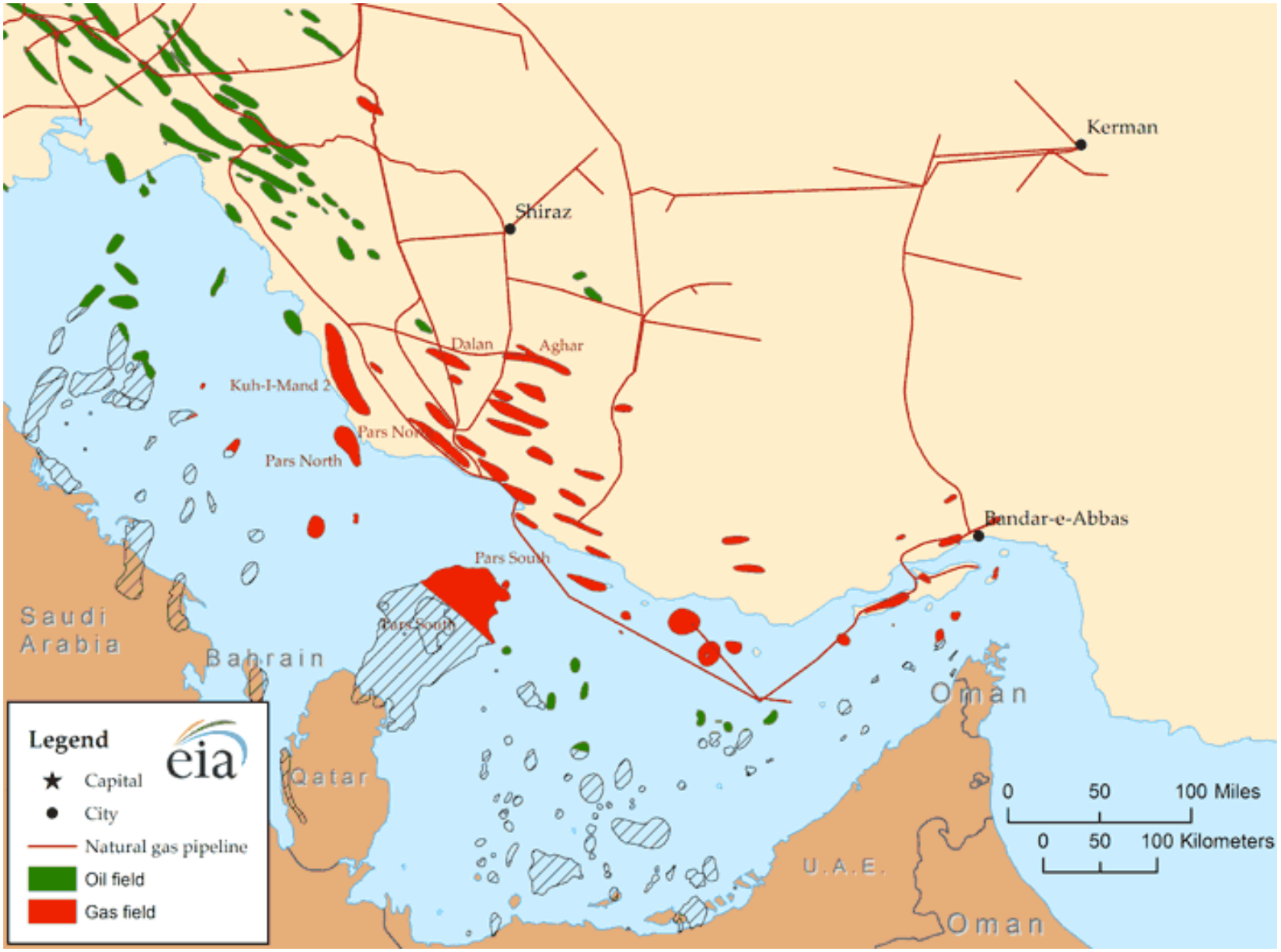
According to *Oil & Gas Journal*, as of January 2015, Iran's estimated proved natural gas reserves were 1,201 trillion cubic feet (Tcf), second only to Russia. Iran holds 17% of the world's proved natural gas reserves and more than one-third of OPEC's reserves.[25] Iran has a high success rate of natural gas exploration, which is estimated at 79% compared to the world average success rate of 30% to 35%, according to FGE.[26] Finding new natural gas reserves in Iran is not a high priority because the country contains large amounts of undeveloped known reserves. Although natural gas finds and exploration are limited, in 2011, four sizeable new discoveries were announced: Khayyam (onshore), Forouz B (offshore in the Persian Gulf), Madar (offshore in the Persian Gulf), and Sardare Jangal fields (offshore in the Caspian Sea).[27]

Iran's largest gas field is South Pars, a nonassociated gas field located offshore in the middle of the Persian Gulf. South Pars is a portion of a larger gas structure that straddles the territorial water borders of Iran and Qatar. It is called the North field in Qatar. South Pars reserves account for almost 40% of Iran's total natural gas reserves, and the field is also estimated to hold 17 million barrels of condensate in place.[28] Other major gas fields in Iran include: Kish, North Pars, Tabnak, Forouz, and Kangan. These fields and others also hold large amounts of condensate reserves. Iran's Caspian basin gas reserves, at 2 Tcf, contribute very little to the nation's total reserves.

Iran

Source: : U.S. Energy Information Administration, http://www.eia.gov/beta/international/country.cfm?iso=IRN

Iran's Natural Gas Fields

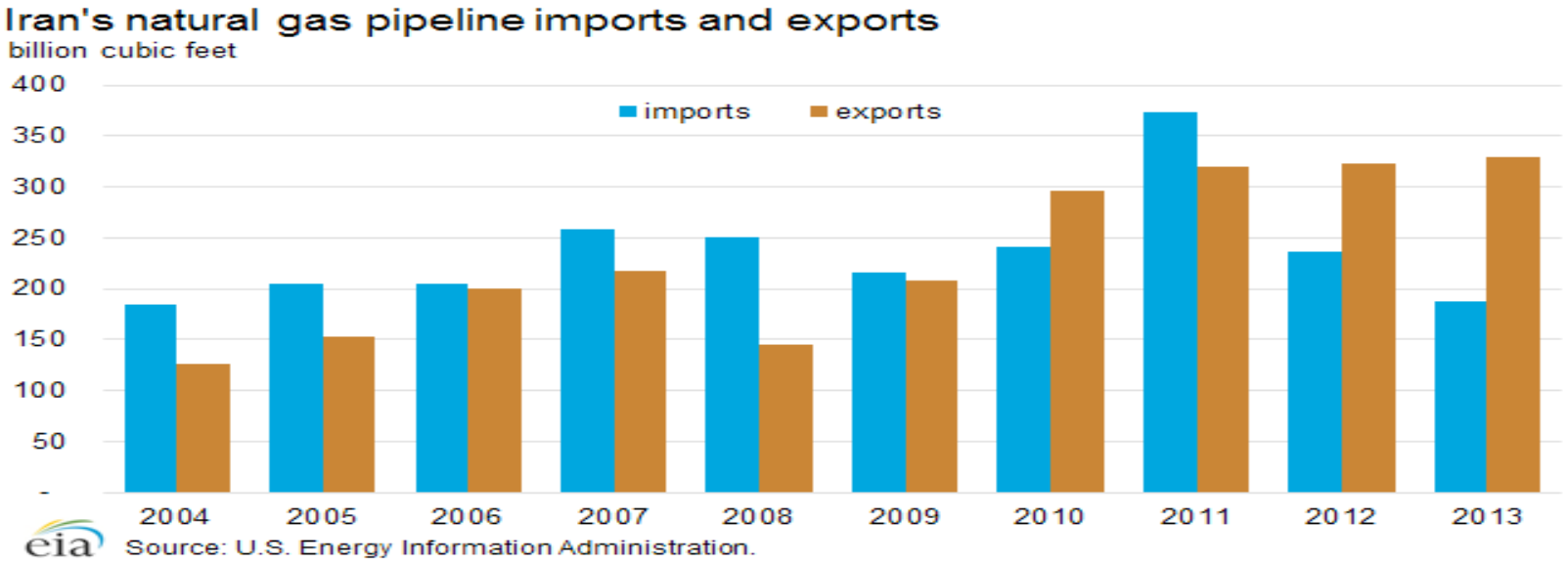


Source: : U.S. Energy Information Administration, http://www.eia.gov/beta/international/country.cfm?iso=IRN

Iran's Natural Gas Infrastructure

Source: : U.S. Energy Information Administration, http://www.eia.gov/beta/international/country.cfm?iso=IRN

Iran's Natural Gas Imports and Exports - I



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Iran trades marginal amounts of natural gas regionally via pipelines. In 2013, more than 90% of Iran's imports came from Turkmenistan, and more than 90% of Iran's exports went to Turkey. Iran does not have the infrastructure in place to export or import liquefied natural gas (LNG).

Iran accounts for less than 1% of global natural gas trade and is not a significant natural gas exporter, as explained in an EIA report on *Natural Gas Exports from Iran*. In 2013, Iran exported 329 Bcf and imported 188 Bcf of dry natural gas, both via pipelines. Iran relies on imports particularly during winter months when residential space-heating demand peaks during colder weather. Iran does not have the infrastructure to export or import liquefied natural gas (LNG).

Iran's natural gas imports declined in 2012 from the previous year (by more than 35%) and in 2013 (by 21%), reflecting much lower volumes imported from Turkmenistan. The U.S. and EU sanctions interfered with transactions between Turkmenistan and Iran in 2012 and 2013, resulting in the decline of Turkmen gas imports.[33] In 2011, Iran received almost 30% of Turkmenistan's natural gas exports, but the share dropped to less than 12% in 2013, according to *BP Statistical Review of World Energy*.[34] Nonetheless, more than 90% of Iran's natural gas imports still came from Turkmenistan in 2012 and 2013, and the remainder from Azerbaijan. Imports of Turkmen natural gas are essential to Iran's ability to meet both seasonal peak demand and industrial demand in northern Iran.

Source: : U.S. Energy Information Administration, http://www.eia.gov/beta/international/country.cfm?iso=IRN

Iran's Natural Gas Imports and Exports - II

Iran exports natural gas to Turkey, Armenia, and Azerbaijan. More than 90% of Iranian exports went to Turkey in 2013, and the remainder went to Azerbaijan and Armenia. Armenia uses most of its imported Iranian natural gas to produce electricity at the Hrazdan power plant. In return, excess baseload electricity generated from the Armenian Nuclear Power Plant is exported to Iran. Iran exports natural gas to the isolated Azerbaijani exclave of Nakhchivan via the Salman-Nakhchivan pipeline. In exchange, Azerbaijan exports natural gas to Iran's northern provinces via the Astara-Kazi-Magomed pipeline.

Demand for gas for power generation and oil pressure reinjection will limit gas exports for near term. Iran is also examining option of using gas to sell electricity to neighbors under the assumption it would be more difficult for the U.S. to use future sanctions or snap back to shut off electricity exports.

Liquefied natural gas (LNG) Although Iran's aspirations to build a liquefaction facility date back to the 1970s, the country has yet to build one. The NIOC started construction projects in the past to build an LNG export plant, but most of the work has been halted, mainly because of the lack of technology and foreign investment, stemming from international sanctions that made it impossible to obtain financing and to purchase necessary technology. Given the political constraints, Iran's LNG projects are years away 91from completion.

Proposed regional pipelines Iran has the potential to become an important gas supplier to its region, and has established agreements with some of its neighboring countries to export natural gas via planned regional pipelines. However, there are several challenges related to Iran's natural gas sector that may complicate volumes expected from these projects. Some of these challenges include: Iran's growth in natural gas demand; Iran's reliance on its natural gas to augment oil recovery by reinjecting it into oil wells; international sanctions that have hindered Iran's access to technology and foreign investment; and some disagreements between Iran and potential buyers over natural gas prices.

Iran-Iraq Pipeline: Based on recent progress, natural gas pipeline exports from Iran to Iraq are expected to begin soon. A natural gas pipeline from Iran's Ilam province to the Iran-Iraq border is complete and the construction of the pipeline on the Iraqi side, which will supply the Mansourieh power plant, is near completion. Initial gas exports are expected to be about 50 billion cubic feet (Bcf) per year and to increase in the future.[35] Iraq and Iran signed an agreement in the past to supply natural gas to fuel Iraqi power plants in Baghdad and Diyala. The initial contract covered 320 Bcf per year over five years. However, security-related concerns may delay plans to increase gas supply to this level.[36]

Iran-Oman Pipeline: In March 2014, Iran and Oman agreed that Iran would export 350 Bcf per year of natural gas via pipeline to Oman.[37] The construction of the pipeline may be delayed because of pricing disagreements. Iran expects gas prices of $11-14/million British thermal units(MMBtu), while Oman is looking to pay $6-8/MMBtu.[38]

Iran-Pakistan Pipeline: Although the Iran-Pakistan Pipeline has experienced considerable financing difficulties, both countries seem committed to complete the project. Construction of the pipeline on the Iranian side is almost complete, while construction on the Pakistani side has been delayed. The initial pipeline agreement called for the delivery of 274 Bcf per year of natural gas over 25 years.[39]

Iran-UAE Gas Contract: The Iran-United Arab Emirates (UAE) natural gas contract outlined an agreement to transport natural gas from the Salman field to Sharjah in UAE. Contract negotiations were not concluded because of a pricing and volume dispute, and the contract was referred to international arbitration.

Source: U.S. Energy Information Administration, http://www.eia.gov/beta/international/country.cfm?iso=IRN