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# *The Gulf Military Balance in 2019: A Graphic Analysis*

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Photo: ARASH KHAMOUSHI/AFP/ Getty Images

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# Introduction

The military balance in the Gulf region has become steadily more complex with time. Conventional forces have been reshaped by massive arms transfers, and changes major weapons, technology, and virtually every aspect of joint warfare, command and control, sensors, and intelligence, surveillance, and reconnaissance systems.

Missile warfare is changing radically as diverse mixes of ballistic and cruise missiles, UAVs and UCAVs, and missiles are deployed. Precision-guided, conventionally armed missiles are becoming a key aspect of regional forces, and so are missile defenses. The threat of nuclear proliferation remains, and at least one state – Iran - is a declared chemical weapons power while the Assad regime in Syria has made repeated use of chemical weapons

At the same time, asymmetric forces, “proxy” forces, and various forms of military advisory and support missions are playing a growing role in local conflicts and gray area operations. So are local militia and security forces – often divided within a given Gulf state by sect and ethnicity. Terrorist and extremist forces continue pose serious threats, as do political tensions and upheavals, and the weaknesses and failures of some regional governments to meet the needs of their people.

The most serious sources of Gulf conflicts are now the tensions between Iran and the Arab Gulf states, and the role played by terrorists and extremists, but civil war and insurgencies remain an additional threat - as does the links between Iran, Syria, and the Hezbollah. The growing role of Russia and Turkey add to regional instability as does the uncertain role of the U.S. and its focus on linking sanctions to Iran’s military activities.

No one analysis can cover all of these military developments, or avoid relying heavily on uncertain data, but the Burke Chair at CSIS has prepared a graphic analysis that focuses on key developments in Gulf military forces, and selected aspects of regional security. It has now been revised extensively to reflect DoD data on the size of U.S. deployments in the Gulf region, U.S. arms transfers to strategic partners, and include large excerpts from the annexes to DIA’s major new assessment of Iranian military capabilities in *Iran Military Power, Ensuring Regime Survival and Securing Regional Dominance*, DIA, November 2019. This document provides a wide range of detailed information on Iran’s activities and impact on the military balance that represents the official views of U.S. experts, and provides an exceptional level of insight into the views of intelligence experts.

The revised report is being distributed for comment in working paper form. Its contents include maps, tables, and graphics that summarize the following key aspects of the balance:

- **An Unstable Region where Civil Violence May Dominate:** Key maps and graphics highlight the level of instability by state, the rising intensity of political protests, the levels of extremist and terrorist violence relative to risk, and the recent patterns in overall extremist and total ISIS attacks.
- **Divided Along Ethnic and Sectarian Lines:** Maps show key Sectarian and Ethnic divisions.
- **Growing Iranian Influence and Recent Attacks:** Maps show the areas where Iran’s support of the Hezbollah, the Assad regime in Syria, and factions with Iraq, is having a growing destabilizing impact on the Gulf.
- **The Struggle for Iraq:** Maps highlight the deep ethnic and sectarian divisions in Iraq, the role of Iranian-backed Popular Militia Forces, the vulnerability of key Iraqi petroleum facilities, and the fact that defeat of the ISIS physical “Caliphate” has not meant. The defeat of either ISIS or extremism in Iraq.
- **Comparative Military Budgets and Arms Transfers:** Graphs and tables show the steady build-up of military spending and arms transfers in the Gulf region, and the vast advantage Arab states have had in such spending and access to modern military technology relative to Iran. These spending levels, however, also place a major burden on some Arab economies and are too high a percent of GDP to allow proper economic growth and job creation. It should be noted that boycott of Qatar and other tensions between the Arab states shown – along with the lack of integrated defense systems, battle management, and IS&R capability plus the lack of real-world readiness and meaningful exercise activity – critical cuts the value of both Arab numerical superiority and far higher military expenditures and arms transfers.

- **U.S. Forward Deployed Forces:** Maps and graphs that show that the United States remains the dominant outside power in the Gulf – regardless of recent force cuts and debates over burdensharing.
- **Total Regular Gulf Military Forces:** A table shows the classic summary measures of conventional force strength by country, and compares total Gulf Cooperation Council and Iranian forces. It should again be noted that boycott of Qatar and other tensions between the Arab states shown – along with the lack of integrated defense systems, battle management, and IS&R capability plus the lack of real-world readiness and meaningful exercise activity – critical cuts the value of both Arab numerical superiority and far higher military expenditures and arms transfers.
- **Nuclear Forces:** Maps and tables warn that Iranian proliferation remains a serious potential threat.
- **Missile Forces:** A range of tables and maps show the rising Iranian missile threat, the reliance of the Gulf Arab states on air power, and Iran’s emphasis on precision missile strike capability as a substitute for its limits in airpower.
- **Land Forces:** Tables show the comparative land balance –the only major area of conventional forces where Iran has parity or possible superiority, but one where Iran is not organized to sustain long-range maneuver, has only token amphibious-forced entry capability, and would have to attack through Iraq. This leaves Kuwait the one GCC country with high vulnerability.
- **Naval Forces:** The Arab states have an advantage in high quality larger surface vessels, but have serious readiness issues, and would be heavily dependent on U.S. help to prepare for combat and then operate together effectively. Iran has an advantage in anti-ship missiles, smart mines, and asymmetric warfare capability. All Gulf states, however, would suffer severely from any conflict that halted commercial shipping through the Strait of Hormuz and that reduced their petroleum export income.
- **Air and Air Defense Forces:** Iran has updated many of its aircraft as much as possible, but they are no longer competitive with most Arab combat aircraft. The Arab states also have a major advantage in the quality of their surface-to-air defenses –although the Iranian deployment of the Russian S-300 is sharply reducing this advantage. Once again, the Arab advantage is offset by a lack of integrated and interoperable AC&W, AWACS, IS&R, and battle management capability. They would be heavily dependent on U.S. help to prepare for combat and then operate together effectively.
- **DIA Assessment of Iranian Military Modernization:** An open-source summary of how Iran’s view of the balance is changing its military forces and tactics.
- **DIA Assessment of Iranian Military Modernization:** An open-source summary of DIA’s assessment of Iran’s irregular forces, links to the forces of other states and non-state actors, and the role of its specific forces.
- **The Yemen War:** This tragic conflict has increased Iranian influence in the Indian Ocean and Red Sea area, and presented major problems for Saudi and UAE forces and cooperation.
- **Petroleum Exports and Petroleum and Infrastructure Targets:** Every military balance is a balance of comparative vulnerabilities as well as one of relative military capability. Both Iran and the Arab Gulf states are highly vulnerable to attacks on critical petroleum and infrastructure facilities. High levels of escalation present a major risk to both sides.

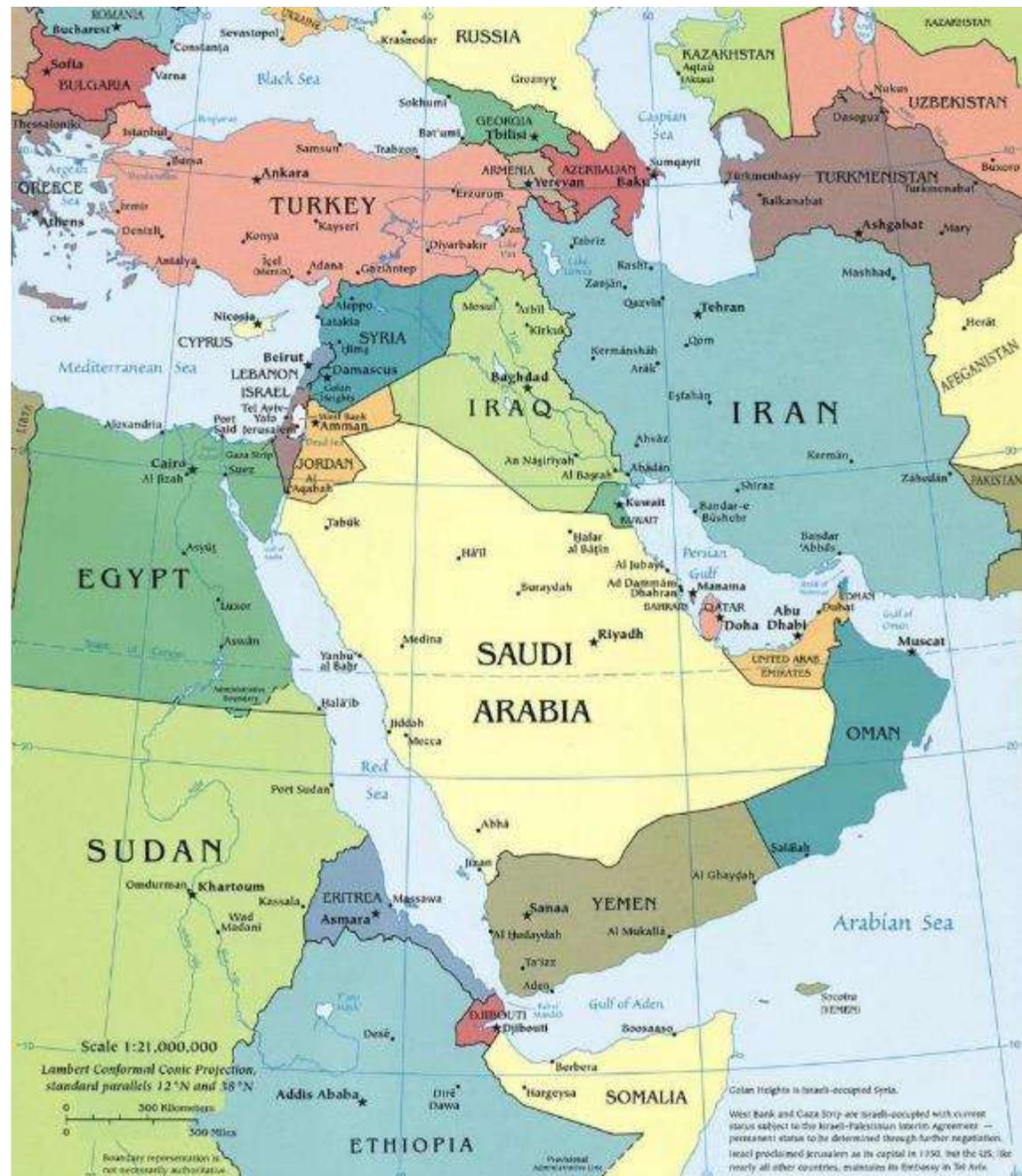
# **An Unstable Region with Serious Civil Violence and Extremism**

# Evolving Gulf Threats and Risks in an Era of Growing Complexity

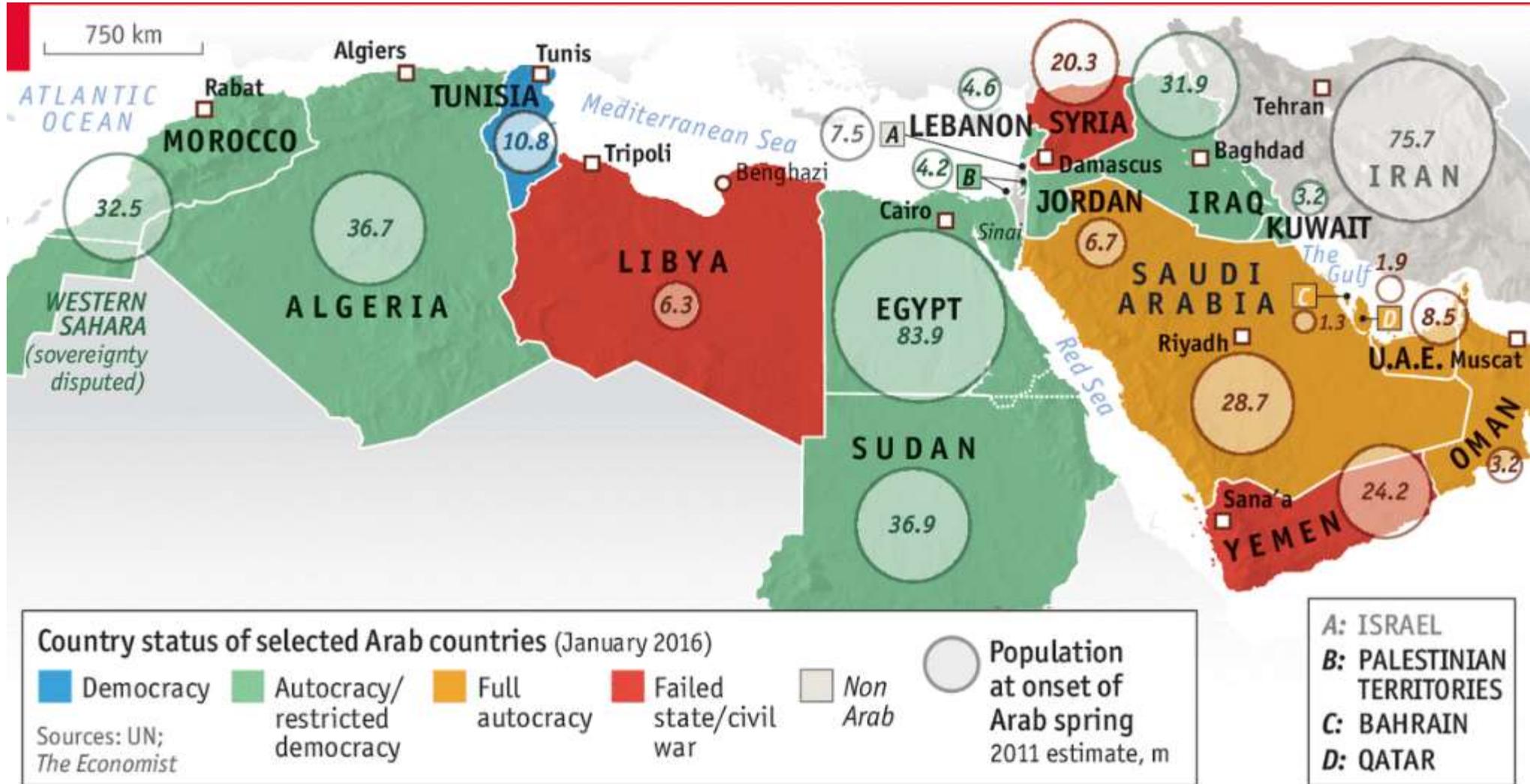
- Risk of actual conflict at very different levels of intensity: Major war, limited war, proxy uses of forces, threats with military gestures, low-levels attacks.
- Serious reduction in Gulf exports of petroleum, LNG and impact on global economy, critical U.S. imports of Asian manufactured goods.
- **Continuing Gray Area operations and clashes: Ranging from proxy forces and low-level to sabotage to naval encounters in the Gulf and missile strikes on key infrastructure and military target.**
- Steady increase in numbers and quality of missile forces: Ballistic, cruise, RPVs, air-launched, Sea-launched; precision-strike/smart warhead, and in different forms of missile defenses.
- Equal rises in air forces: Strike/attack, fighter, IS&R, precision strike.
- Improvements in surface -to-air missile forces (SAMs) and dual capable BMD and SAM forces.
- Expansion of air-sea operations to cover entire Gulf/Gulf of Oman/Indian Ocean/Red Sea – Naval surface, missile, air, smart mine, submarines, submersibles.
- Struggle for control of Iraq: Sectarian, Ethnic, Extremist, PMFs, proxies, Iran, U.S.
- Struggle for control of Syria: Idlib, Kurdish areas. Uncertain ability to unify rebuild, develop, and stabilize.
- Resurgence of extremism/ISIS, AQAP, other.
- Use of, or development of, Nuclear, chemical, (BW?) forces.
- Precision targeting of critical petroleum, economic,, desalination, other infrastructure and military targets; Use of weapons of mass effectiveness.
- New forms of cyber warfare, electronic warfare, attacks on critical nodes/sensors.
- Competing roles of outside powers: US/Europe, Russia, Turkey, Syria, China: presence/influence/arms sales/advisors/active military role
- Uncertain future nature of U.S., British, French presence and power projection.
- Evolving role of proxies and non-state actors: Hezbollah, Hamas, PIJ, PMF, “volunteers,” support of extremists and ethnic/sectarian factions.
- Arab strategic partner disunity and self-destructiveness: boycott of Qatar, distancing of Oman, Kuwait neutral , UAE tensions with Saudi.
- Turkey vs. Kurds. Kurdish tension in. Iraq and Iran.
- “Failed state” political and economic upheavals -- and potential internal conflicts -- in Syria, Lebanon, Iraq, Iran, Yemen.
- Yemen civil war, struggle for control of Yemen: Iran Houthi, Yemeni government, Saudi Arabia, UAE, AQAP, other internal factions.
- Ethnic and sectarian, internal and local tensions and conflict: Syria, Iraq, Bahrain, Saudi; Interactions with Egypt, Jordan, Palestinian internal issues.
- Evolving reality of Shi’ite “axis”: Hezbollah, Syria, Iraq, Iran.
- Impact of sanctions vs. military action, “wars” of intimidation.

# Broader Gulf Military Theater

Source: <https://www.geographicguide.com/asia/maps/middleeast.htm>



# The Edge of Repression and Impact of Failed States



Economist.com

Source: Adapted from the *The Economist*, January 7, 2016

# Failed States Help Shape Military Risk and Extremism Risk

Rank  
(Lowest Rank being the best):

Political Stability & Absence of Violence:

40 to 80:

Oman  
UAE  
Qatar

80 to 120:  
Kuwait

120 to 160:  
Morocco  
Jordan  
Saudi Arabia

160 to 200:  
Israel  
Iran  
Bahrain  
Algeria  
Tunisia  
Egypt  
Lebanon  
Turkey  
Libya  
Iraq  
Syria  
Yemen



Rank  
(Lowest Rank being the best):

Control of Corruption:

0 to 40:

UAE  
Israel

40 to 80:  
Qatar  
Saudi Arabia  
Jordan  
Oman

80 to 120:  
Tunisia  
Morocco  
Bahrain  
Turkey  
Kuwait

120 to 160:  
Egypt  
Algeria  
Iran

160 to 200:  
Lebanon  
Iraq  
Syria  
Libya  
Yemen

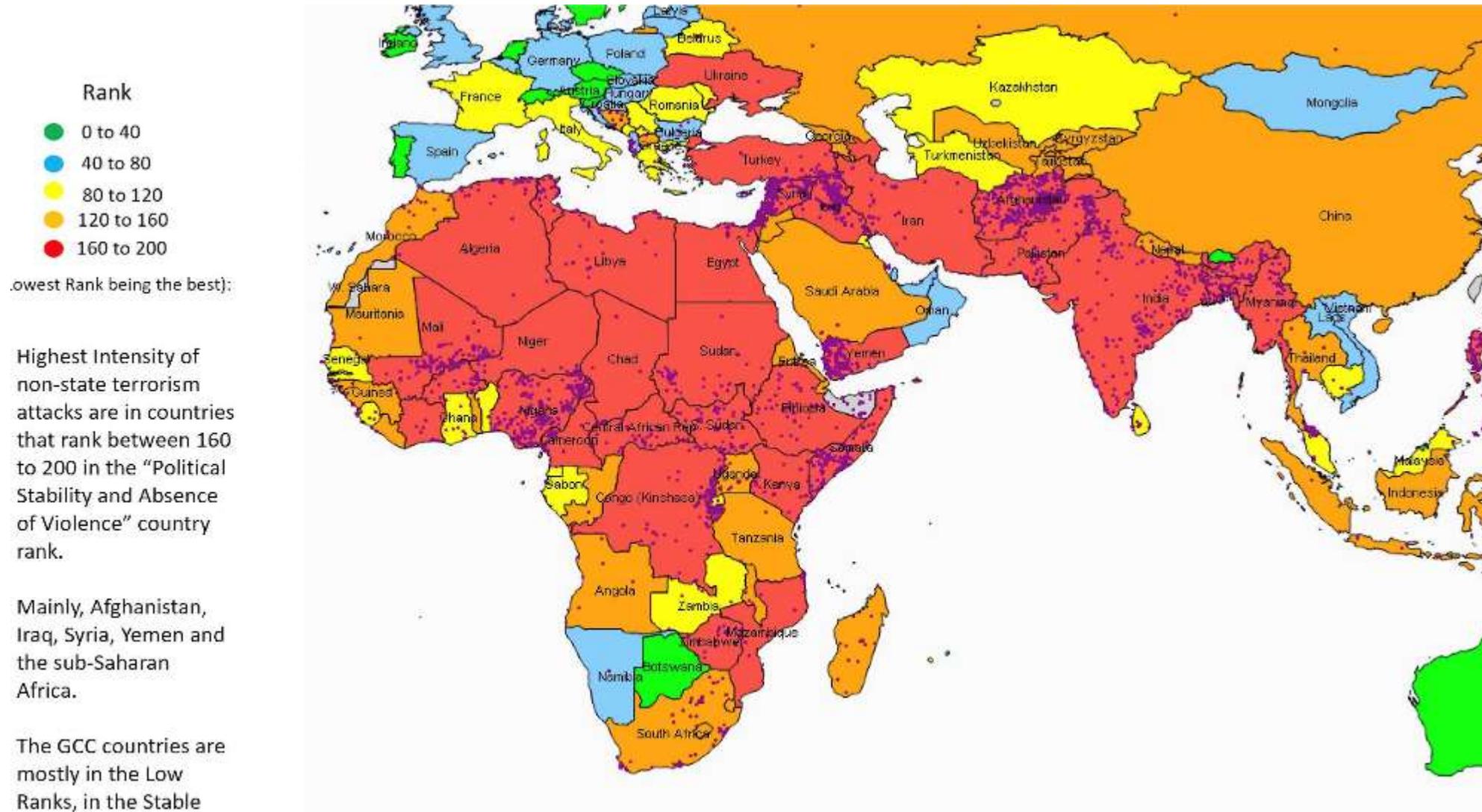
{Source: World Bank Worldwide Governance Indicators. <https://info.worldbank.org/governance/wgi/>  
(Chart developed by Abdullah Toukan using the SIRA model)

## The Rising Pace of Civil Protests in the Middle East in 2018

Year	Peaceful Protests	Reported Killed in Protest
2016	3260	26
2017	2009	9
2018	4894	28
2019 (October 24)	5752	26

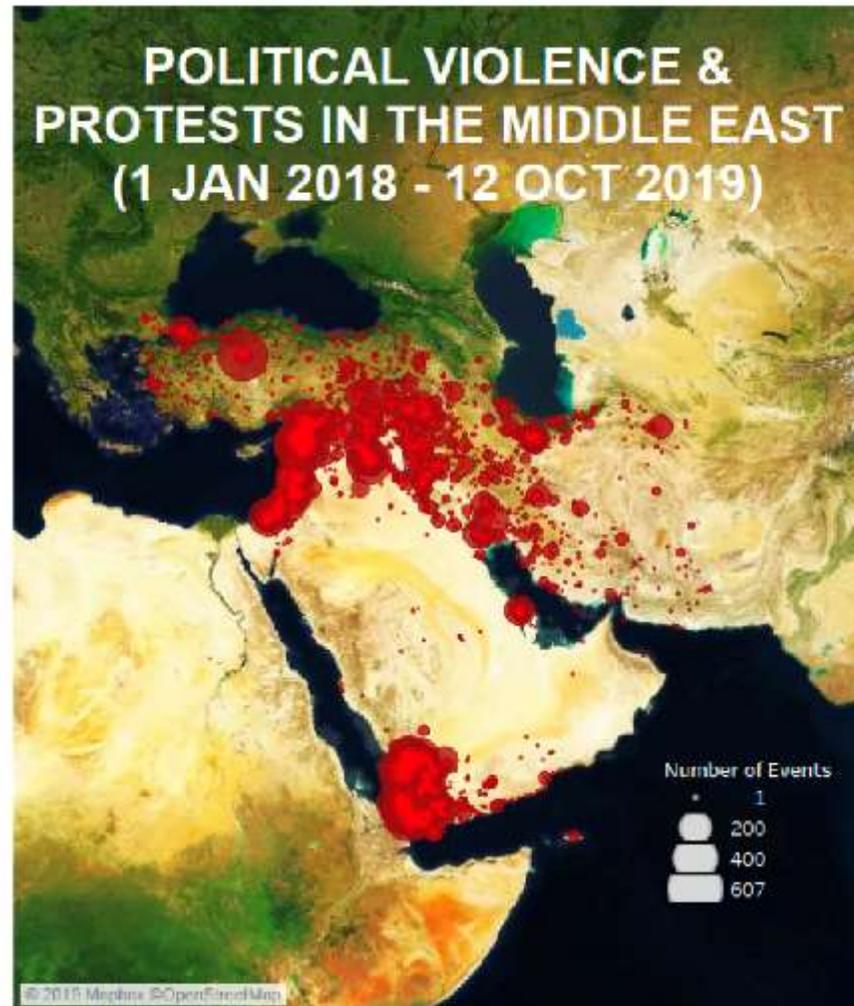
Source: "Armed Conflict Location & Event Data Project (ACLED); acleddata.com", Abdullah Toukan using the SIRA model.

# Extremism: Non-State Terrorist Attack Imposed on World Bank Ratings of Stability and Absence of Violence – 2018

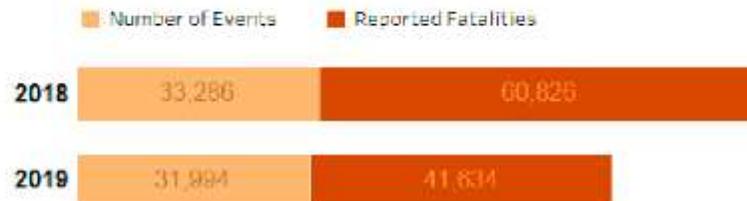


Source: "Armed Conflict Location & Event Data Project (ACLED); acleddata.com", graphics developed by Abdullah Toukan using the SIRA model.

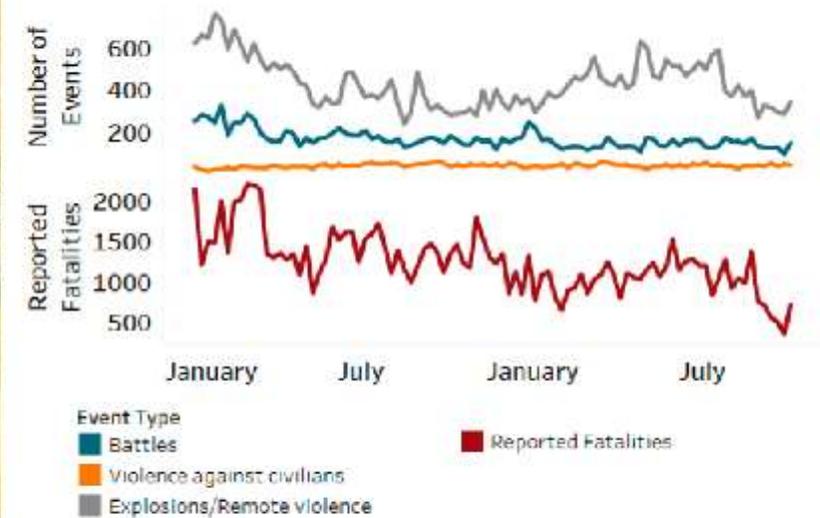
# ACLED Estimate of Recent Violence in the MENA Region



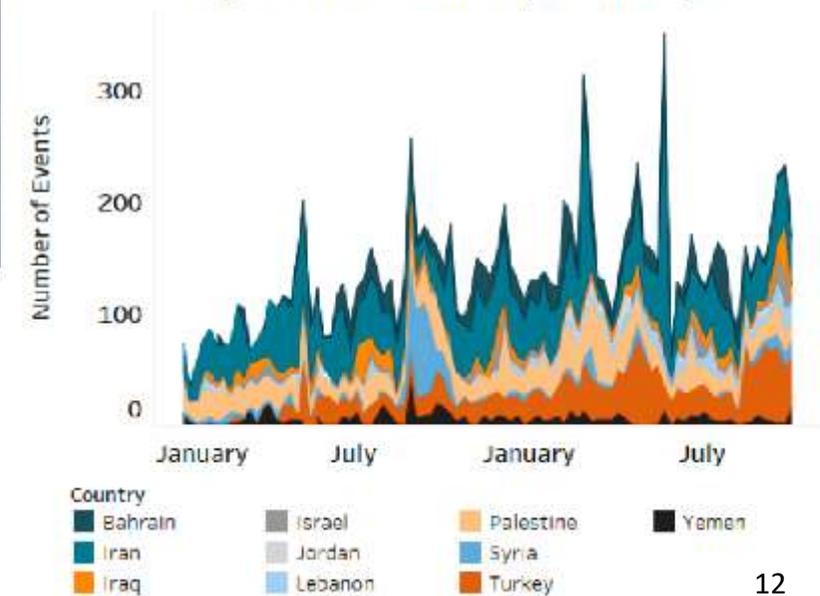
**Key Numbers (same period 2018 vs 2019)**



**Weekly Organized Violence per Event Type and Reported Fatalities**

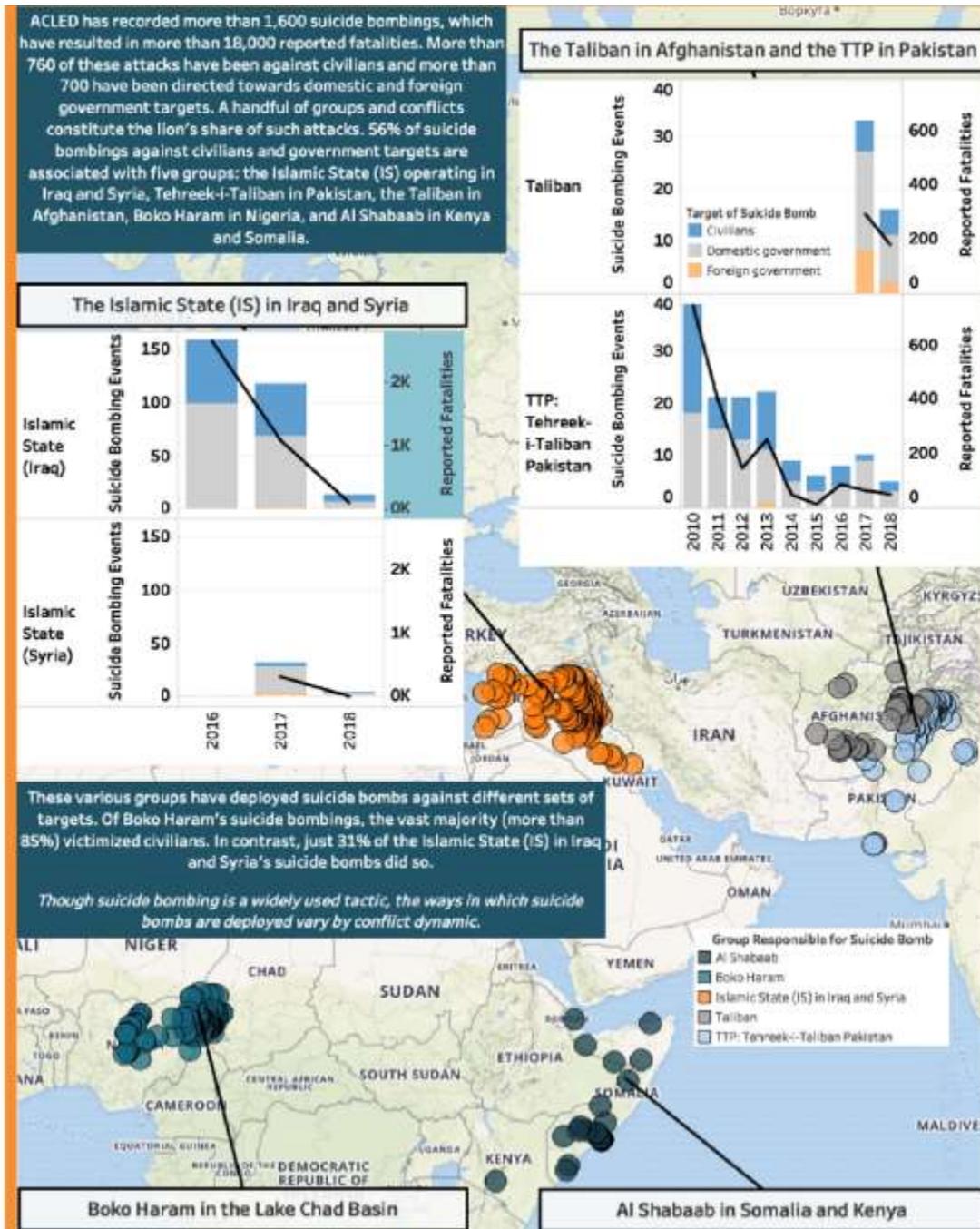


**Weekly Riots and Protests per Country**



Source: ACLED,  
<https://www.acleddata.com/2019/10/15/regional-overview-middle-east-6-12-october-2019/>

# ACLED Estimate of Comparative Suicide Bombings Against Government and Civilian /Targets in Syria and Gulf, South Asia, and Africa: 2011-2018



Source: ACLED,  
<https://www.acleddata.com/2019/03/20/suicide-bombings-against-civilians-and-government-targets-in-africa-the-middle-east-and-southern-asia/>

# After the “Caliphate”: ISIS Attacks in Iraq and Syria in 2019

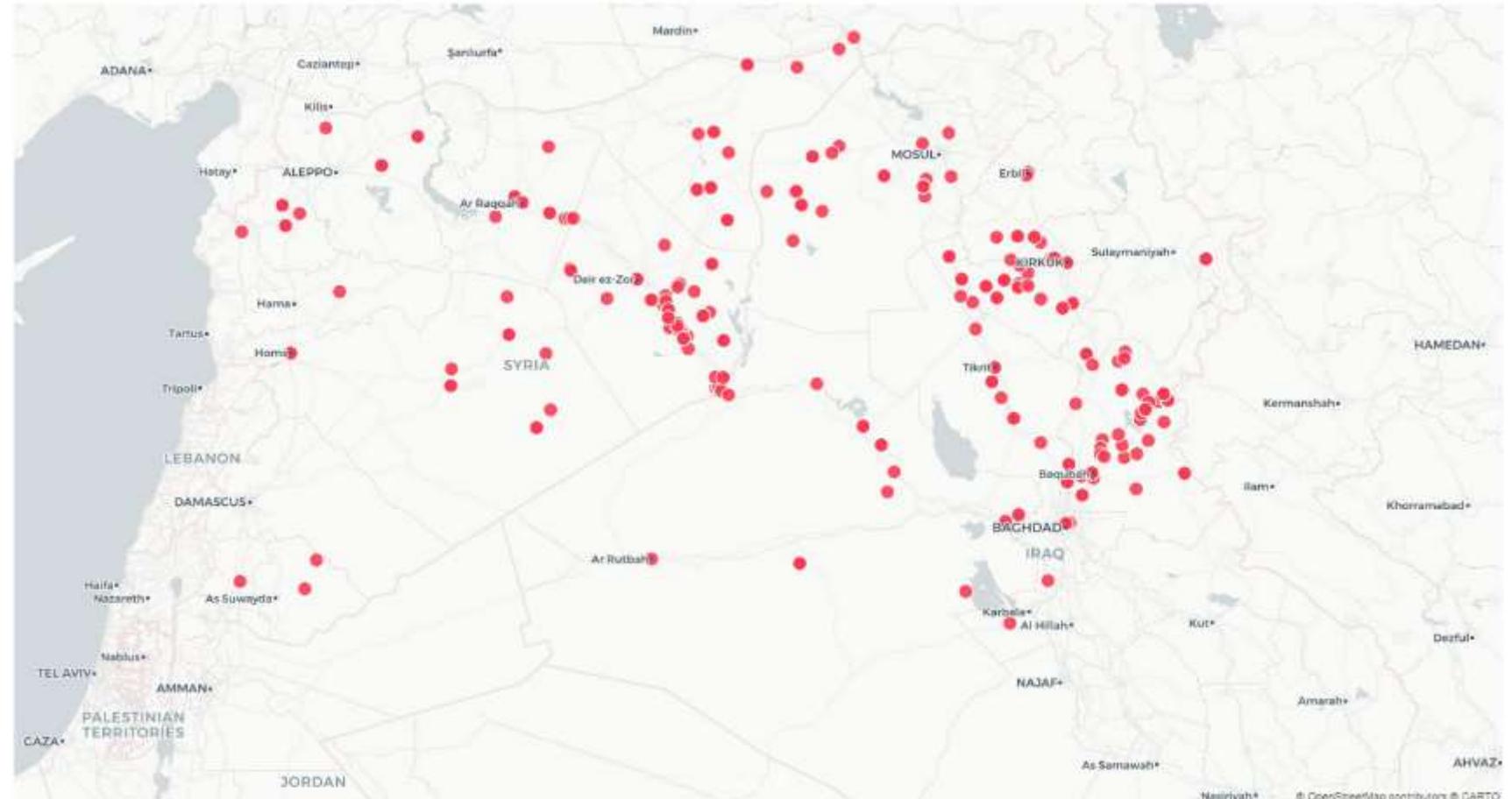
The Islamic State continues to conduct attacks...it orchestrated 572 attacks from January through September 2019 across 21 provinces in Iraq (276 attacks) and Syria (296 attacks).<sup>12</sup> In Iraq, the attacks have occurred in provinces like Diyala, Anbar, Ninewa, Kirkuk, and Salahuddin. In Syria, Islamic State attacks have largely been centered in Raqqah, Dayr az Zawr, Homs, and Hasakah.

Perhaps most concerning, there are still at least 30,000 to 37,000 jihadist fighters in Syria and Iraq from the Islamic State and two al-Qaeda-linked groups: Hay’at Tahrir al-Sham and Tanzim Hurras al-Din.

Over the next several months, more jihadists may enter the battlefield after escaping—or being released—from prisons run by the Syrian Democratic Forces (SDF) in areas like al-Hol, located in eastern Syria near the border with Iraq.

After all, there are roughly 10,000 Islamic State fighters in prisons run by the SDF, as well as thousands more in prisons and camps that may support an extremist ideology.

While Hay’at Tahrir al-Sham has experienced sometimes frosty relations with Ayman al-Zawahiri and other al-Qaeda leaders, the organization still has strong connections with Salafi-jihadist networks in the region.<sup>17</sup> Tanzim Hurras al-Din has close links with al-Qaeda and is led by Faruq al-Suri, an al-Qaeda veteran.

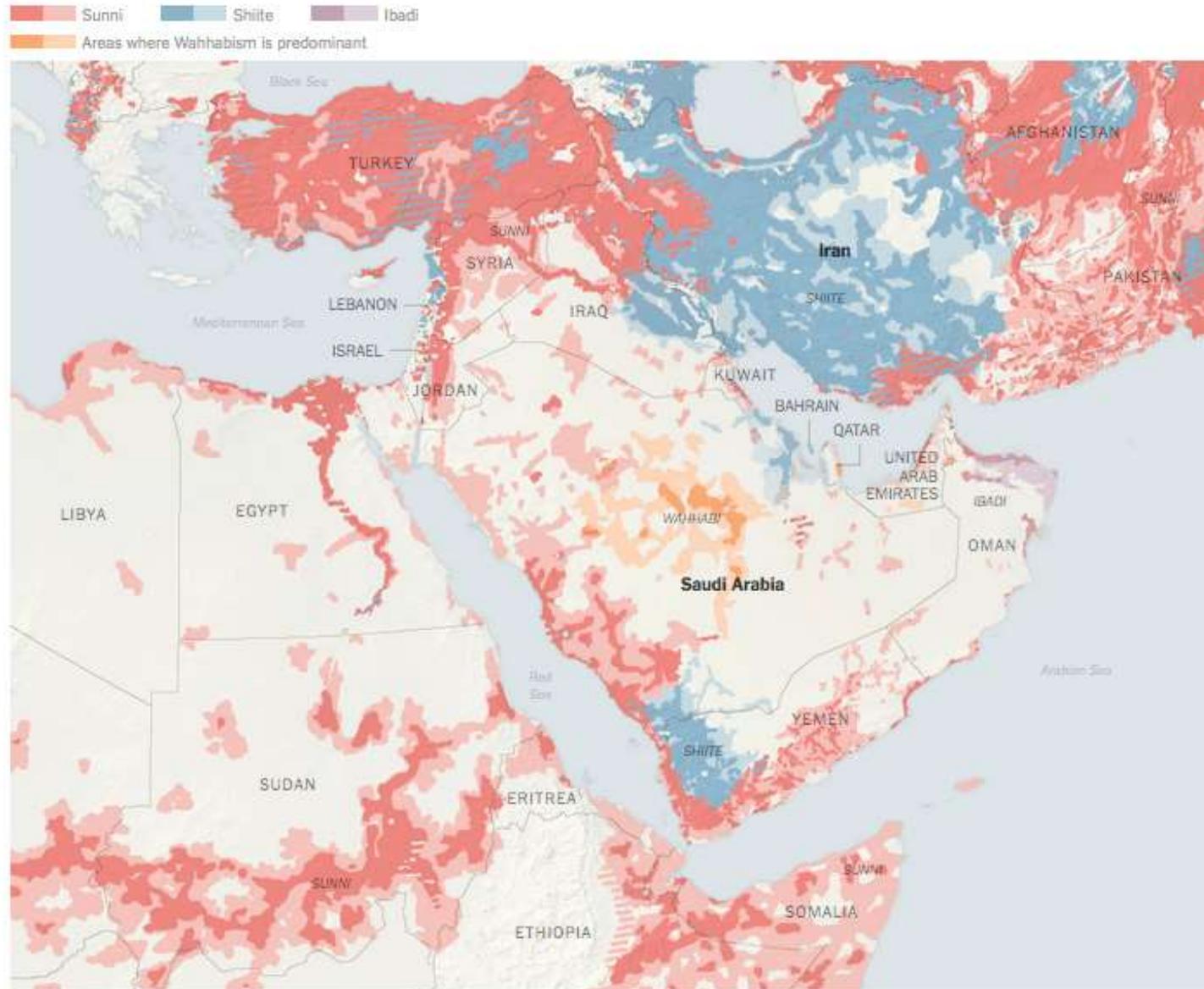


Source: “Jane’s Terrorism and Insurgency Centre,” IHS Markit, 2019.

Excerpted from Seth G. Jones, “Beyond Baghdadi: The Next Wave of Jihadist Violence,” *CSIS Briefs*, November 2019, [https://csis-prod.s3.amazonaws.com/s3fs-public/publication/191104\\_Jones\\_BeyondBaghdadi\\_layout\\_WEB\\_v2.pdf?utm\\_source=Members&utm\\_campaign=7b2c5df29a-EMAIL\\_CAMPAIGN\\_2019\\_11\\_05\\_09\\_49&utm\\_medium=email&utm\\_term=0\\_e842221dc2-7b2c5df29a-145924545](https://csis-prod.s3.amazonaws.com/s3fs-public/publication/191104_Jones_BeyondBaghdadi_layout_WEB_v2.pdf?utm_source=Members&utm_campaign=7b2c5df29a-EMAIL_CAMPAIGN_2019_11_05_09_49&utm_medium=email&utm_term=0_e842221dc2-7b2c5df29a-145924545)

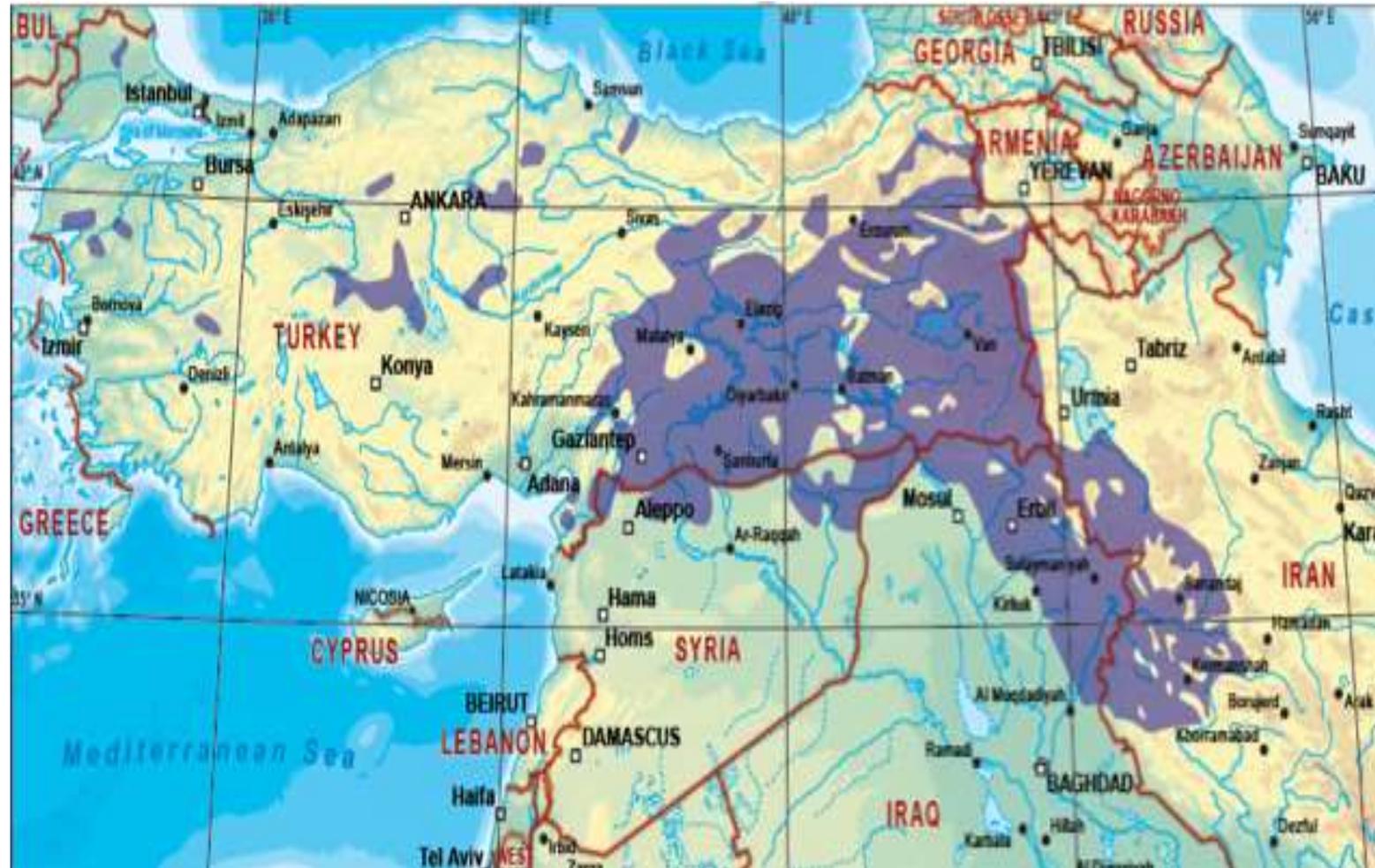
# **Divided Along Ethnic and Sectarian Lines**

# Sectarian Divisions in MENA



The New York Times | Source: M. Izady, Columbia University's Gulf 2000 project | Note: Non-Muslims and other Islamic sects are not shown.

## The Broader “Kurdish Problem”



Source: Atlas-Syria: Federal Ministry of the interior, Republic of Austria, 2015,  
[http://www.ecoi.net/atlas\\_syria.pdf](http://www.ecoi.net/atlas_syria.pdf), p. 16



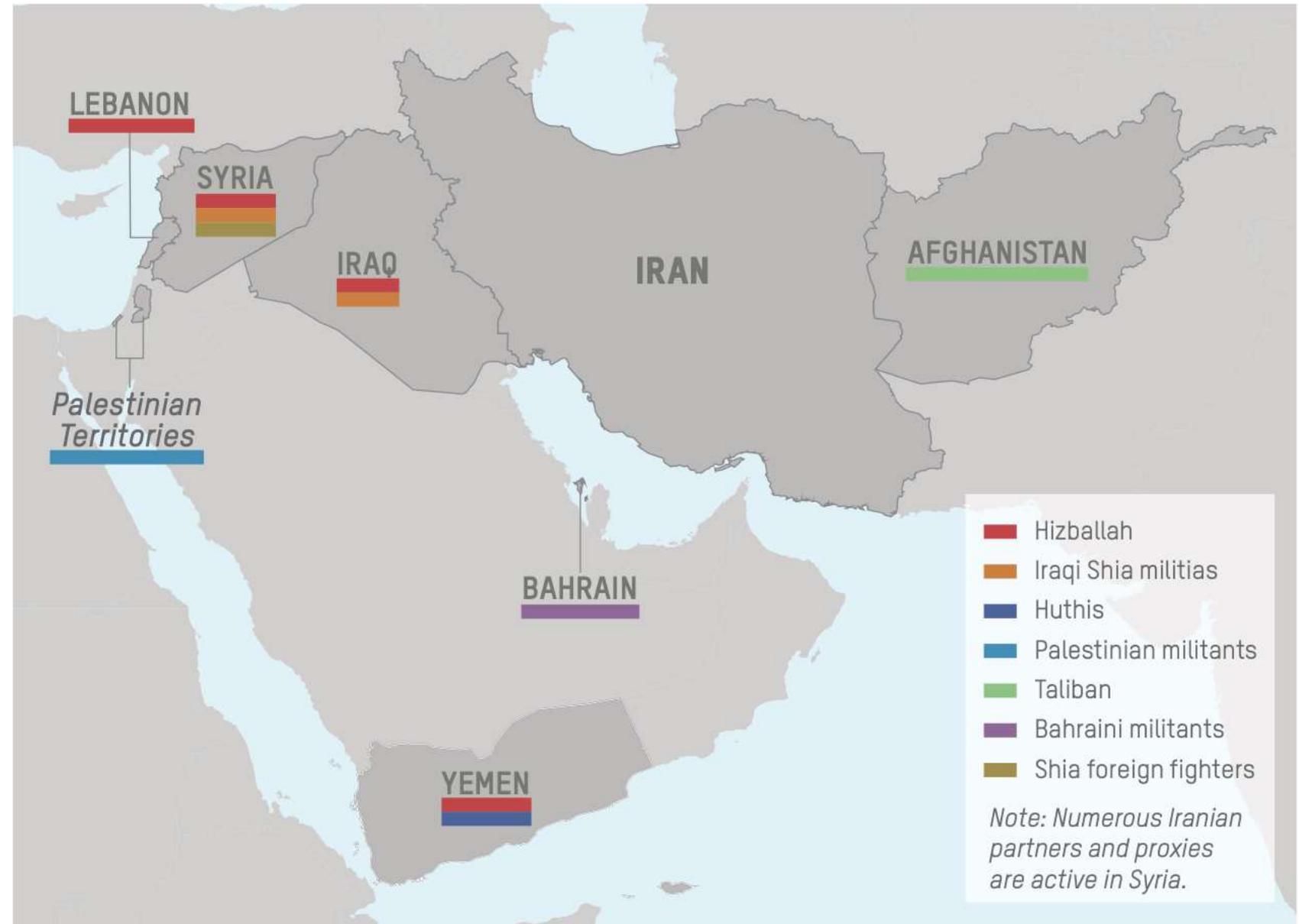
# **Growing Iranian Influence and Recent Attacks**

# The “Shi’ite Crescent”



Source: CIA Factbook

# DIA Map of Iranian Partners, Proxies, and Affiliates

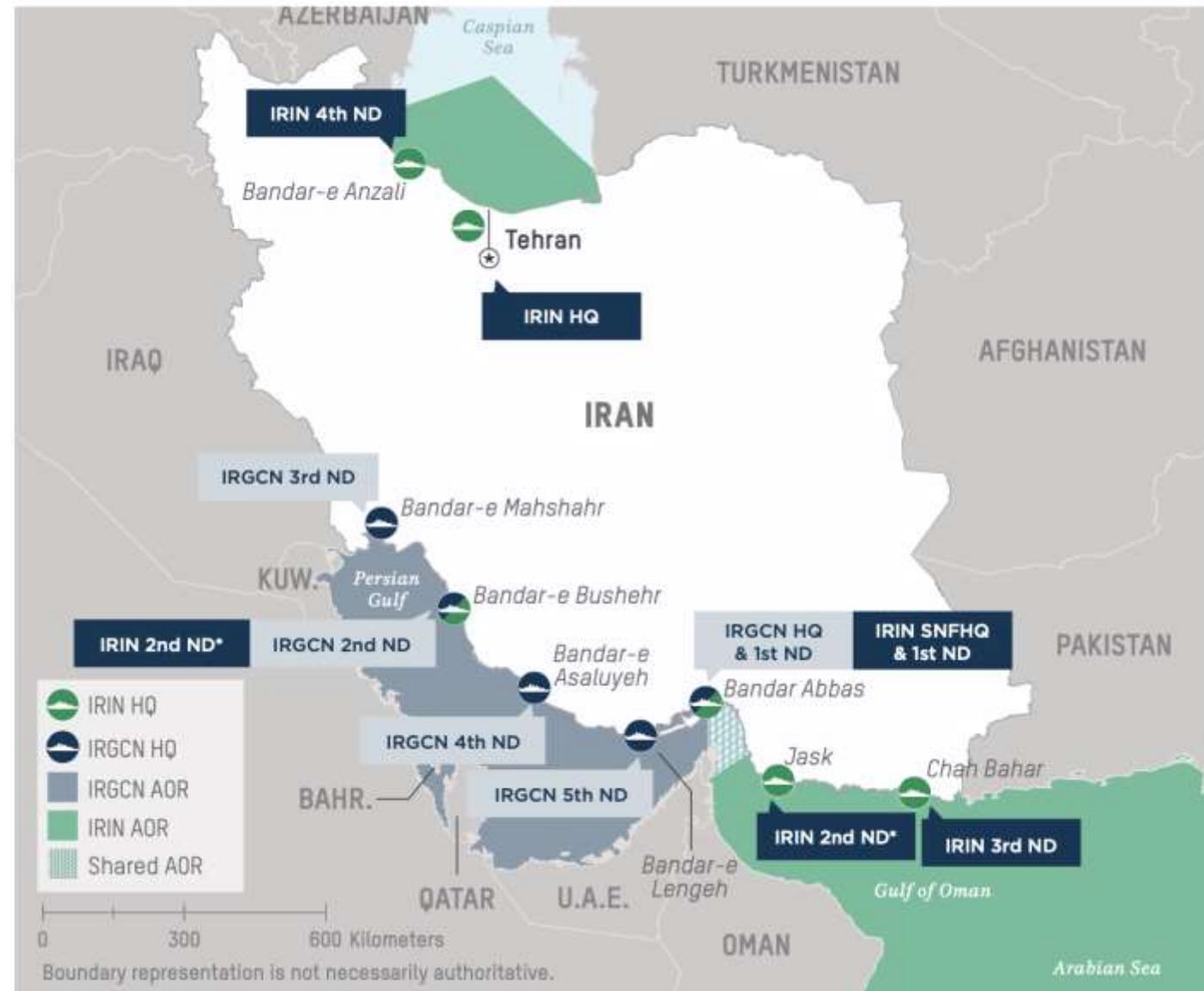


Source: DIA, *Iran Military Power, Ensuring Regime Survival and Securing Regional Dominance*, DIA, November 2019, pp. 58.

# DIA Map of Iranian Naval Commands

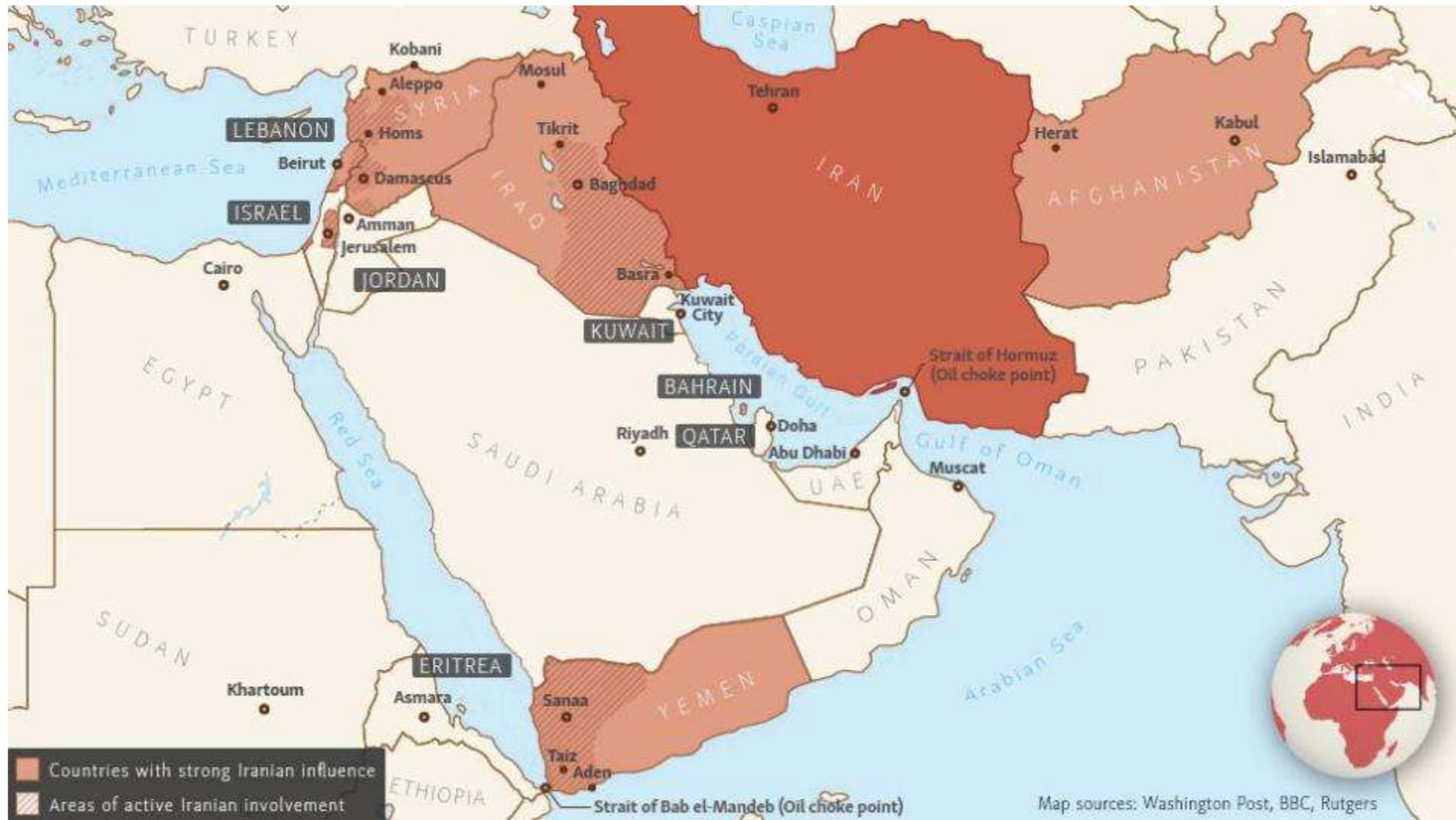
Iranian Naval Headquarters and Areas of Responsibility

1805-17885

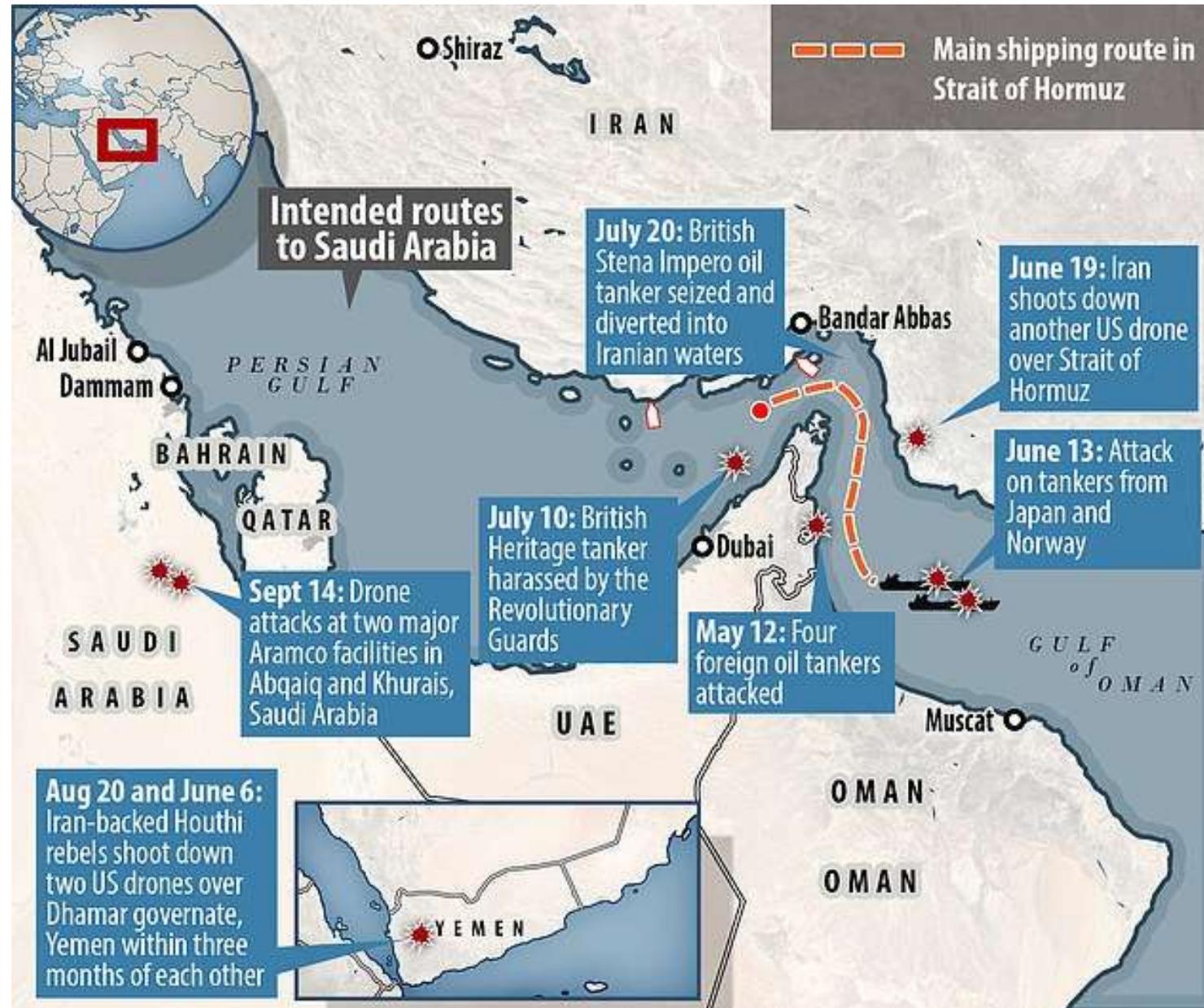


Source: DIA, *Iran Military Power, Ensuring Regime Survival and Securing Regional Dominance*, DIA, November 2019, p. 48.

## C7: Iran's Key Areas of Strategic Influence



# Iranian Attacks in May-September 2019



# Bahrain's Island Vulnerability



## Ethnic groups:

Bahraini 46%, Asian 45.5%, other Arab 45.7%, African 1.6%, European 1%, other 1.2% (2010 census)

## Languages:

Arabic (official), English, Farsi, Urdu

## Religions:

Muslim (Shia and Sunni) 70.3%, Christian 14.5%, Hindu 9.8%, Buddhist 2.5%, other 2.8% (2010 census)

Shi'ite-Sunni sectarian tension has been a continuing challenge.

## Population:

1,410,942 July 2017 est.

country comparison to the world: [155](#) note: population is 48% immigrant.

urban population: 89.3% of total population (2018); rate of urbanization: 4.38% annual rate of change (2015-20 est.)

# The Struggle For Iraq

# Iraq's Strategic Position

Source: Google, <http://www.maps-of-the-world.net/maps/maps-of-asia/maps-of-iraq/large-detailed-political-and-administrative-map-of-iraq-with-roads-and-cities-2008.jpg>



# The Iran-Iraq Border Area

Source: AustralianNationalUniversity,  
[https://www.google.com/search?q=Iraq-Iran+border+map&client=firefox-b-1&tbm=isch&source=iu&ictx=1&fir=Zx8dCVG47k3E4M%253A%252CwFRRnFBykytTuM%252C\\_&usg=\\_\\_cnRP2OfOY0kS9hilA3osRQOe5BE%3D&sa=X&ved=2ahUKEwjj6S4rMfcAhXNjt8KHSc8DCsQ9QEwAXoECAyQBg#imgrc=slz3ntU760J6uM:](https://www.google.com/search?q=Iraq-Iran+border+map&client=firefox-b-1&tbm=isch&source=iu&ictx=1&fir=Zx8dCVG47k3E4M%253A%252CwFRRnFBykytTuM%252C_&usg=__cnRP2OfOY0kS9hilA3osRQOe5BE%3D&sa=X&ved=2ahUKEwjj6S4rMfcAhXNjt8KHSc8DCsQ9QEwAXoECAyQBg#imgrc=slz3ntU760J6uM:)



# Iraq: Uncertain Stability and Control

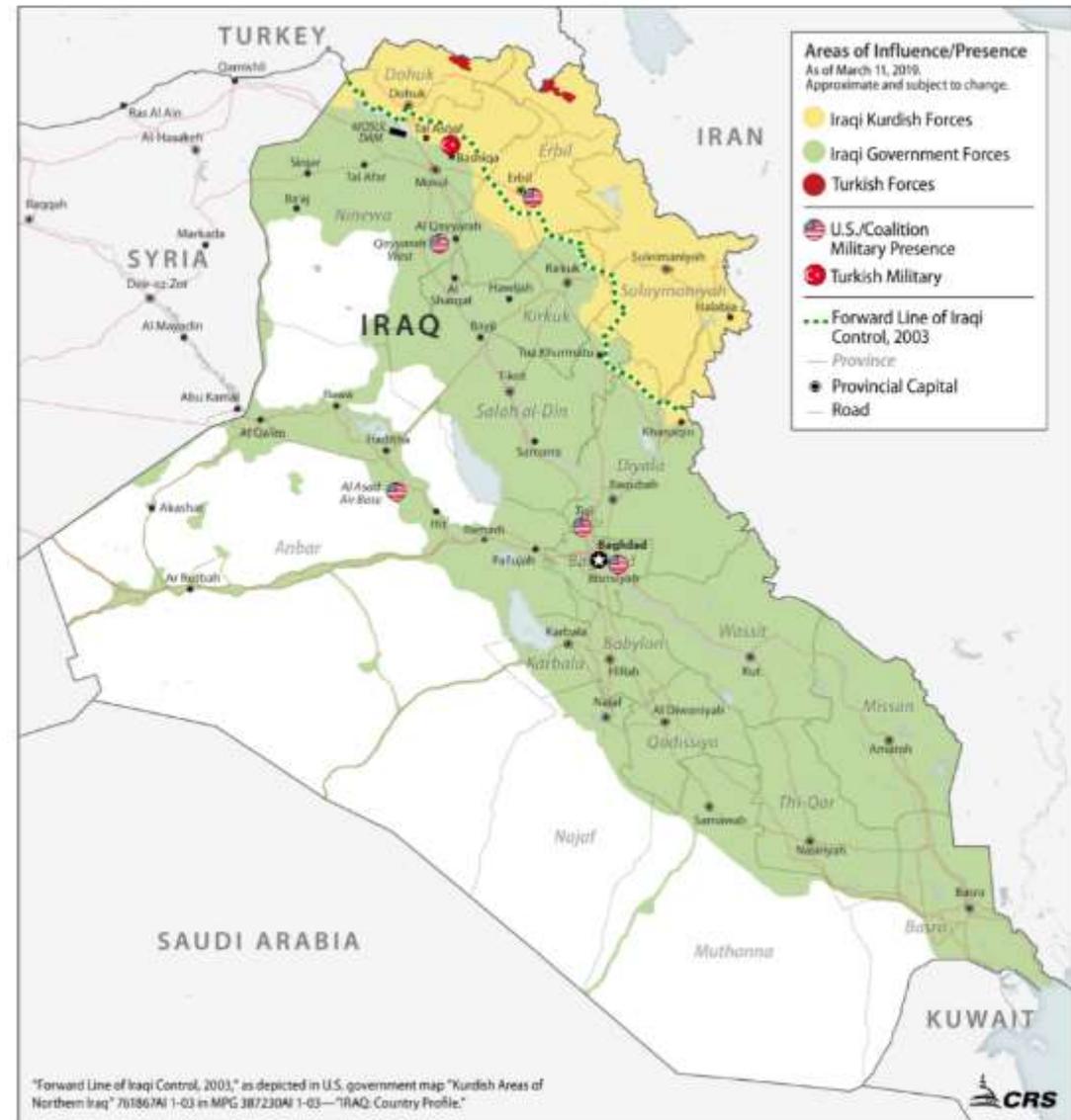
The legacy of the war with the Islamic State strains security in Iraq in two other important ways. First, the Popular Mobilization Committee (PMC) and its militias—the mostly Shia Popular Mobilization Forces (PMF) recruited to fight the Islamic State—have been recognized as enduring components of Iraq’s national security establishment. This is the case even as many PMF units continue to operate outside the bounds of their authorizing legislation and the control of the Prime Minister. The U.S. intelligence community considers Iran-linked Shia elements of the PMF to be the “the primary threat to U.S. personnel” in Iraq.

Second, national and KRG forces remain deployed across from each other along contested lines of control while their respective leaders are engaged in negotiations over a host of sensitive issues. Following a Kurdish referendum on independence in 2017, the Iraqi government Kurdish *peshmerga* from some disputed territories they had secured from the Islamic State, and IS fighters now appear to be exploiting gaps in ISF and Kurdish security to survive. PMF units remain active throughout the territories in dispute between the Iraqi national government and the federally recognized Kurdistan Region of northern Iraq, with local populations in some areas opposed to the PMF presence.

Iraq’s Popular Mobilization Forces contributed to Iraq’s fight against the Islamic State, though ties between some PMF components and Iran have prompted Iraqi and international concerns. In 2016, the COR adopted a law to provide for a permanent role for the PMF as part of Iraq’s national security sector. The law calls for the PMF to be placed under the authority of the Prime Minister as commander-in-chief and to be subject to military discipline and organization. Some PMF units have demobilized, but many remain outside the law’s defined structure, including some units associated with groups identified by the State Department as receiving Iranian support.

U.S. officials have expressed concern about potential attacks by Iran-linked PMF forces and other militias amid U.S. tensions with Iran, and reduced the number of personnel deployed to the U.S. Embassy in Baghdad in May 2019. In July 2019, Prime Minister Abd al Mahdi issued a decree restating a requirement that PMF units either serve as “an indivisible part of the armed forces and be subject to the same regulations” or disarm. Recent changes in military command personnel are renewing questions about the integrity and political independence of the armed forces (Christopher M. Blanchard, Iraq and U.S. Policy Iraqis Struggle to Define a Way Forward, CRS 10.22.2019, cblanchard@crs.loc.gov, 7-0428.)

**Figure 1. Iraq: Areas of Influence and Operation**  
As of March 11, 2019

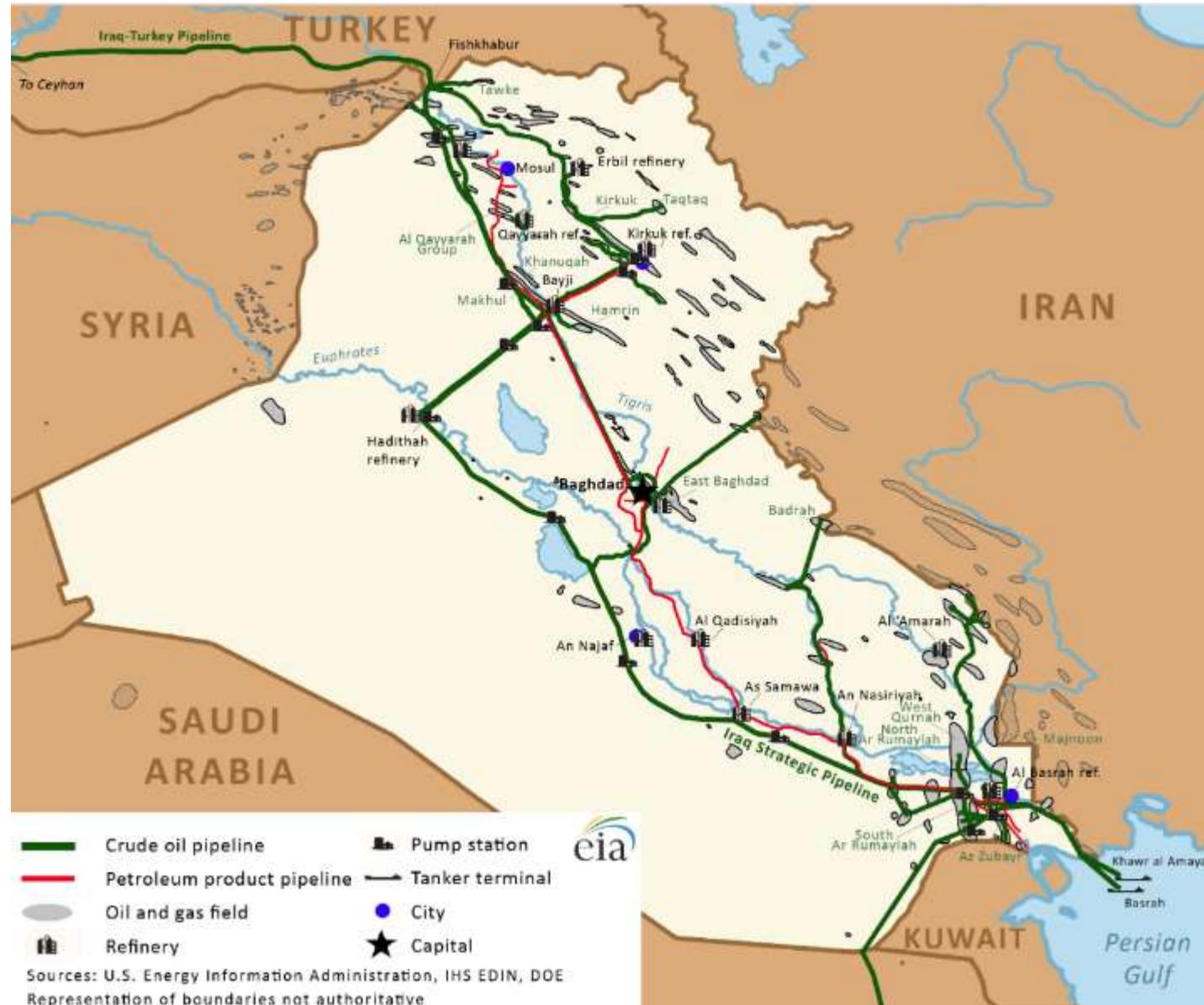


\*Forward Line of Iraqi Control, 2003,\* as depicted in U.S. government map: "Kurdish Areas of Northern Iraq" 761867AI 1-03 in MPG 38723DAI 1-03—"IRAQ: Country Profile."

**Source:** Congressional Research Service using ArcGIS, IHS Markit Conflict Monitor, U.S. government, and United Nations data.

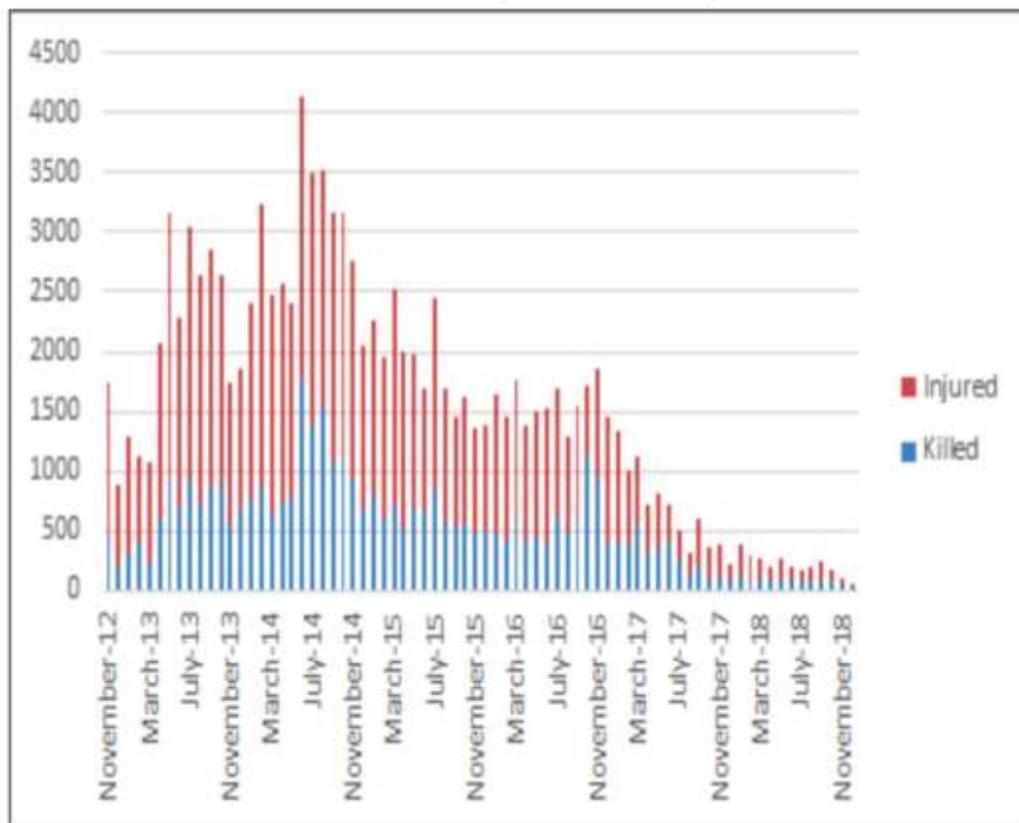
**Notes:** Areas of influence are approximate and subject to change.

# C27: Iraq's Vulnerable Energy Facilities



Source: EIA, Iraq Country Analysis, <https://www.eia.gov/beta/international/analysis.php?iso=IRQ>

# Iraq: Continuing Violence

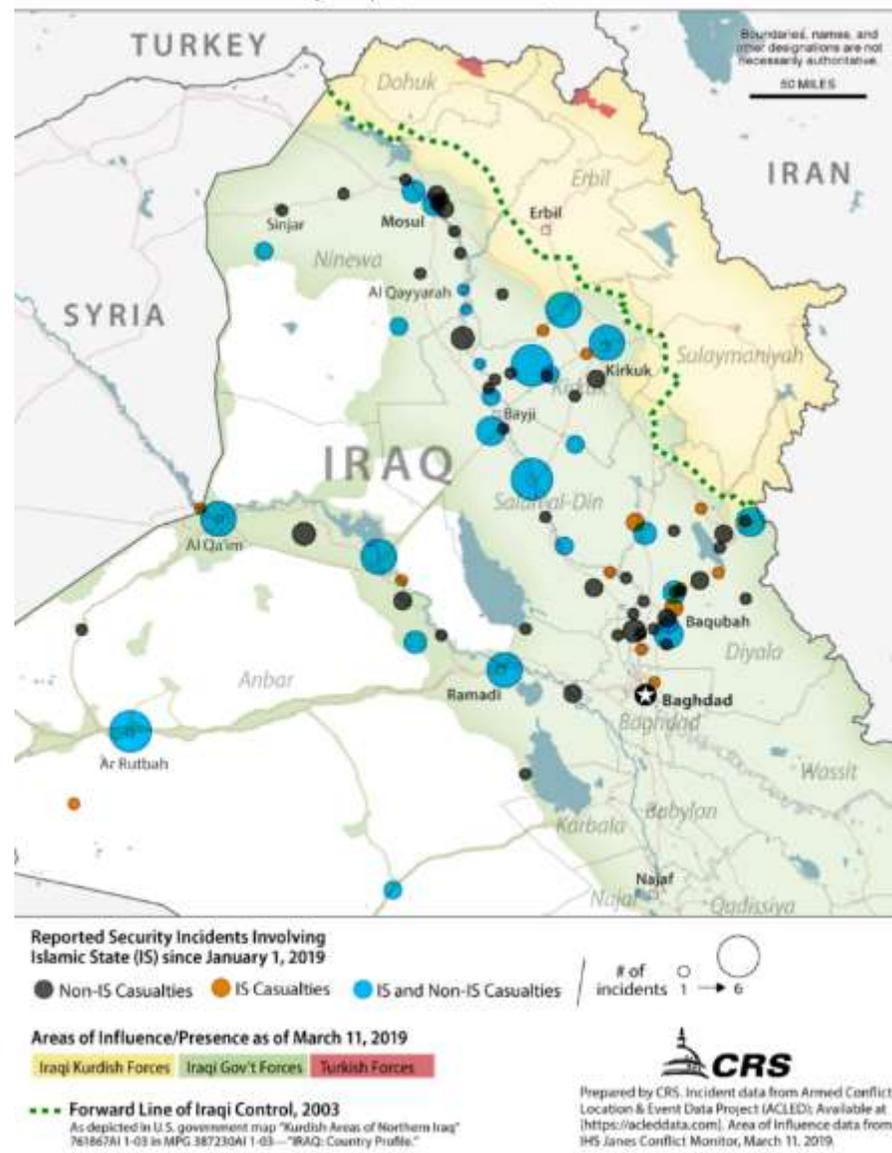


Source: United Nations Assistance Mission in Iraq. Some months lack data from some governorates.

Source: Christopher M. Blanchard, Iraq: Issues in the 116th Congress, CRS, R45633, March 26, 2019

Figure 4. Iraq: Reported Islamic State-Related Security Incidents

January 1, 2019 to March 8, 2019



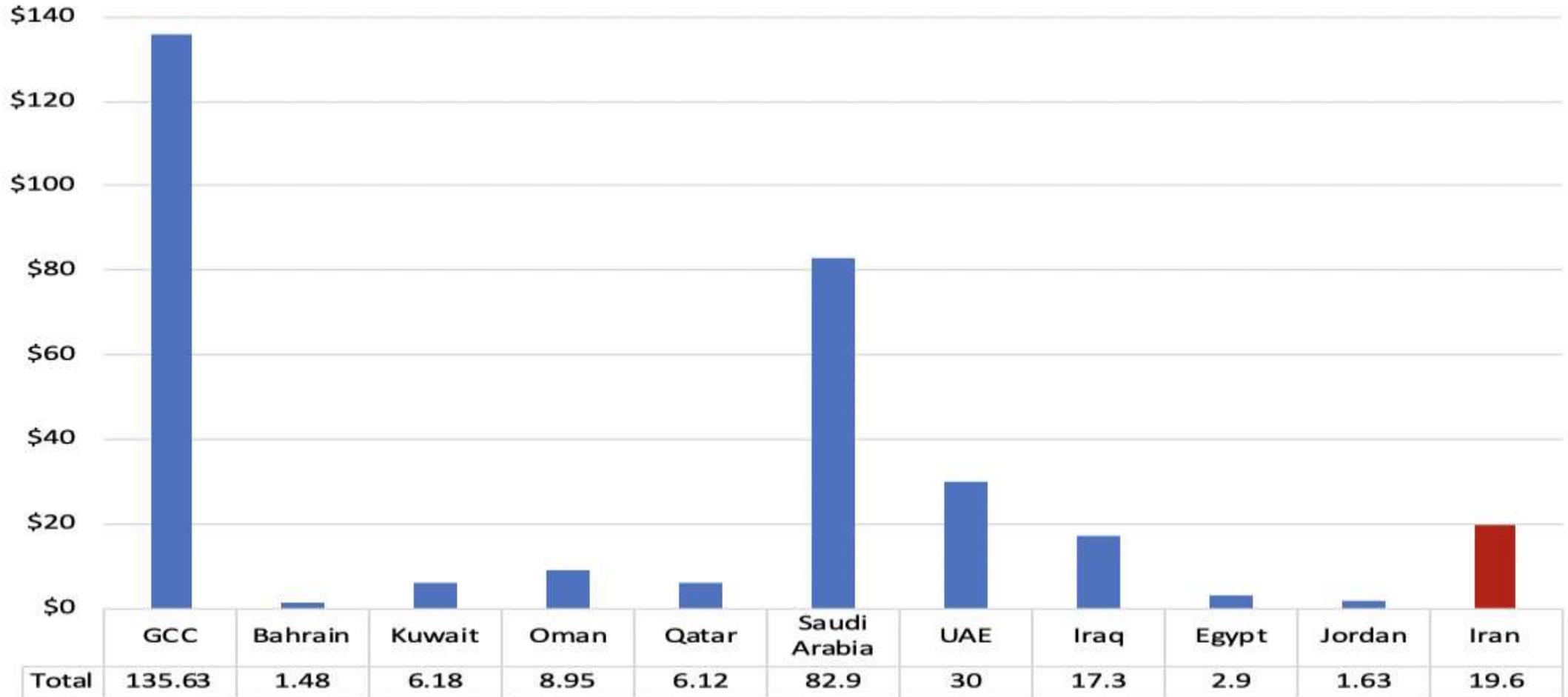
Source: Prepared by CRS. Incident data from Armed Conflict Location and Event Data Project (ACLED). Available at <https://acleddata.com>. Area of Influence data from IHS Janes Conflict Monitor, March 11, 2019.

# **Comparative Military Budgets and Military Spending as Percent of GDP**

# CSIS/IISS Estimate of Gulf Defense Expenditures in 2018

(in billions of constant 2018 \$USD)

**(9,300 + 7,629 = 16,929 Less at Sea. Peaks at 30,000, or around 1.4% of U.S. forces)**

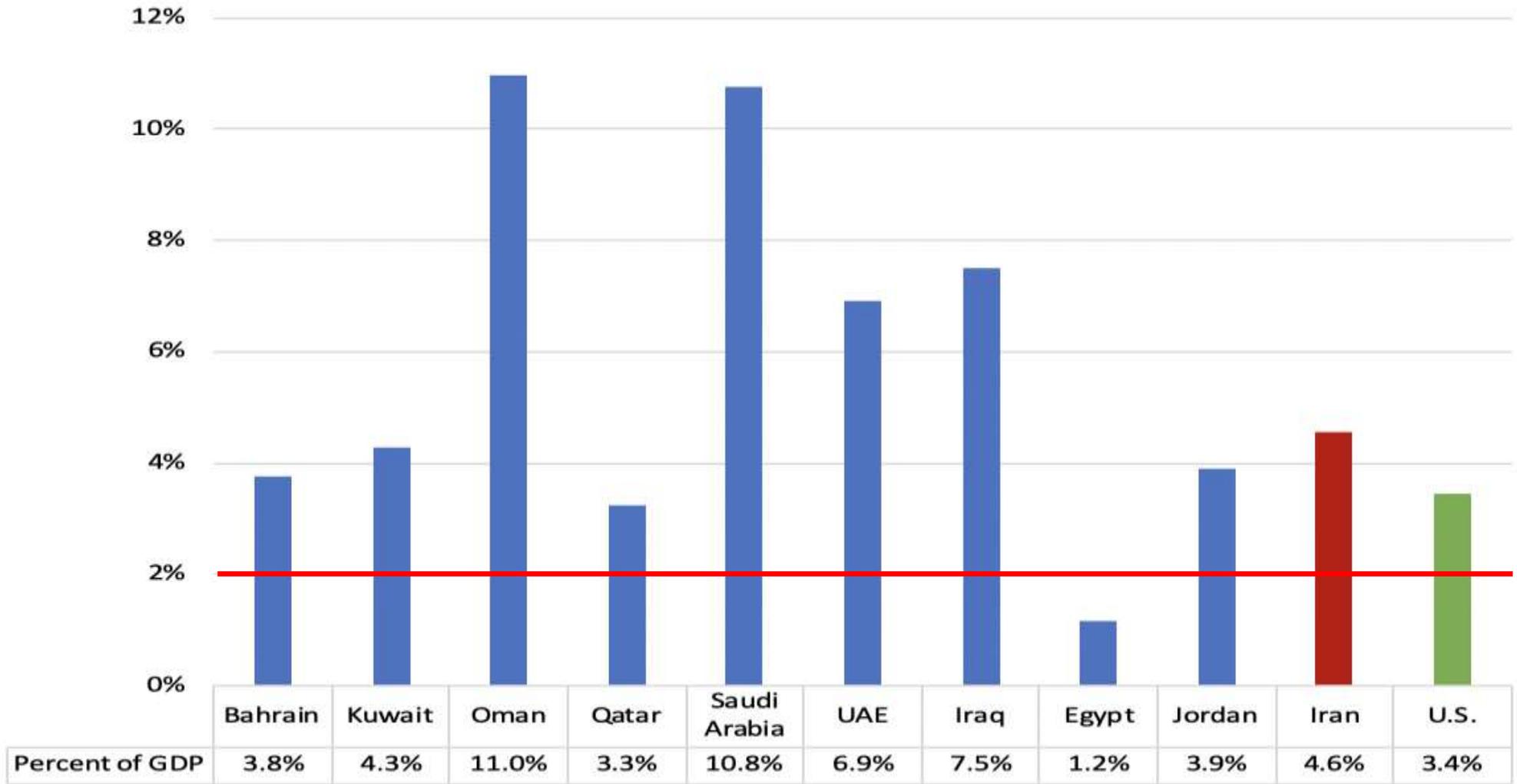


Note: UAE estimate is authors' estimate.

Source: Adapted by the authors from IISS, *Military Balance 2019, Chapter Seven, "The Middle East and North Africa."*

# CSIS/IISS Estimate of Gulf Defense Expenditures as Percent of GDP in 2018

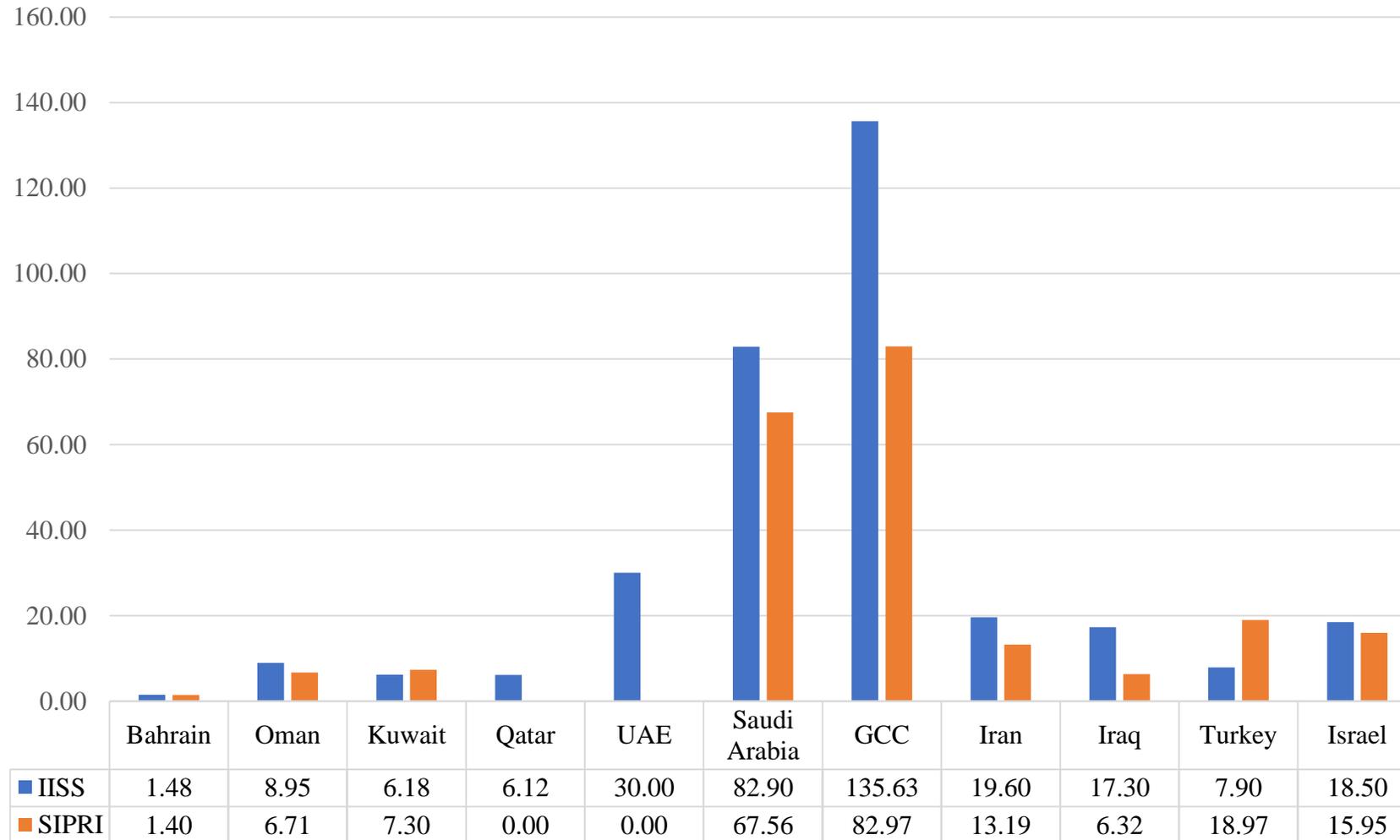
(9,300 + 7,629 = 16,929 Less at Sea. Peaks at 30,000, or around 1.4% of U.S. forces)



Note: UAE estimate is authors' estimate.

Source: Adapted by the authors from IISS, *Military Balance 2019, Chapter Seven, "The Middle East and North Africa."*

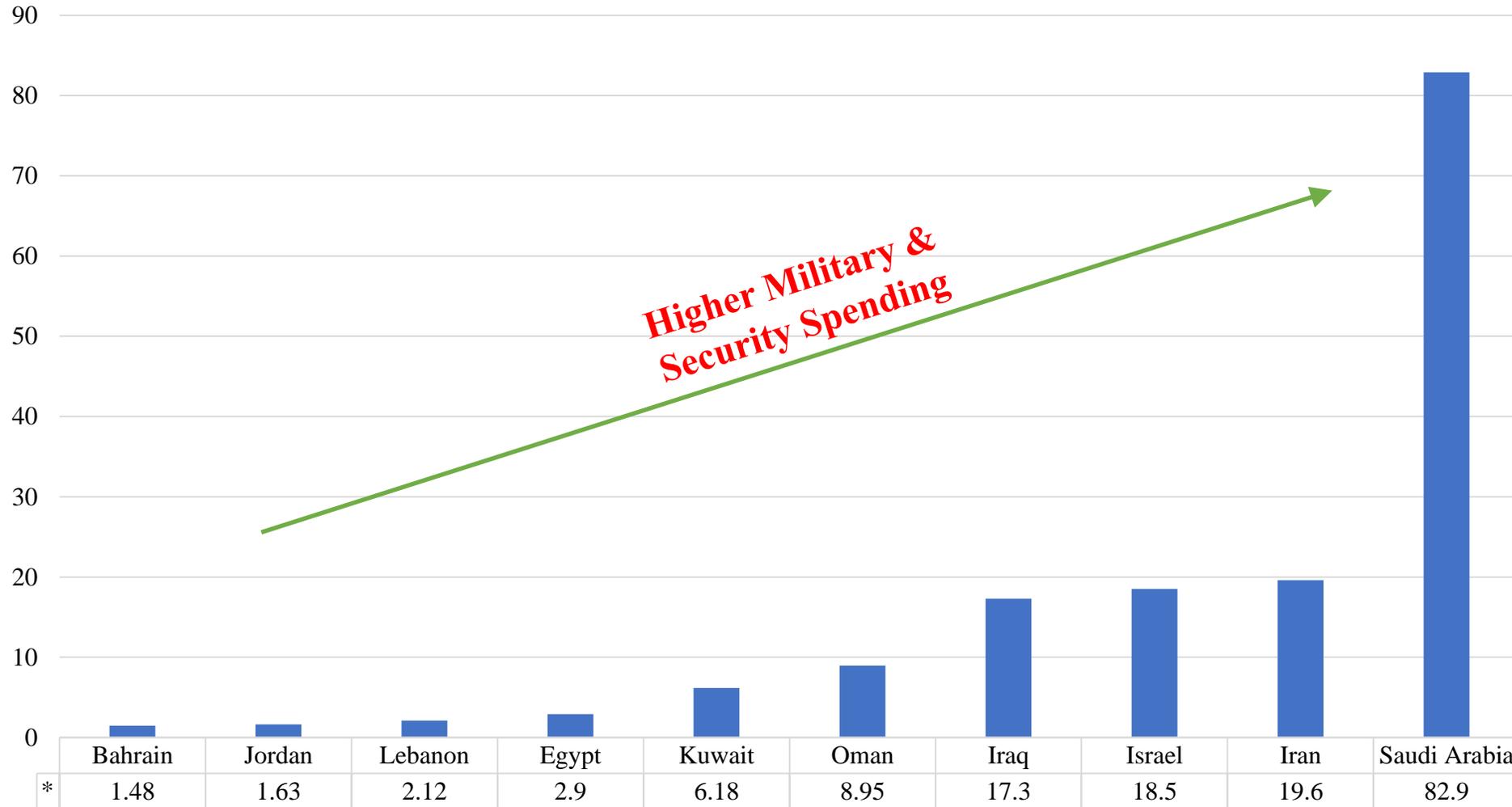
## Comparative Estimates of Defense Spending 2018 (current \$USD billions)



Note: UAE estimate is authors' estimate.

Source: Adapted by the author from IISS, *Military Balance 2018, Chapter Seven, "The Middle East and North Africa."* SIPRI Military Expenditure Database, 2017  
<https://www.sipri.org/databases/milex>. Also, IHS Markit Jane's Sentinel Security Assessment – The Gulf States

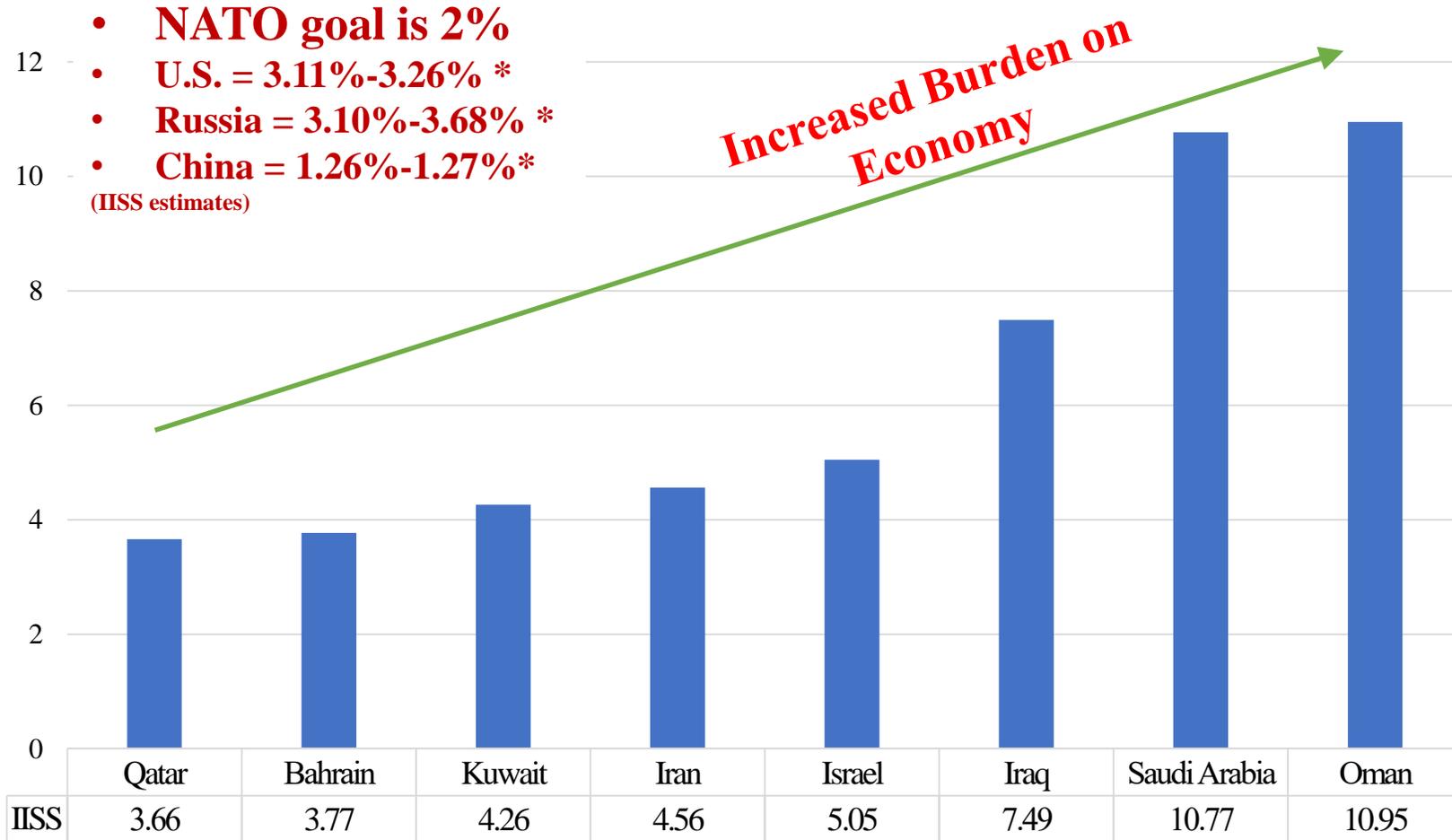
## IISS: Comparative Military and Security Spending in 2018 (Current \$US Billions)



Source: Adapted by the author from IISS, *Military Balance 2019, Chapter Seven, "The Middle East and North Africa."*

No data available for Qatar, Libya, UAE, and Syria

## Comparative Estimates of Military Spending as Percent of GDP, 2018



Note: Qatar & UAE data unavailable for IISS and IIHS & IHS respectively. Syria, and Yemen are at war and no estimate is possible, but must exceed 8%. NATO goals is 2%. U.S. is 3.26%, Russia is 3.68%, Chia is 1.27%.

Source: Adapted by the author from IISS, *Military Balance 2019, Chapter Seven, "The Middle East and North Africa."*  
 Also adapted by author from IHS Markit, *Jane's Sentinel Security Assessment – The Gulf States 2017*

## SIPRI: Low Iranian Military Spending Relative to Arb States, 2000-2018

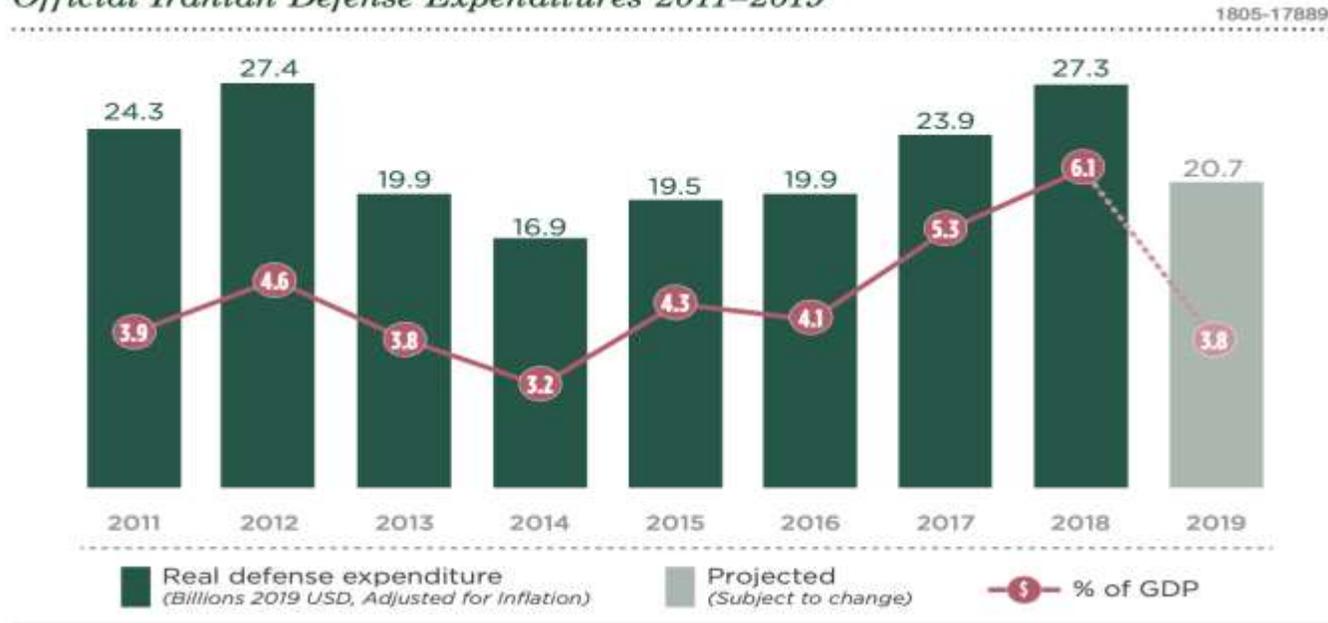
(Current \$USD millions)

Middle East	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Bahrain	359.0	372.3	444.1	516.0	531.9	513.3	574.2	642.6	719.9	828.2	842.8	1033.5	1182.2	1347.6	1475.3	1442.0	1505.5	1532.7	1396.8
Egypt	2627.7	2834.3	2902.8	2383.9	2369.7	2659.4	2952.5	3306.9	3779.9	4017.4	4407.3	4464.0	4557.7	4359.8	5085.1	5475.5	4513.0	2765.6	3110.0
Iran	8327.1	10378.8	3243.9	3717.1	5243.6	6796.7	8751.5	9330.9	11082.0	12584.6	13561.3	14277.7	16494.0	11997.2	9901.1	10588.8	12264.0	13931.2	13194.2
Iraq	..	..	..	..	613.7	1120.3	1236.1	1989.9	3116.3	3237.2	3752.9	4278.6	4141.1	7780.2	6921.3	9604.2	5970.4	7416.4	6318.0
Israel	9407.8	9607.4	10090.9	10827.5	11127.1	10919.2	11559.0	12128.9	14191.9	14030.4	14605.3	16343.2	15567.1	17319.7	18485.8	16969.4	14783.8	15581.6	15946.8
Jordan	529.3	528.9	521.9	611.8	586.7	603.7	701.6	1032.4	1358.4	1568.3	1557.9	1594.8	1472.8	1444.9	1548.9	1614.9	1768.3	1939.7	1957.7
Kuwait	2697.1	2685.7	2821.5	3130.7	3450.1	3509.4	3597.8	4115.7	4430.3	4208.9	4335.2	5393.5	5941.5	5698.1	5832.2	5735.1	6446.7	6764.6	7296.3
Lebanon	930.0	958.5	907.5	923.4	954.6	962.5	1009.0	1152.2	1169.5	1426.2	1585.4	1626.5	1757.2	1935.7	2270.1	2239.4	2606.5	2441.1	2775.6
Oman	1577.2	1819.9	1868.5	1969.3	2230.7	2739.0	3022.6	3244.6	3462.5	3367.5	3671.4	5000.7	9250.7	8766.3	8213.5	7533.6	7936.0	6802.7	6710.0
Qatar	..	..	761.0	784.6	772.4	887.5	1065.7	1562.2	2317.5	1948.4	1876.8	..	..	..	..	..	..	..	..
Saudi Arabia	19964.3	21026.7	18501.9	18747.5	20910.4	25392.0	29580.5	35469.5	38222.9	41267.2	45244.5	48530.9	56497.9	67020.0	80762.4	87185.9	63672.8	70400.0	67554.7
Syria	897.0	1022.5	1102.9	1436.2	1388.5	1450.3	1435.2	1599.0	1732.4	2182.0	2346.0	2494.9	..	..	..	..	..	..	..
Turkey	9993.7	7216.1	9050.4	10277.9	10920.8	12081.2	13363.3	15319.2	17127.3	16352.3	17939.4	17304.9	17958.2	18662.6	17772.2	15880.9	17854.0	17824.0	18967.1
UAE	5875.8	5798.0	5354.1	5834.7	6816.9	6604.2	7165.4	8461.0	11571.7	13836.4	17504.7	19181.8	19024.1	23561.1	22755.1	..	..	..	..
Yemen	473.7	540.1	737.4	807.3	735.5	815.6	822.1	1050.5	1196.4	1420.8	1448.2	1612.3	1618.8	1648.8	1714.8	..	..	..	..

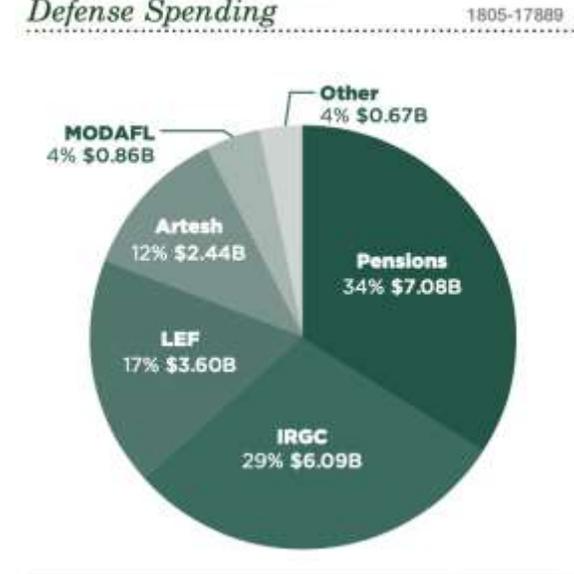
- **Iran never spent more than \$16.5 billion per year from 2000-2018**
- **Saudi Arabia alone averaged over \$50 billion per year and spent \$67.5 billion in 2018 vs. \$18.5 billion in 2002.**
- **UAE rose from \$5.4 billion in 2002 to \$25.6 billion in 2013. Estimated to have spent over \$24 billion from 2015 on.**

# DIA Estimate of Iranian Defense Spending

Official Iranian Defense Expenditures 2011–2019



Official 2019 Iranian Defense Spending



Following a significant increase in Iranian defense spending from 2014 to 2018 after the implementation of the JCPOA, Iran’s security forces have experienced a funding decrease in 2019. Key drivers of this defense budget decrease include the reimposition of U.S. oil and banking sanctions, the depreciation of the Iranian rial, and chronic economic mismanagement. Iran’s official defense budget for 2019 is approximately \$20.7 billion, roughly 3.8 percent of gross domestic product (GDP), as passed by the Iranian Majles. This total includes funding for the major components of Iran’s security apparatus, including the IRGC, Artesh, and LEF, as well as the Armed Forces General Staff (AFGS), the Ministry of Defense and Armed Forces Logistics (MODAFL), and security forces pensions. The decline in funding for 2019 is similar to the decrease following the implementation of multi-lateral oil and financial sanctions in 2012. Iran’s current defense funding may face further cuts as Iranian oil export revenue continues to decline.

Although it is smaller in size, the IRGC receives a greater proportion of the defense budget than the Artesh. In 2019, Iran allocated 29 percent of the defense budget to the IRGC, compared with 12 percent for the Artesh.

The government allocated 34 percent of the budget to pensions for all military personnel, and law enforcement personnel received about a third of the budget. Iran also distributes funding to its many partners and proxies, expenditures not fully accounted for in the official budget. Between 2012 and 2018, Iran provided more than \$16 billion to the Syrian regime, Hizballah, Iraqi Shia militias, the Huthis, and Palestinian groups.

Tehran has a variety of off-budget sources of funding, making it difficult to accurately estimate the true size and scope of Iranian defense spending. The supreme leader can authorize transfers to defense and security organizations from the National Development Fund, Iran’s reserve fund, as it reportedly has done to support military activities in Syria.<sup>120</sup> Moreover, the IRGC runs numerous private companies— most notably the wide-ranging *Khatemolania* (“seal of the prophets”) Construction Headquarters—and exploits its far-reaching political and social influence to raise additional revenue. The IRGC and IRGC-QF can also gain extra income through smuggling and other illicit activities in the region.

Iran’s new 5-year national development plan, released in July 2017, emphasizes a broader range of conventional capabilities than past plans. The plan continues to prioritize missiles and naval forces, but it also emphasizes air power, including the first public reference to offensive air capabilities in an Iranian strategic document. The plan also provides new focus on electronic warfare (EW) capabilities.

# **Comparative Military Arms Imports**

# U.S. Estimates Massive Arab Lead in Arms Imports:

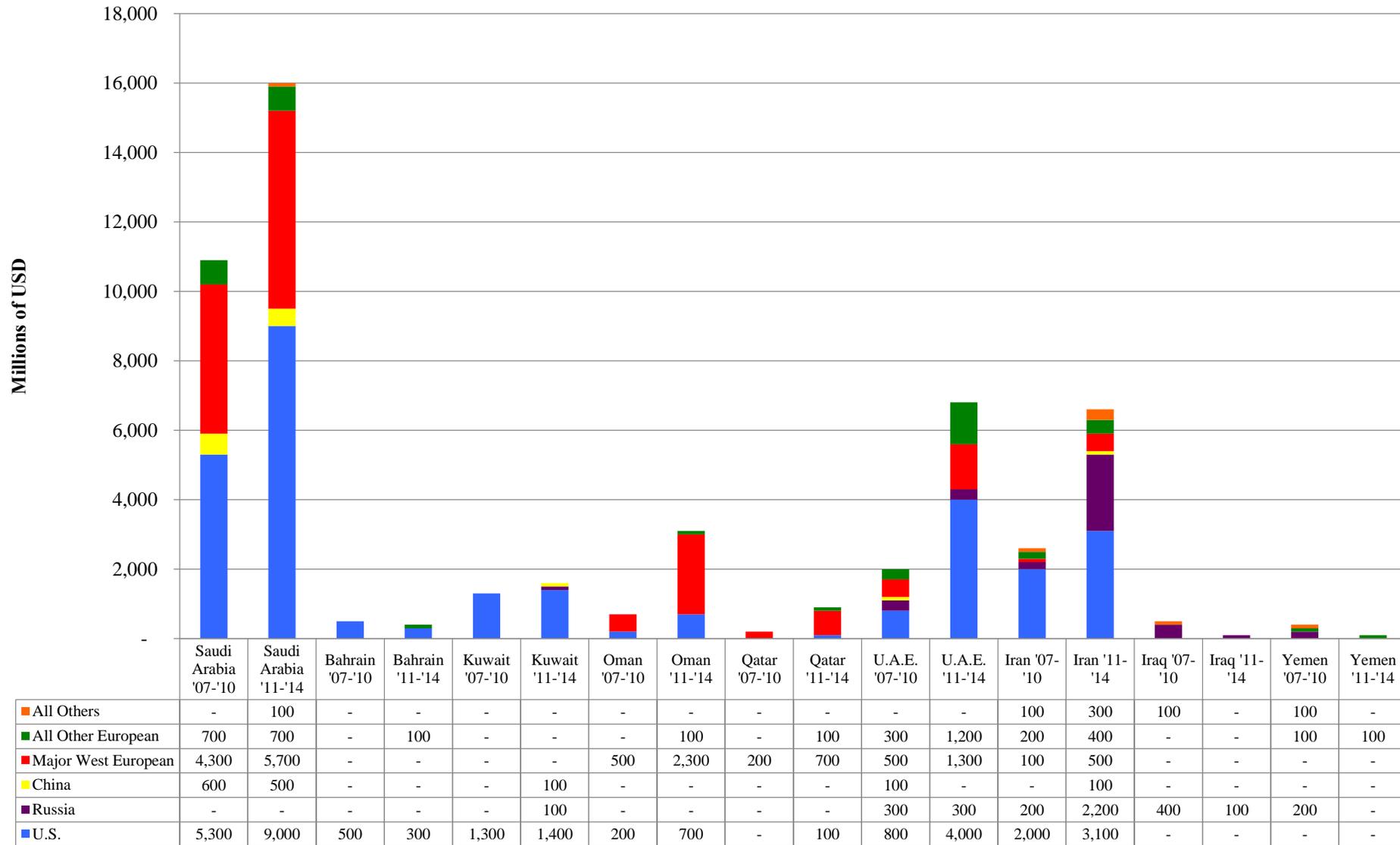
**Arab states placed \$199.7 billion in new orders 2008-2015. Iran placed \$900 million**

**(Gulf Arms Orders and Deliveries: 2008-2015 in millions of current U.S. Dollars)**

Country	Arms Orders			Arms Deliveries		
	<u>2008-2011</u>	<u>2012-2015</u>	<u>Total</u>	<u>2008-2011</u>	<u>2012-2015</u>	<u>Total</u>
Saudi Arabia	52,500	41,000	93,500	13,000	17,700	30,700
Other GCC Countries						
Bahrain	400	500	900	400	100	500
Kuwait	2,400	4,400	6,800	1,300	1,900	3,200
Oman	1,600	3,300	4,900	500	3,500	4,000
Qatar	1,000	6,200	7,200	300	1,700	2,000
UAE	13,500	22,900	36,500	3,700	5,500	9,200
Sub-Total	21,300	28,600	49,900	4,500	12,800	17,300
<b>Total GCC</b>	<b>92,700</b>	<b>106,900</b>	<b>199,700</b>	<b>23,700</b>	<b>43,200</b>	<b>120,700</b>
<b>Iraq</b>	<b>5,200</b>	<b>23,900</b>	<b>34,400</b>	<b>3,700</b>	<b>10,300</b>	<b>14,000</b>
Iran	300	600	900	300	100	400
Yemen	800	100	900	400	200	600
<b>Total</b>	<b>99,000</b>	<b>131,500</b>	<b>235,500</b>	<b>28,100</b>	<b>53,800</b>	<b>135,700</b>

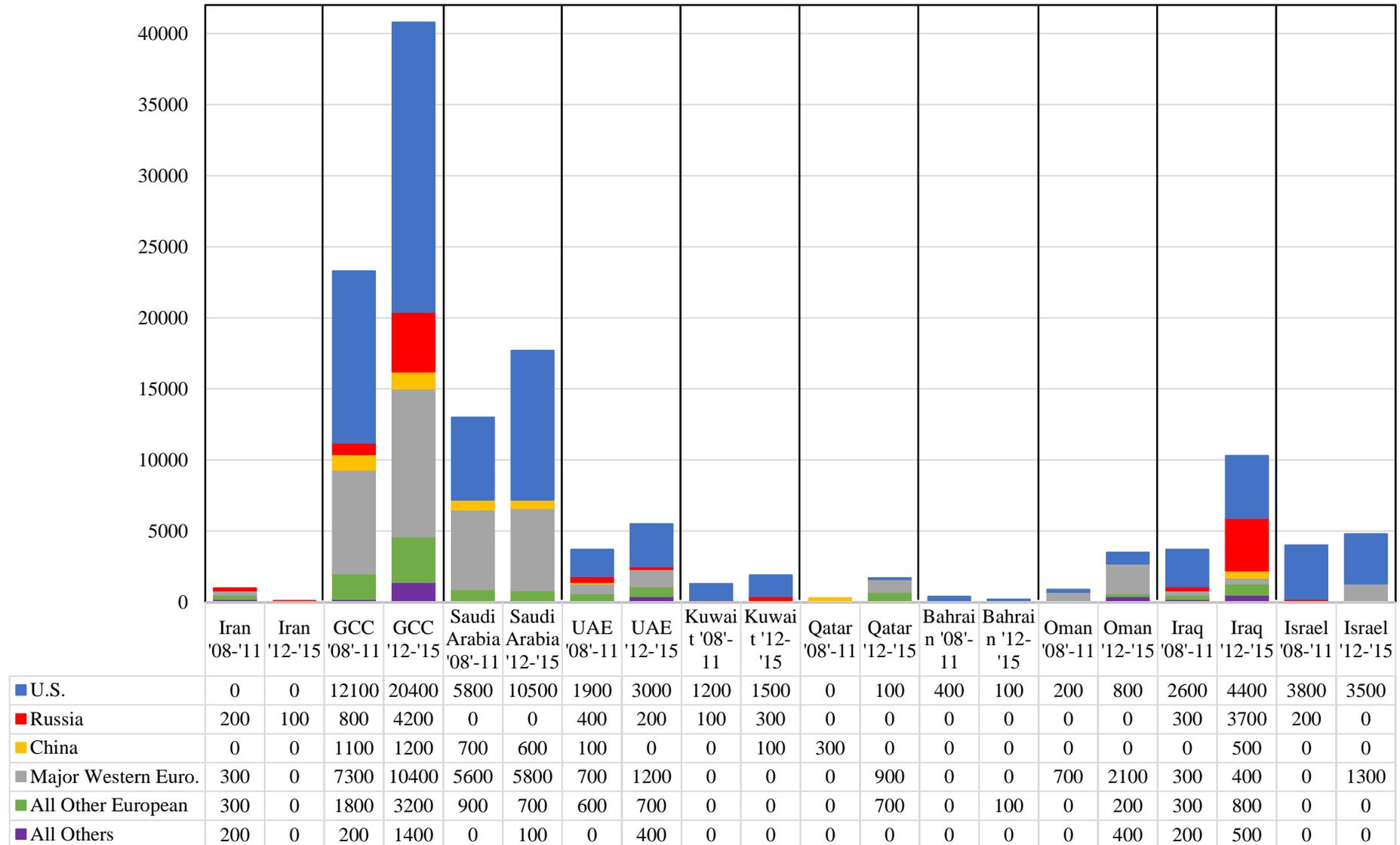
Source: Source: Catherine A. Theohary, Conventional Arms Transfers to Developing Nations, 2008-2015, Congressional Research Service, December 19, 2016, <https://www.google.com/search?q=Congressional+Research+Service%2C+data+on+arms+transfers&ie=utf-8&oe=utf-8>, p. 30.  
 . "0" represents any value below \$50 million or nil. All data are rounded to the nearest \$100 million .

## New Conventional Arms Deliveries by Supplier, 2008-2015 (in current millions \$USD)



Source: Catherine A. Theohary, *Conventional Arms Transfers to Developing Nations, 2007-2014*, Congressional Research Service, December 21, 2015, pp. 37-38. “0” represents any value below \$50 million or nil. All data are rounded to the nearest \$100 million .

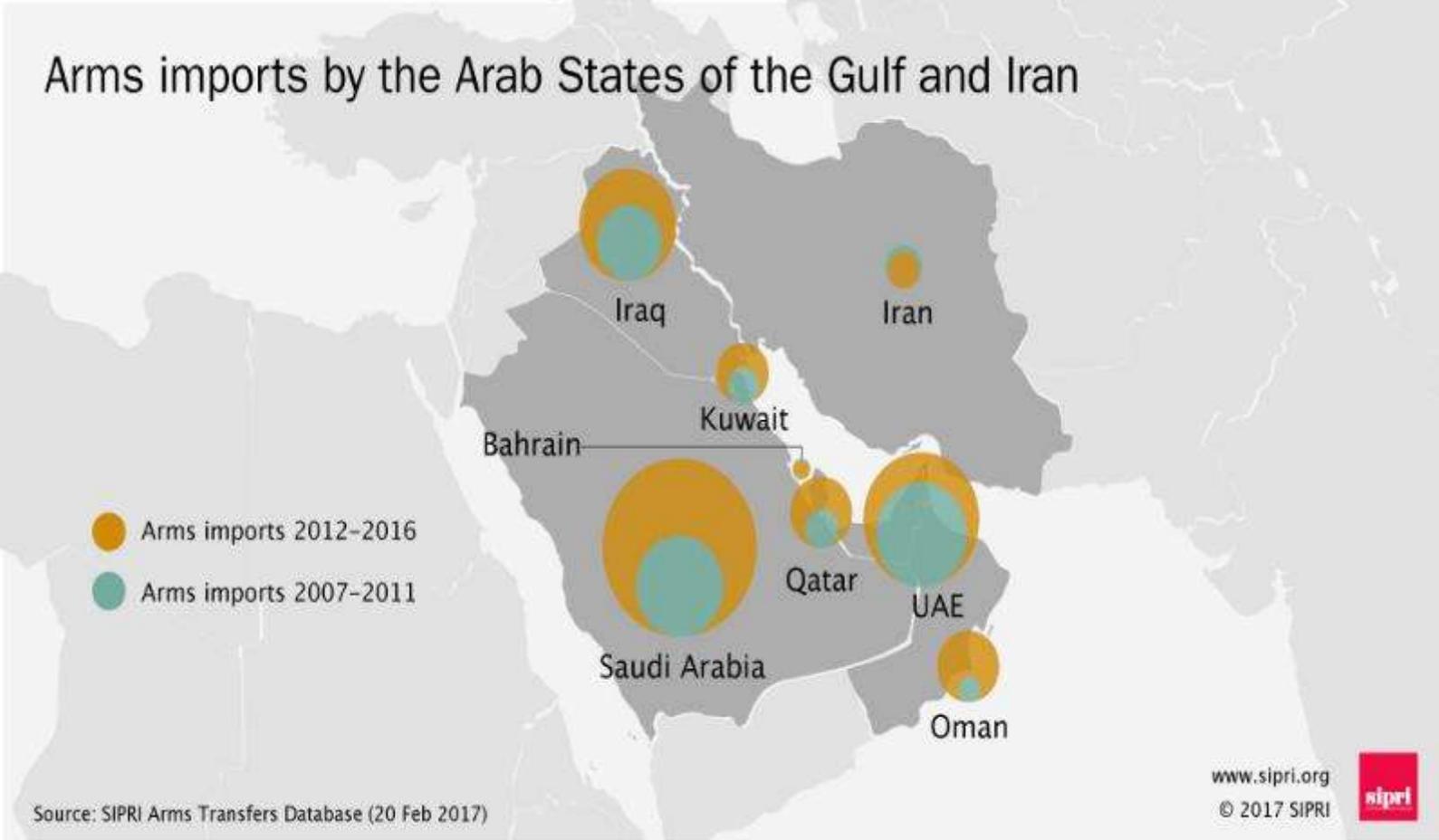
## New Conventional Arms Transfer Agreements by Supplier, 2008-2015 (in current millions \$USD)



Source: Catherine A. Theohary, *Conventional Arms Transfers to Developing Nations, 2008-2015*, Congressional Research Service, December 19, 2016, pp. 36. All data are rounded to the nearest \$100 million.

# SIPRI Estimate of Imports by the Arab States versus Imports by Iran

(Comparative value in Trend Indicator Values or TIVs )



Source: Source: Dr. Kate Blanchfield, Pieter D. Wezeman, and Siemon T. Wezeman , “The state of major arms transfers in 8 graphics,” SIPRI, February 22, 2017, <https://www.sipri.org/commentary/blog/2017/state-major-arms-transfers-8-graphics>.

# SIPRI: Comparative Gulf Arms Imports, 2000-2018

(Current \$USD billions)

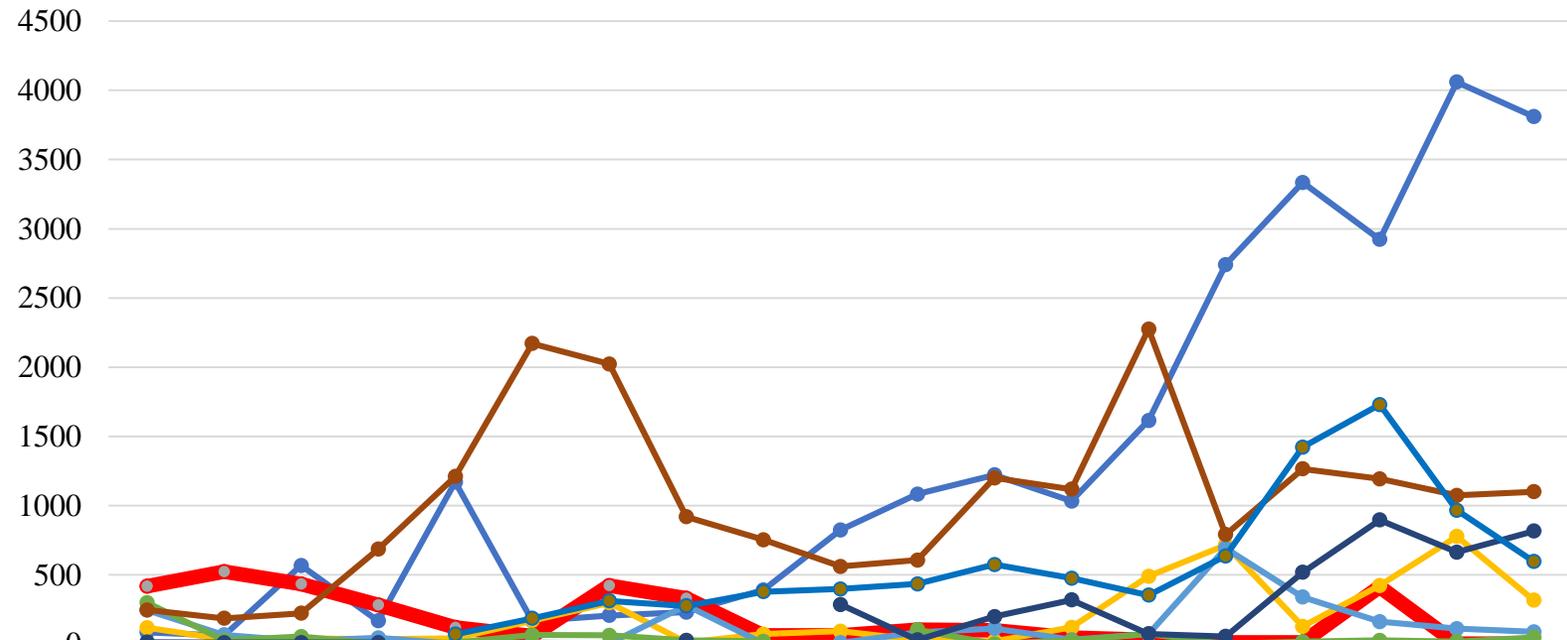
TIV of arms exports to all, 2000-2018

Figures are SIPRI Trend Indicator Values (TIVs) expressed in millions.

Figures may not add up due to the conventions of rounding.

A '0' indicates that the value of deliveries is less than 0.5m

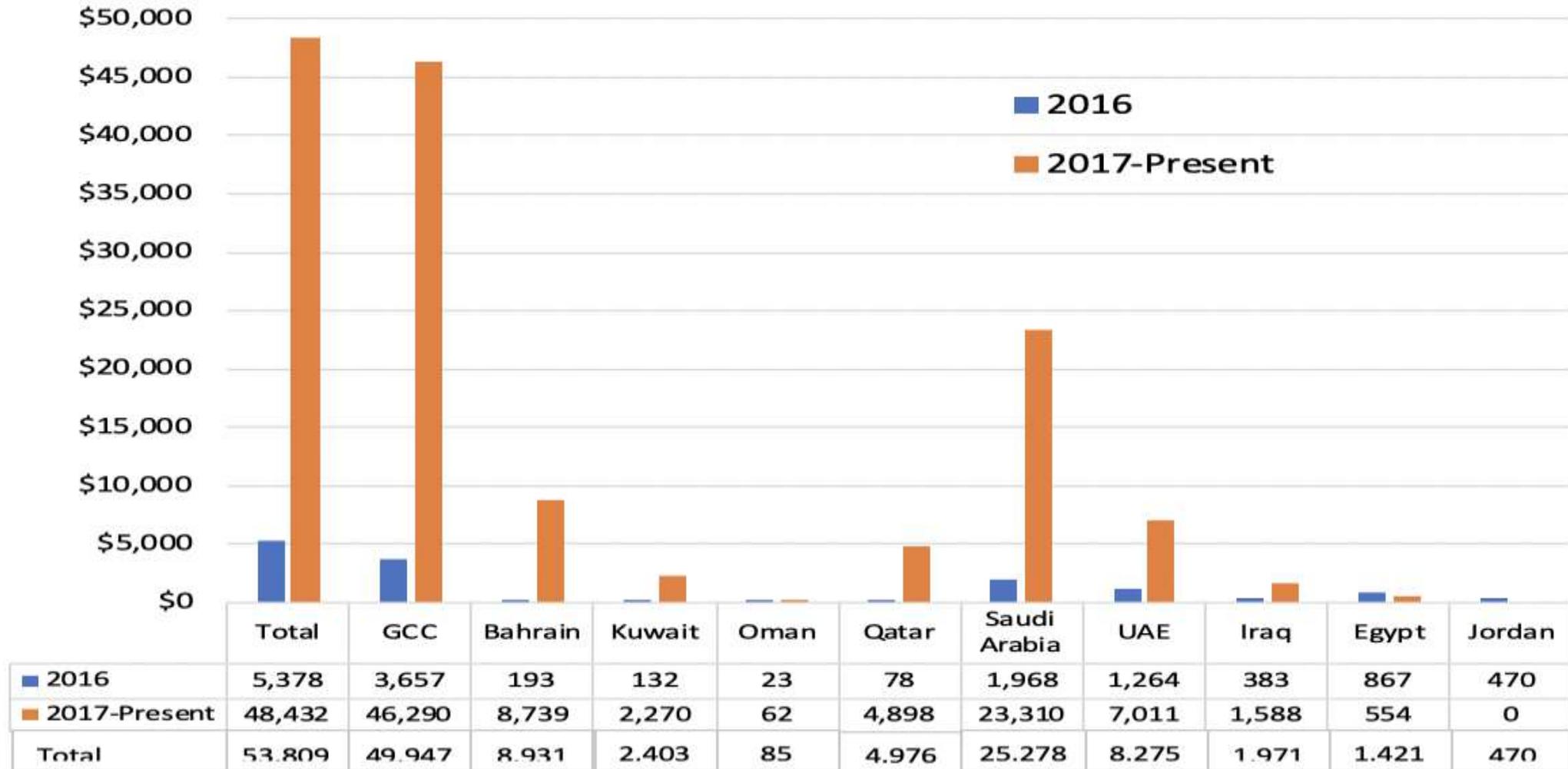
For more information, see <http://www.sipri.org/databases/armstransfers/sources-and-methods/>



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Saudi Arabia	85	61	567	167	1170	167	206	230	391	824	1083	1222	1033	1615	2741	3334	2923	4060	3810	25689
Iran	418	524	435	282	121	57	423	331	62	62	103	100	46	31	13	13	413	4	4	3442
Oman	118	33	40	36	41	170	298	12	72	93	30	21	120	490	715	127	423	777	316	3930
Kuwait	245	67	23	45	2	12	5	279	5	9	85	113	31	73	692	339	162	111	88	2386
Bahrain	299	28	54	1	10	66	63	26	20		103	1	26	72	1	17	26	19	48	879
Qatar	14	11	11	11				27		286	30	198	319	73	55	518	896	664	816	3929
UAE	247	186	222	685	1211	2171	2023	919	753	561	607	1200	1119	2275	791	1266	1193	1074	1101	19602
Iraq					71	186	312	275	378	398	434	574	476	353	636	1422	1730	966	596	8808

— Saudi Arabia — Iran — Oman — Kuwait — Bahrain — Qatar — UAE — Iraq

## Proposed U.S. Arms Sales to the Middle East Reported to Congress: 2016 and 2017 to 11.2019

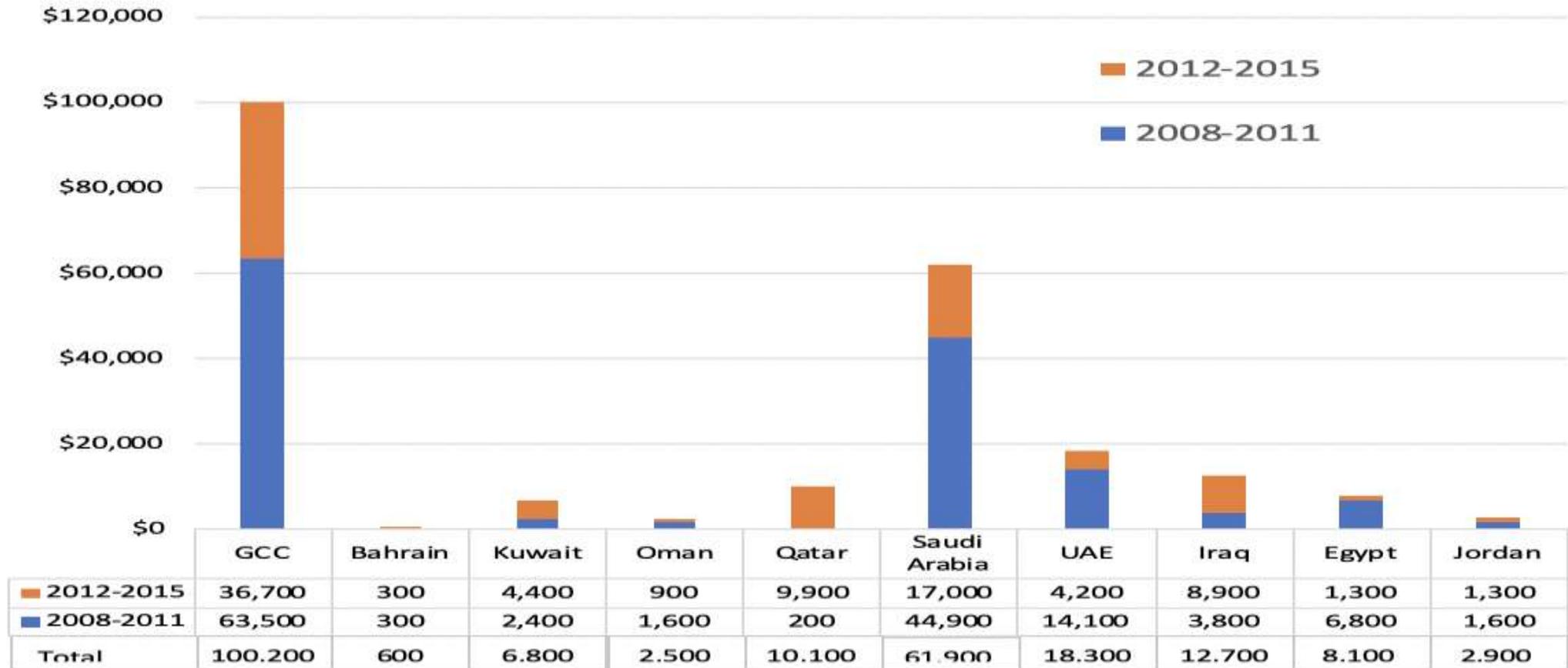


Source: Theohary, Catherine A. "Conventional Arms Transfers to Developing Nations, 2008-2015." Congressional Research Service, December 19, 2016.  
[https://crsreports.congress.gov/product/details?prodcode=R44716.](https://crsreports.congress.gov/product/details?prodcode=R44716)"

# New U.S. Arms Transfer Agreements to the Middle East: 2008-2015

(in millions of current \$USD)

**(GCC Total is \$100.2 Billion. Saudi Total alone is \$61.9 Billion)**



These figures rely on data from the Defense Security Cooperation Agency (DSCA) within the Department of Defense. The DSCA has not updated its Fiscal Year Series Report since September 30, 2017. Therefore, the entirety of the data for 2016 – and part of the 2017-present data – rely exclusively on the “Total Sales Agreements” section for each country in this report. In other words, these are sales agreed to and signed onto by Congress. The data from October 1, 2017, to the present are sales that have been approved by the State Department, but are yet to be approved by Congress. Therefore, it is likely that these numbers are larger than what would theoretically appear on an updated Fiscal Year Series Report, but they are the best available figures without making any additional conjectures.

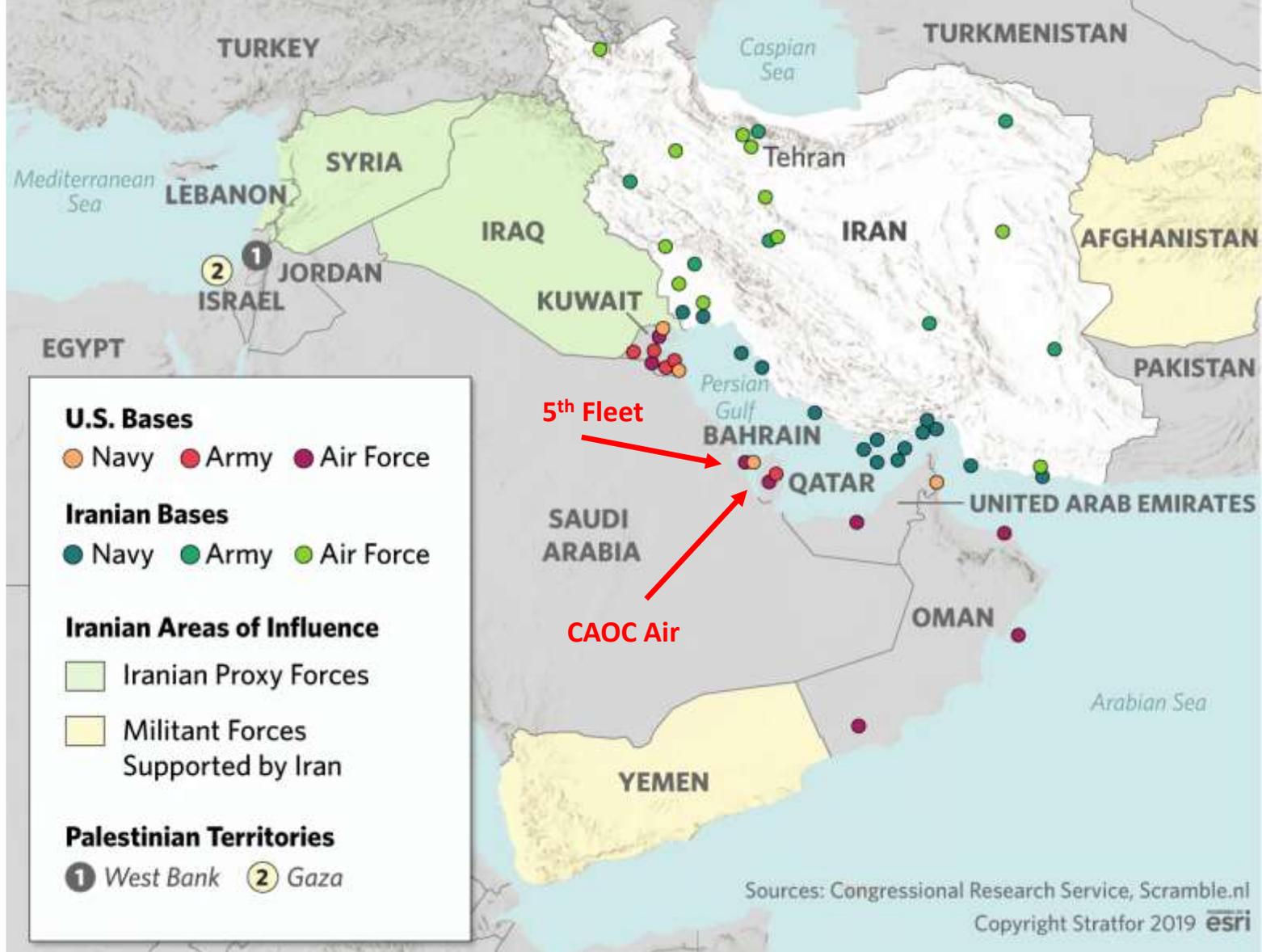
Source: Defense Security Cooperation Agency, Department of Defense, *DSCA Historical Facts Book & Fiscal Year Series*, September 30, 2017. <https://www.dsca.mil/resources/dsca-historical-facts-book-fiscal-year-series>. Also, Defense Security Cooperation Agency, Department of Defense *Major Arms Sales*, November 20, 2019. <https://www.dsca.mil/major-arms-sales>.

# U.S. Forward Deployed Forces

# Strategic Benefits to U.S.

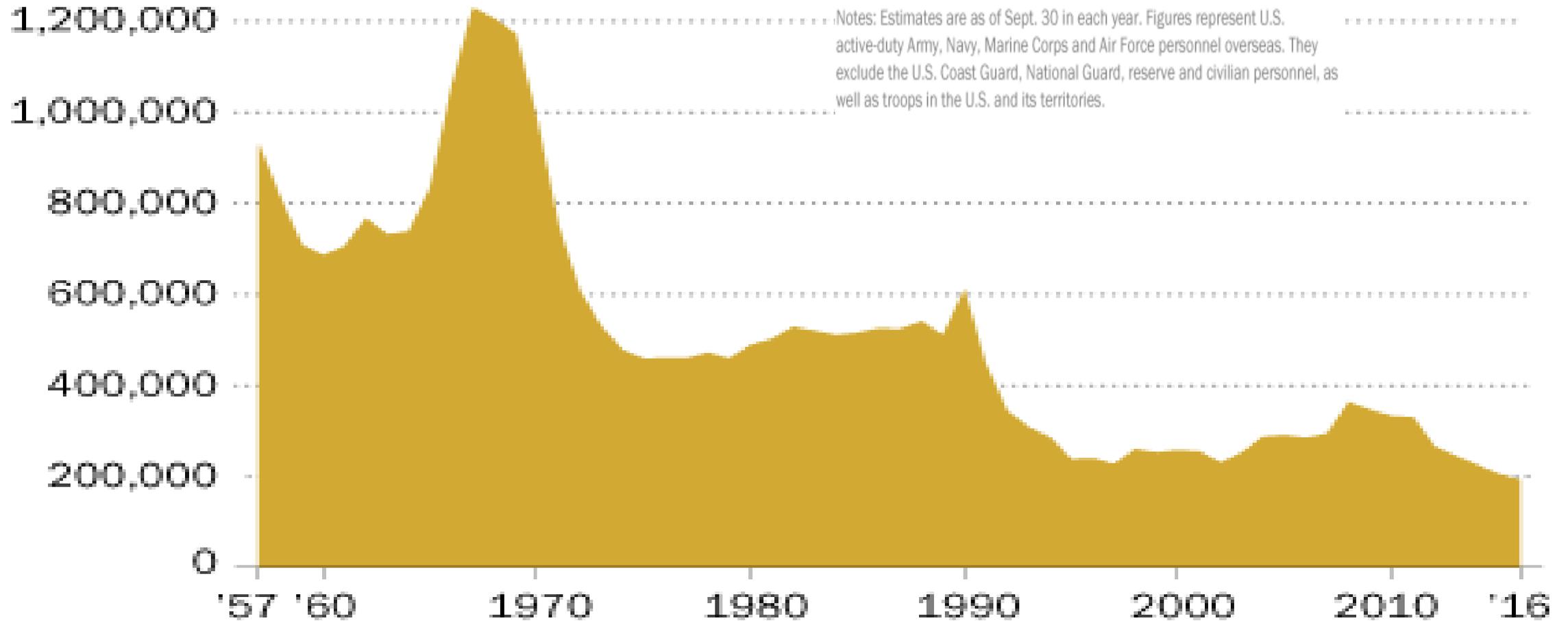
- **Counter/Limit/Reverse Iranian influence and deter or defeat Iran, use of Syrian, Hezbollah, and Yemeni proxies**
- **Limit Arab tensions and self-destructive fault lines, provide more effective coordination and leadership of Gulf/GCC forces**
  - **Coordination of joint operations battle management, C3, Intelligence, Surveillance and Reconnaissance**
  - **Critical in checking irregular warfare, gray area and proxy threats**
  - **Critical to effective air and missile defense**
  - **Key to coordinated naval-air-missile operations**
- **Maintain stable flow of 20% of world oil supplies, 4.1 TCF of LNG: Critical to stability of U.S. and Global economy.**
  - **Helps to secure Gulf, Gulf of Oman, Indian Ocean, Red Sea, Suez (See following three slides)**
- **Steady flow of Gulf Oil and Gas critical to U.S. economy and jobs**
  - **Import dependence on Asian manufactures far higher than past dependence on crude oil imports. CIA estimates total U.S. imports equaled \$2.631 trillion in 2017, or 13.5% of GDP. 41% came from Asian countries dependent on Gulf oil: China, Japan, South Korea, Hong Kong, Singapore, Taiwan.**
- **Provides options to to limit level of escalation: Threats, proxy, limited war, major war**
- **Helps contain Russian, Turkish, Chinese presence/influence/arms sales**
- **Major strategic leverage relative to China, support of India, access to Indian Ocean, impact on SE Asia**
- **Helps bring stability to Iraq: Sectarian, PMFs, Ethnic, Extremist, Iran, U.S., Civil war**
- **Provides ability to limit impact of failed governance, weak economic development, internal conflicts, and political upheavals**
- **Key advantages in containing and defeating ISIS, AQAP, other-Extremism**
- **Limits risk of nuclear crisis, chemical weapons, (BW?)**
- **May help end Yemen War, aid recovery**

# Key Iranian and U.S. Military Bases



# Trend in U.S. Overseas Military Deployments: 60 Year Low in 2016

## *Number of active-duty personnel overseas*



Source: Defense Manpower Center, Department of Defense, PEW Research Center, [https://www.pewresearch.org/fact-tank/2017/08/22/u-s-active-duty-military-presence-overseas-is-at-its-smallest-in-decades/ft\\_17-08-21\\_usmilitary\\_locations\\_trend-1/](https://www.pewresearch.org/fact-tank/2017/08/22/u-s-active-duty-military-presence-overseas-is-at-its-smallest-in-decades/ft_17-08-21_usmilitary_locations_trend-1/)

# Most U.S. troops overseas are in Europe or Asia

*Number of active-duty personnel by region in 2016*



Notes: Estimates are as of Sept. 30, 2016. Figures exclude the U.S. Coast Guard, National Guard, reserve and civilian personnel, as well as troops in the U.S. and its territories. Source: Defense Manpower Data Center.

PEW RESEARCH CENTER

Source: Defense Manpower Center, Department of Defense, PEW Research Center, [https://www.pewresearch.org/fact-tank/2017/08/22/u-s-active-duty-military-presence-overseas-is-at-its-smallest-in-decades/ft\\_17-08-21\\_usmilitary\\_locations\\_trend-1/](https://www.pewresearch.org/fact-tank/2017/08/22/u-s-active-duty-military-presence-overseas-is-at-its-smallest-in-decades/ft_17-08-21_usmilitary_locations_trend-1/)

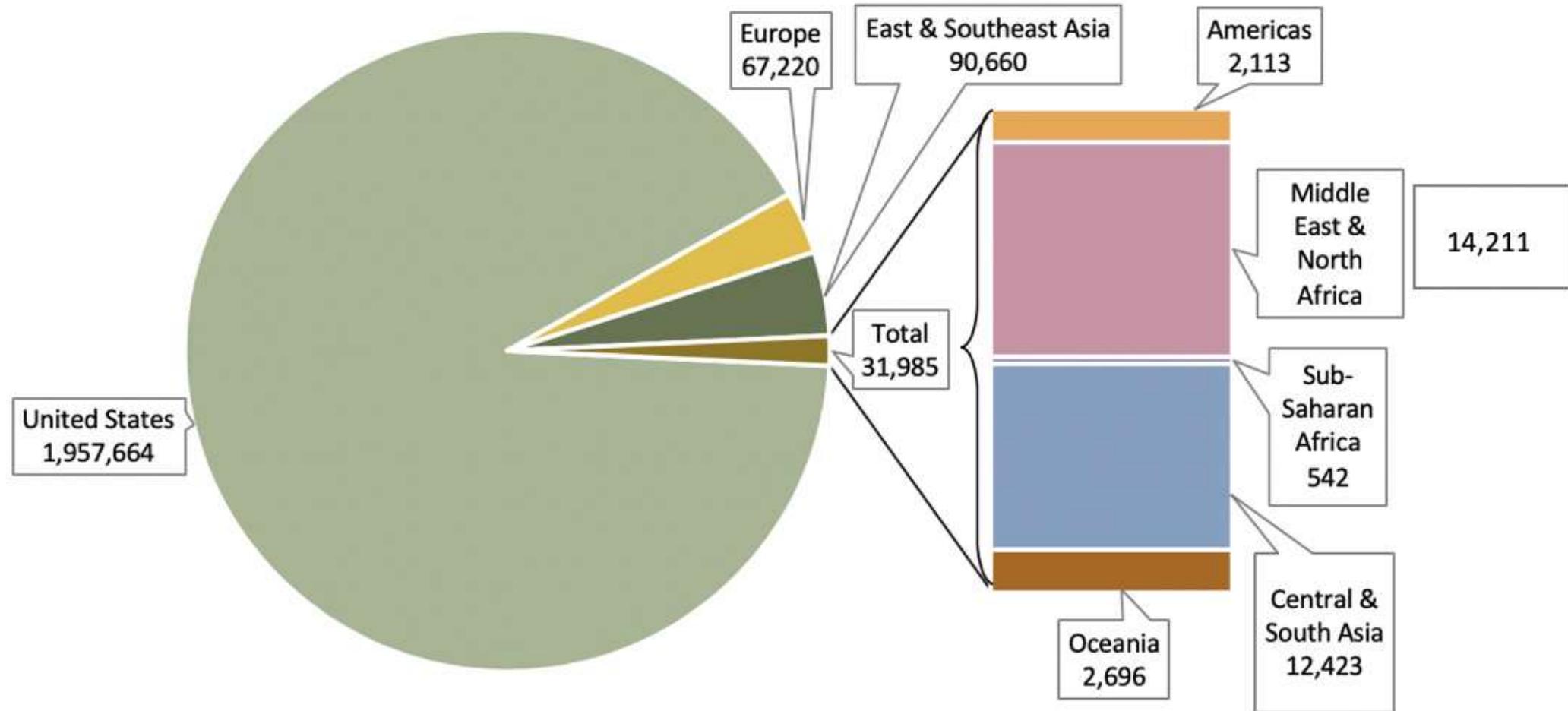
# U.S. Military Deployments in the Gulf and NATO in 2016



Source: Defense Manpower Center, Department of Defense, PEW Research Center, [https://www.pewresearch.org/fact-tank/2017/08/22/u-s-active-duty-military-presence-overseas-is-at-its-smallest-in-decades/ft\\_17-08-21\\_usmilitary\\_locations\\_trend-1/](https://www.pewresearch.org/fact-tank/2017/08/22/u-s-active-duty-military-presence-overseas-is-at-its-smallest-in-decades/ft_17-08-21_usmilitary_locations_trend-1/)

# 9% of U.S. Forces are Deployed PCS Overseas

Total in U.S: 1,957,664 (91%). Total Overseas: 189,865 (9%). Total Worldwide: 2,147,529

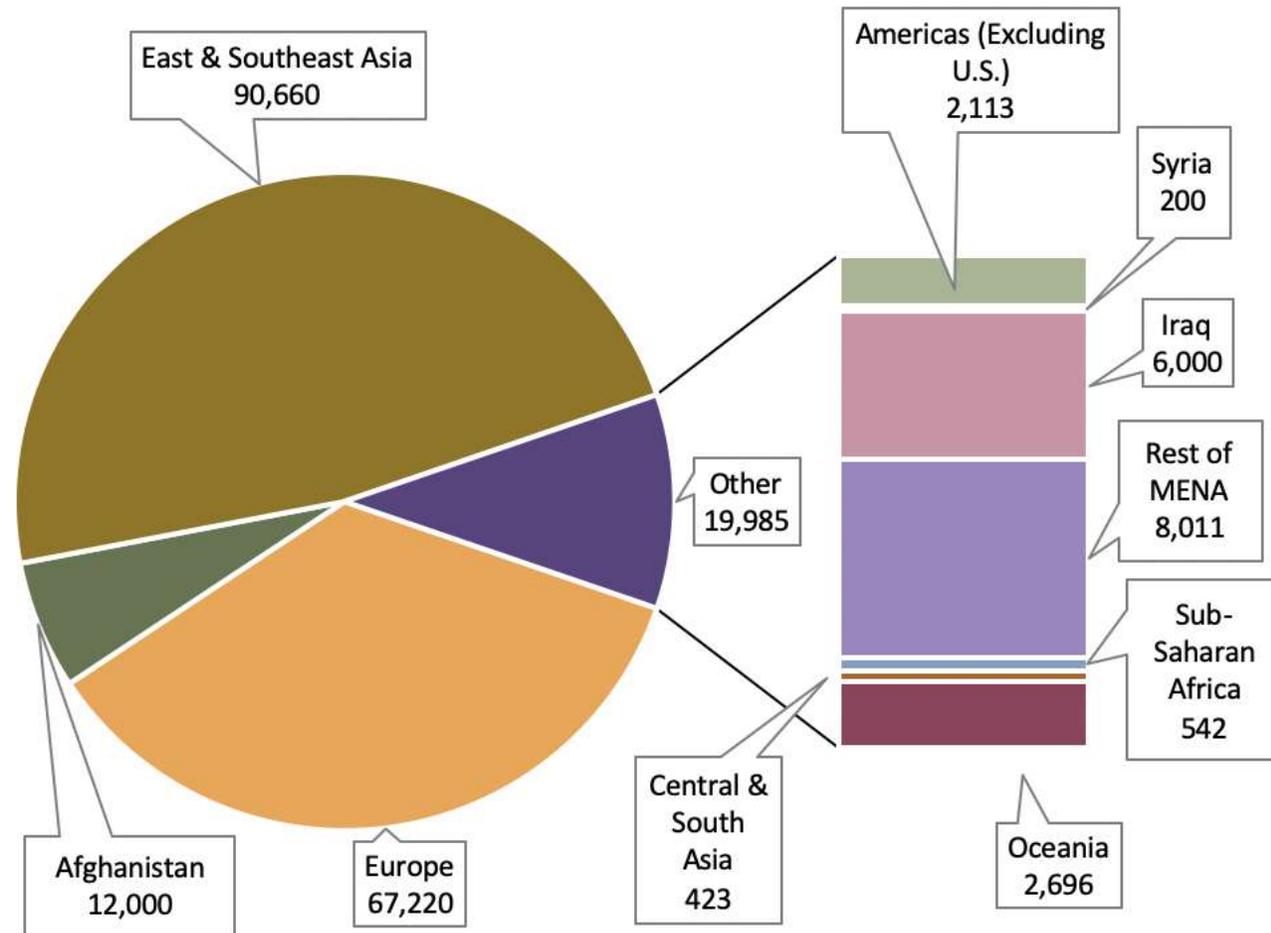


These troop counts are as of June 2019, and do not account for recent announcements of new troop deployments, except for current deployments to Syria, Iraq, and Afghanistan which are not included in the DoD database, and which are therefore filled in from reports. Furthermore, these numbers are based on soldiers' permanent stations and does not account for temporary duty (TDY) locations.

Source: "DoD Workforce Report on Military and Civilian Personnel by Service/Agency by State/Country," *Defense Manpower Data Center*, June 2019, [https://www.dmdc.osd.mil/appj/dwp/dwp\\_reports.jsp](https://www.dmdc.osd.mil/appj/dwp/dwp_reports.jsp). Troop numbers in Syria, Iraq, and Afghanistan are based on current reporting, found at: Gibbons-Neff, Thomas, and Eric Schmitt. "Despite Vow to End 'Endless Wars,' Here's Where About 200,000 Troops Remain." *New York Times*, October 21, 2019. <https://www.nytimes.com/2019/10/21/world/middleeast/us-troops-deployments.html>

# 9% of U.S. Forces are Deployed PCS in Middle East

Total in U.S.: 1,957,664 (91%). Total Overseas: 189,865 (9%). Total in MENA: 14,211 (0.7%)

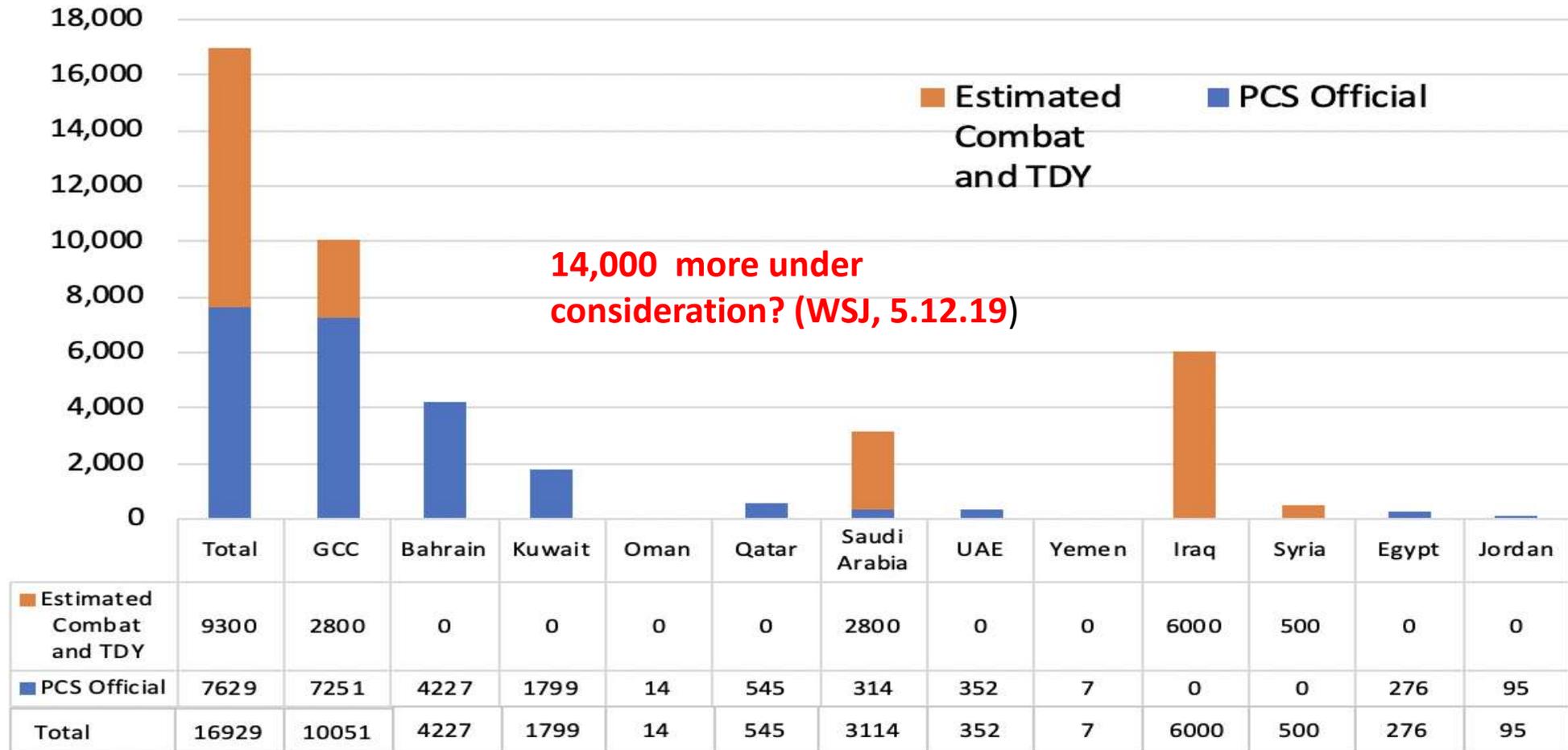


Source: "DoD Workforce Report on Military and Civilian Personnel by Service/Agency by State/Country," *Defense Manpower Data Center*, June 2019, [https://www.dmdc.osd.mil/appj/dwp/dwp\\_reports.jsp](https://www.dmdc.osd.mil/appj/dwp/dwp_reports.jsp). Troop numbers in Syria, Iraq, and Afghanistan are based on current reporting, found at: Gibbons-Neff, Thomas, and Eric Schmitt. "Despite Vow to End 'Endless Wars,' Here's Where About 200,000 Troops Remain." *New York Times*, October 21, 2019. <https://www.nytimes.com/2019/10/21/world/middleeast/us-troops-deployments.html>

# Current Total U.S. Military Deployments in the Gulf

**(9,300 + 7,629 = 16,929 Less Personnel at Sea: Total seems under 24,000.**

**Some estimates put total for MENA + Afghanistan as high as 40,000-60,000)**



Source: "DoD Workforce Report on Military and Civilian Personnel by Service/Agency by State/Country," Defense Manpower Data Center, September 2019, [https://www.dmdc.osd.mil/appj/dwp/dwp\\_reports.jsp](https://www.dmdc.osd.mil/appj/dwp/dwp_reports.jsp). Troop numbers in Syria, Iraq, and Afghanistan are based on current reporting and statements made by the U.S. Secretary of Defense, found at: Eric Schmitt, "U.S. Resumes Large-Scale Operations Against ISIS in Northern Syria." *New York Times*, November 25, 2019. <https://www.nytimes.com/2019/11/25/us/politics/us-syria-isis.html>; and <https://www.defense.gov/Newsroom/Transcripts/Transcript/Article/1988194/departement-of-defense-press-briefing-by-secretary-esper-and-general-milley-in-t/>

# IISS Estimate of Nominal U.S. Deployments in the MENA/ Gulf Region in Early 2019

**(25,500 in Gulf, 36,954 in MENA, Other Gulf-Related, Less Personnel at Sea)**

**US Central Command** • *Operation Freedom's Sentinel* 8,000

**ARABIAN SEA: US Central Command** • US Navy • 5th Fleet:  
1 SSGN; 1 DDGHM; 1 LSD; **Combined Maritime Forces** • TF  
53: 1 AE; 2 AKE; 1 AOH; 3 AO

**BAHRAIN: US Central Command** • 5,000; 1 HQ (5th Fleet); 2  
AD bty with MIM-104E/F *Patriot* PAC-2/3

**BRITISH INDIAN OCEAN TERRITORY: US Strategic Command**  
• 300; 1 Spacetrack Optical Tracker at Diego Garcia; 1  
ground-based electro-optical deep space surveillance  
system (*GEODSS*) at Diego Garcia

**DJIBOUTI: US Africa Command** • 4,700; 1 tpt sqn with C-  
130H/J-30 *Hercules*; 1 spec ops sqn with MC-130H/J; PC- 12  
(U-28A); 1 CSAR sqn with HH-60G *Pave Hawk*; 1 CISR UAV  
sqn with MQ-9A *Reaper*; 1 naval air base

**EGYPT: MFO** 454; elm 1 ARNG recce bn; 1 ARNG spt bn

**IRAQ: US Central Command** • *Operation Inherent Resolve*  
5,000; 1 div HQ; 1 cav bde(-); 1 EOD pl; 1 atk hel sqn with  
AH-64D *Apache*

**ISRAEL: US Strategic Command** • 1 AN/TPY-2 X-band radar  
at Mount Keren

**JORDAN: US Central Command** • *Operation Inherent  
Resolve* 2,300: 1 FGA sqn with 12 F-15E *Strike Eagle*; 1 CISR  
UAV sqn with 12 MQ-9A *Reaper*

**QATAR: US Central Command** • 10,000: 1 bbr sqn  
with 6 B-1B *Lancer*; 1 ISR sqn with 4 RC-135 *Rivet Joint*;  
1 ISR sqn with 4 E-8C *JSTARS*; 1 tkr sqn with 24 KC- 135R/T  
*Stratotanker*; 1 tpt sqn with 4 C-17A *Globemaster*; 4 C-130H/J-30  
*Hercules*; 2 AD bty with MIM-104E/F *Patriot* PAC-2/3

**US Strategic Command** • 1 AN/TPY-2 X-band radar

**SAUDI ARABIA: US Central Command** • 500

(3,000-THAAD)

**SYRIA: US Central Command** • *Operation Inherent Resolve*  
2,000+; 1 ranger unit; 1 mne bn; 1 arty bty with M777A2; 1 MRL  
bty with M142 HIMARS

**TURKEY: US European Command** • 1,700; 1 tkr sqn with 14 KC-  
135; 1 ELINT flt with EP-3E *Aries II*; 1 air base at Incirlik; 1  
support facility at Ankara; 1 support facility at Izmir

**US Strategic Command** • 1 AN/TPY-2 X-band radar at Kürecik

**UNITED ARAB EMIRATES: US Central Command** • 5,000: 1 ftr  
sqn with 6 F-22A *Raptor*; 1 ISR sqn with 4 U-2; 1 AEW&C sqn  
with 4 E-3 *Sentry*; 1 tkr sqn with 12 KC-10A; 1 ISR UAV sqn with  
RQ-4 *Global Hawk*; 2 AD bty with MIM-104E/F *Patriot* PAC-2/3

# Key U.S. CAOC Capabilities for Coordinating Air Operations

**The Combat Plans Division (CPD)** applies operational art to develop detailed execution plans for air and space operations. As one of five divisions within the Combined Air Operations Center (CAOC), the CPD enables the CAOC to meet its mission as the primary command and control facility for Coalition air operations in the U.S. Central Command's (USCENTCOM) Area of Responsibility (AOR). CPD produces execution plans that integrate and synchronize specific air and space capabilities and assets, with the ground commander's intent in order to accomplish the Combined Forces Command (CFC) mission. The end result is the publication and dissemination of the Air Tasking Order (ATO), Special Instructions (SPINS), and other planning and tasking documents.

**The Intelligence, Surveillance and Reconnaissance Division (ISRD)** provides the Combined Force Air Component Commander (CFACC), Combined Air Operations Center (CAOC) and subordinate units with intelligence analysis, ISR planning and targeting support to provide situational awareness to help leadership with decision making. As one of five divisions, the ISRD enables the CAOC to meet its mission as the primary command and control facility for Coalition air operations in the U.S. Central Command's (USCENTCOM) Area of Responsibility (AOR). The ISRD provides comprehensive air domain awareness and targeting support critical to planning and executing theater-wide airpower operations to meet CFACC objectives. The ISRD performs post war analysis to ensure we are fighting with the highest level of efficiency to help improve our warfighting abilities for the future. ISR personnel plan and monitor the execution of airborne ISR operations 24/7 and adjust ISR plans to meet battlespace demands and provide situation awareness to the warfighter.

**The Strategy Division (SRD)** supports the achievement of theater objectives by developing, refining, disseminating, and assessing the Combined Force Air Component Commander's (CFACC) air and space strategy. As one of five divisions within the Combined Air Operations Center, the Strategy Division enables the CAOC to meet its mission as the primary command and control facility for Coalition air operations in the U.S. Central Command's (USCENTCOM) Area of Responsibility (AOR). The Strategy Division represents the CFACC's core, long-range and near-term operational planning and assessment capability. The SRD conducts long-range planning by developing and maintaining the joint air operations plan (JAOP), and performs near-term planning primarily through the air operations directive (AOD) development process. The AOD provides guidance to the Combat Plans Division in producing the daily air tasking order, which directs the detailed execution of missions. At the operational level, SRD assesses the effectiveness and efficiency of air, space, and information operations and makes strategy recommendations to the CFACC. It is also the focal point within the CAOC for planning projects addressing future air and space activities and contingencies.

**The Combat Operations Division (COD)** executes and monitors the Combined Force Air Component Commander's daily Air Tasking Order (ATO), a document that directs daily air operations with respect to aircraft sorties, weapons loads and operational tasks. As one of five divisions within the Combined Air Operations Center (CAOC), the COD enables the CAOC to meet its mission as the primary command and control facility for Coalition air operations in the U.S. Central Command's (USCENTCOM) Area of Responsibility (AOR). The COD serves as the CAOC's dynamic around-the-clock operations floor...The COD executes and monitors each day's ATO. Members of the COD coordinate with tasked wing operations centers, air support operations centers and other theater and national air control systems to achieve air and space operations. The COD is also the focal point for monitoring the real-time execution of joint and combined air operations across the entire USCENTCOM AOR. Division members execute the ATO through constant command and control of the battle space, subordinate Theater Air Control System elements and assigned assets. The COD adjusts the ATO in response to changing situations such as battlefield dynamics, maintenance problems or adverse weather, and publishes changes to the ATO and the Airspace Control Order at throughout each execution day. The COD assumes responsibility for the next day's ATO as soon as it is released from the Combat Plans Division.

# U.S. and Coalition Air Power Projection in the War Against ISIS and Extremism in Syria and Iraq: 1/2015-10/2019

<b>OPERATION INHERENT RESOLVE</b>																	
<b>Strike Aircraft (manned)</b>				<b>Number of Weapons Released (Manned &amp; RPA strike assets)</b>													
<b>Sorties</b>		<b>Sorties with at least one weapon release</b>		<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Total</b>	
<b>2015</b>	21,116	<b>2015</b>	9,912	<b>2015</b>	2,426	1,853	1,685	1,862	2,145	1,683	2,823	2,758	2,380	2,694	3,242	3,145	28,696
<b>2016</b>	21,181	<b>2016</b>	11,825	<b>2016</b>	2,718	2,090	2,052	2,582	2,341	3,160	2,439	2,244	2,427	3,038	2,709	2,943	30,743
<b>2017</b>	19,680	<b>2017</b>	9,944	<b>2017</b>	3,600	3,439	3,878	3,274	4,374	4,848	4,313	5,075	3,550	1,642	1,000	584	39,577
<b>2018</b>	16,056	<b>2018</b>	1,591	<b>2018</b>	780	747	294	254	431	356	241	338	758	876	1,424	2,214	8,713
<b>2019</b>	11,315	<b>2019</b>	928	<b>2019</b>	2,005	607	900	90	54	135	105	218	137	166			4,417

Statistics provided includes numbers of sorties (not strikes) and munitions expended by aircraft under CFACC control

	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>Intel, Surveillance and Recon Sorties</b>	9,514	12,270	14,015	7,782	11,096
<b>Airlift and Airdrop Sorties</b>	10,050	8,400	9,448	8,450	5,781
<b>Airlift Cargo (Short Tons)</b>	78,500	72,800	68,537	43,566	28,426
<b>Airlift Passengers</b>	47,200	46,900	76,802	76,369	52,999
<b>Supplies Airdropped (Pounds)</b>	111,200	822,171	641,746	605,670	930,700
<b>Tanker Sorties</b>	14,737	13,064	13,243	8,697	5,898
<b>Fuel Offloaded (Millions of Pounds)</b>	912	804	778	620	401
<b>Aircraft Refuelings</b>	84,381	80,912	70,536	52,061	36,769

Some figures may have changed due to data re-calculation and re-verification•Assets under CFACC control include a compilation of aircraft from all U.S. military branches of service, as well as Coalition aircraft; however, not all aircraft flying in the AOR fall under CFACC control.

Source: AFCENT, AFCENT (CAOC) Public Affairs [afcent.pa@afcent.af.mil](mailto:afcent.pa@afcent.af.mil), <https://www.afcent.af.mil/About/Airpower-Summaries/>

# **Total Gulf Regular Military Forces**

## Iran and the Arab Gulf Balance in 2019

	Iraq	Iran	GCC	Saudi	UAE	Bahrain	Kuwait	Oman	Qatar
Active Personnel	64,000	523,000	374,800	227,000	63,000	8,200	17,500	42,600	16,500
Reserve Personnel	-	350,000	23,700	-	-	-	23,700	-	-
Main Battle Tanks	393	1,513	1,937	900	385	180	293	117	62
AIFVs	240	610	1,766	760	405	67	492	2	40
APCs	2,092	640	3,121	1,340	928	203	260	200	190
Towed Artillery	60	2,030	359	110	93	36	-	108	12
Self-Propelled Artillery	72	292	669	224	181	82	106	24	52
Multiple Rocket Launchers	3	1,476	194	60	88	13	27	-	6
Combat Aircraft	65	336	748	407	156	38	66	63	18
Attack Helicopters	28	-	79	35	-	28	16	-	-
Major SAM Launchers	0	205	296	236	14	6	40	-	-
Destroyers	-	-	3	3	-	-	-	-	-
Frigates	-	-	6	4	1	1	-	-	-
Corvettes	-	6	21	4	10	2	-	5	-
Patrol and Coastal	32	61	111	28	32	10	20	10	11
Submarines	-	21	0	-	-	-	-	-	-
Submersibles	-	3	0	-	-	-	-	-	-
Mine Warfare	-	-	5	3	2	-	-	-	-
Landing Ships	-	12	3	-	2	-	-	1	-
Landing Craft	-	11	42	5	17	9	6	5	-

Source: Adapted from IISS, "Middle East Balance," *Military Balance 2019*, pp 334-373.

# Nuclear Forces

# DIA Estimate of Iranian Nuclear Program - 2019

Iran's overarching strategic goals of enhancing its security, prestige, and regional influence have led it to pursue nuclear energy and the capability to build missile-deliverable nuclear weapons, if it chooses to do so. Iran has no nuclear weapons and, under the JCPOA, agreed not to seek, develop, or acquire nuclear weapons. The JCPOA limits Iran's uranium enrichment capabilities until at least 2026 and requires Iran to redesign its Arak reactor, making it more difficult to produce plutonium for weapons. Without a sufficient source of weapons-usable fissile material, Iran cannot produce a nuclear weapon.

Iran's interest in nuclear technology dates back to the 1950s, when it began receiving assistance through the U.S. Atoms for Peace program, which later included the Tehran Nuclear Research Center and a 5-megawatt-thermal research reactor. Iran signed the Nonproliferation Treaty (NPT) as a nonweapons state and ratified the agreement in 1970. In the mid-1970s, Iran unveiled ambitious plans to expand the nuclear power program. These plans, however, did not come to fruition because of the 1979 revolution.

In the late 1980s, Iran established an undeclared nuclear program, managed through the Physics Research Center (PHRC) and overseen through a scientific committee by the Defense Industries Education Research Institute. The PHRC was subordinate to MODAFL. In the late 1990s, the PHRC was consolidated under the "Amad Plan," Iran's effort to develop a nuclear weapon. Iran's Project 111 was an attempt to integrate a spherical payload into a Shahab 3 missile reentry vehicle. However, Iran halted its nuclear weapons program in 2003 and subsequently announced the suspension of its declared uranium enrichment program. Iran also signed an Additional Protocol to its International Atomic Energy Agency (IAEA) Safeguards Agreement in 2003.

The halt was primarily in response to increasing international scrutiny resulting from the exposure of Iran's previously undeclared nuclear work. After this halt, and in line with its history of poor transparency, Iran continued its efforts to develop uranium enrichment technology with gas centrifuges and constructed

an undeclared uranium enrichment plant near Qom, where it began producing near-20-percent enriched uranium in mid-2011. The IAEA also reported in 2011 that Iran may have conducted some dual-use research relevant to nuclear weapons after the 2003 halt. In late 2011, a Department of State compliance report found Iran to be in violation of obligations under the NPT because Iran's past nuclear activities and its failure to report ongoing activities were contrary to its Safeguards Agreement. That same year, the IAEA began an effort to clarify issues surrounding Iran's lack of transparency dating back to 2002, noting that by failing to declare some nuclear activities, including the construction at Qom, Iran was not implementing the Additional Protocol. In 2015, the IAEA concluded that it had no further indications of undeclared work.

In April 2015, a framework was announced to limit Iran's nuclear program that built on the interim Joint Plan of Action. Under the deal, Iran would commit that under no circumstances would it seek, develop, or acquire nuclear weapons, and it would limit its enrichment program and redesign a heavy-water reactor near Arak; in exchange, all nuclear-related sanctions against Iran would be suspended. On 14 July 2015, Iran and the P5+1 (the five permanent members of the UN Security Council plus Germany) finalized the JCPOA, whereby Iran agreed to curtail its nuclear program significantly in exchange for sanctions relief. On 16 January 2016, the IAEA reported that Iran had taken the technical steps required to meet its Implementation Day obligation. As long as Iran adheres to the agreement, the JCPOA limits the pathways to a nuclear weapon and hampers Iran's ability to conduct activities that could contribute to nuclear explosive device design and development.

Under the JCPOA, Iran must maintain a total enriched uranium stockpile of no more than 300 kilograms of up to 3.67 percent enriched uranium hexafluoride (UF<sub>6</sub>) or its equivalent in other chemical forms until 2031. Iran also had reduced its low-enriched uranium stockpile of about 8,500 kilograms to below 300 kilograms by shipping the material to Russia and downblending the remaining scrap to natural uranium.

UN Security Council Resolution (UNSCR) 2231, which endorses the JCPOA but is separate from the nuclear agreement, sets out the specific limitations on Iran's nuclear program and places additional restrictions on Iran's ballistic missile program and its import and export of conventional arms.

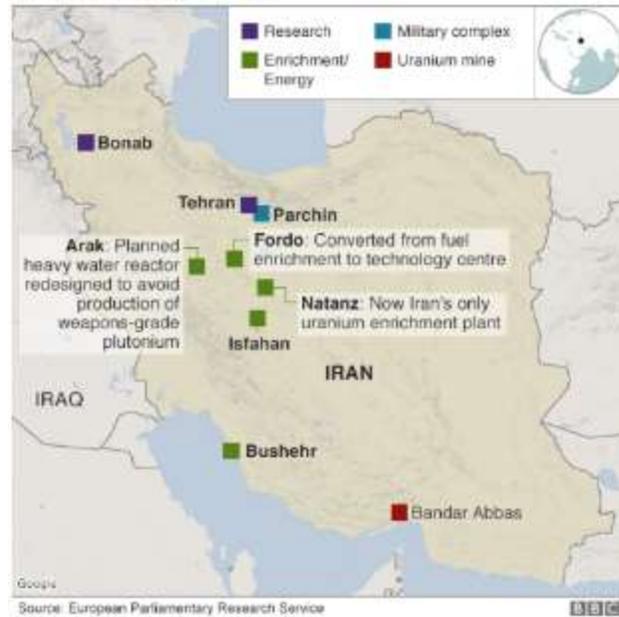
## *Recent Developments*

In May 2018, the United States ceased participation in the JCPOA and began reimposing unilateral U.S. sanctions on Iran. Tehran announced it would continue upholding its commitments while negotiating with remaining JCPOA participants to try to sustain the deal.<sup>129,130</sup> However, Khamenei warned that Iran would exit the deal if Iran were unable to achieve sufficient economic benefits from the JCPOA absent the United States.<sup>131</sup> In June 2018, Tehran announced that it would begin taking steps to expand Iran's enrichment infrastructure within the bounds of the JCPOA.

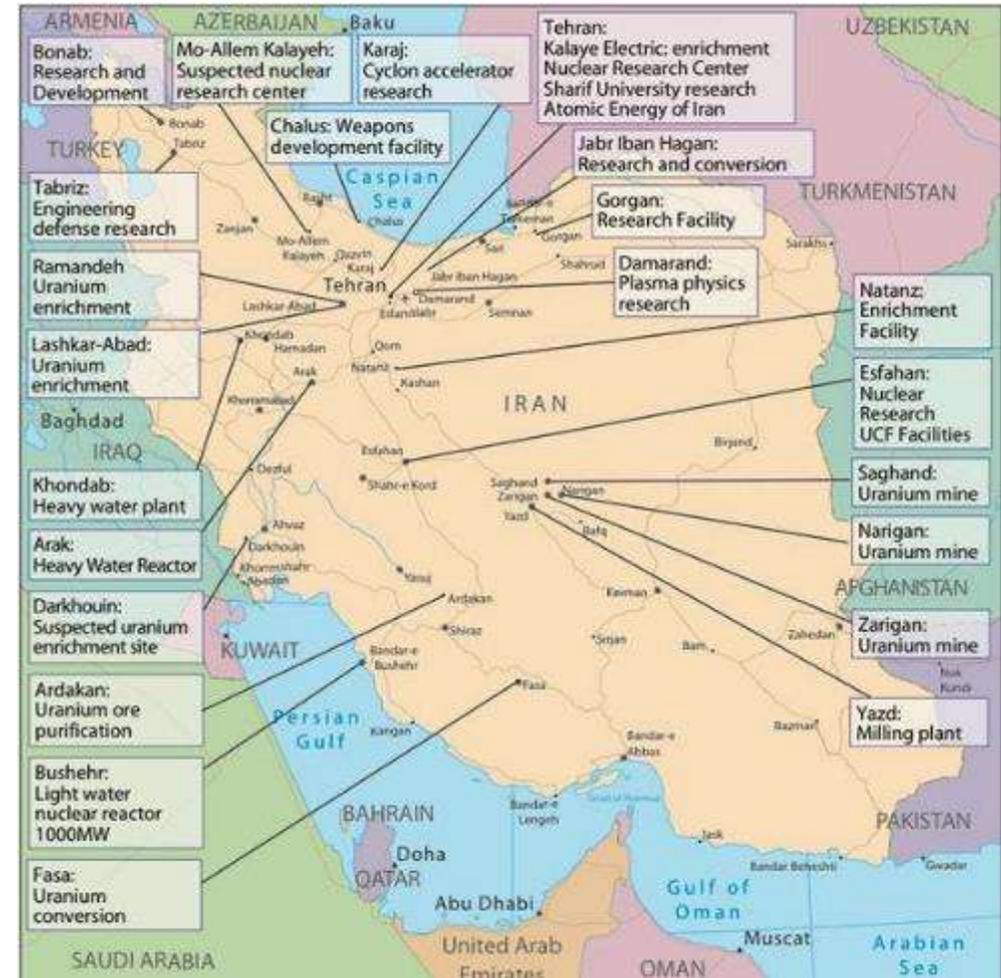
Iran announced, in May 2019, that it would begin to cease adhering to some of its JCPOA obligations and warned it would take further action if JCPOA members did not meet certain economic demands.<sup>133</sup> In early July 2019, the IAEA confirmed that Iran had exceeded the JCPOA limit on the size of its low-enriched uranium stockpile and had produced uranium with an enrichment level exceeding the JCPOA limit of 3.67 percent. Tehran threatened to continue gradually ceasing other JCPOA commitments unless it receives sufficient sanctions relief.

# Remaining Iranian Nuclear Facilities

Changes agreed under Iran deal to limit nuclear programme



Iran had two facilities - Natanz and Fordo - where uranium hexafluoride gas was fed into centrifuges to separate out the most fissile isotope, U-235. Low-enriched uranium, which has a 3%-4% concentration of U-235, can be used to produce fuel for nuclear power plants. "Weapons-grade" uranium is 90% enriched. In July 2015, Iran had almost 20,000 centrifuges. Under the JCPOA, it was limited to installing no more than 5,060 of the oldest and least efficient centrifuges at Natanz until 2026 - 10 years after the deal's "implementation day" in January 2016. Iran's uranium stockpile was reduced by 98% to 300kg (660lbs), a figure that must not be exceeded until 2031. It must also keep the stockpile's level of enrichment at 3.67%. By January 2016, Iran had drastically reduced the number of centrifuges installed at Natanz and Fordo, and shipped tons of low-enriched uranium to Russia. In addition, research and development must take place only at Natanz and be limited until 2024. **No enrichment will be permitted at Fordo until 2031, and the underground facility will be converted into a nuclear, physics and technology center. The 1,044 centrifuges at the site will produce radioisotopes for use in medicine, agriculture, industry and science.** Iran had been building a heavy-water nuclear facility near the town of Arak. Spent fuel from a heavy-water reactor contains plutonium suitable for a nuclear bomb...Under the JCPOA, Iran said it would redesign the reactor so it could not produce any weapons-grade plutonium, and that all spent fuel would be sent out of the country as long as the modified reactor exists. Iran will not be permitted to build additional heavy-water reactors or accumulate any excess heavy water until 2031.



Source: Google, [https://www.google.com/search?q=map+of+iranian+nuclear+facilities&client=firefox-b-1-d&sxsr=ACYBGNQ1Kb5gaMJfql9zC99v5WBRVe2EQg:1572347047035&tbm=isch&source=iu&ictx=1&fir=gNsb6dG9BFBP3M%253A%252CzOd142rgjMRjIM%252C\\_&vet=1&usg=AI4\\_-kSfjS\\_j9TGHx\\_AT1TA5nz0B8APSSg&sa=X&ved=2ahUKEwi62M6ZqCHIAhUj1kKHW-pAv8Q9QEWB3oECAUQEg#imgrc=gNsb6dG9BFBP3M](https://www.google.com/search?q=map+of+iranian+nuclear+facilities&client=firefox-b-1-d&sxsr=ACYBGNQ1Kb5gaMJfql9zC99v5WBRVe2EQg:1572347047035&tbm=isch&source=iu&ictx=1&fir=gNsb6dG9BFBP3M%253A%252CzOd142rgjMRjIM%252C_&vet=1&usg=AI4_-kSfjS_j9TGHx_AT1TA5nz0B8APSSg&sa=X&ved=2ahUKEwi62M6ZqCHIAhUj1kKHW-pAv8Q9QEWB3oECAUQEg#imgrc=gNsb6dG9BFBP3M)

# Hard Targets: Iran's Fordow Facility



Figure 1. A 2018 Google Earth image with a schematic of the underground tunnel complex overlain. The schematic was part of the Iranian Nuclear Archive, as revealed by Israeli Prime Minister Benjamin Netanyahu on April 30, 2018.



Figure 2. Overview of the Fordow facility, which includes the underground tunnel complex and the support complex.

# Regional Nuclear Capabilities

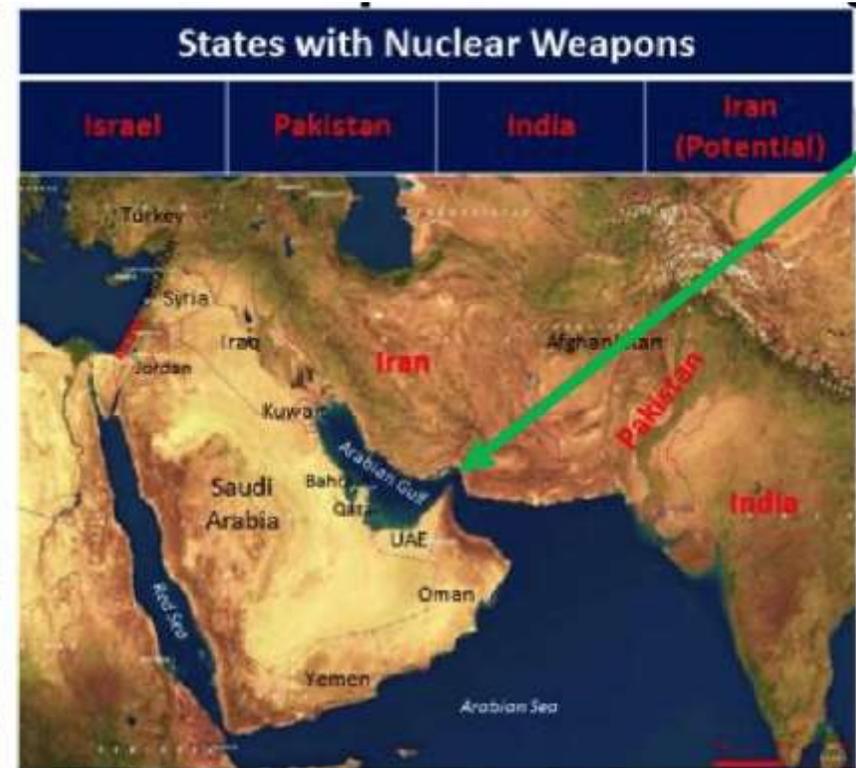
	SRBM < 1000 km	MRBM 1,000 – 3,000 km	IRBM 3,000 – 5,500 km	ICBM > 5,500 km
Iran	Shahab-1	Shahab-3	Shahab-5	Shahab-6
	Shahab-2	Shahab-4	-	-
	Mushak-120	Ghadr-101	-	-
	Mushak-160	Ghadr-110	-	-
	Mushak-200	IRIS	-	-
	-	Sajil	-	-

	SRBM < 1000 km	MRBM 1,000 – 3,000 km	IRBM 3,000 – 5,500 km	ICBM > 5,500 km
Syria	SCUD-B	-	-	-
	SCUD-C	-	-	-
	SCUD-D	-	-	-
	SS-21b	-	-	-

	SRBM < 1000 km	MRBM 1,000 – 3,000 km	IRBM 3,000 – 5,500 km	ICBM > 5,500 km
Israel	-	Jericho II	-	Jericho III
	-	-	-	-

	SRBM < 1000 km	MRBM 1,000 – 3,000 km	IRBM 3,000 – 5,500 km	ICBM > 5,500 km
Pakistan	Shaheen I	Shaheen II	-	-
	Hatf I	Ghauri I	-	-
	Hatf II	Ghauri II	-	-
	Hatf III	Ghauri II	-	-
	M-11	-	-	-

	SRBM < 1000 km	MRBM 1,000 – 3,000 km	IRBM 3,000 – 5,500 km	ICBM > 5,500 km
India	Agni I	Agni II	Agni III	Surya
	Prithvi I	-	-	-
	Prithvi II	-	-	-



Iran is the only state between the four that has signed and ratified the NPT Treaty

Iran has been heavily investing in:

- Precision Strike Munitions
- Naval-anti-ship weapons such as the Chinese C802 that hit the Israeli Navy ship during the 2006 war in Lebanon and the Ra'ad 350 km anti-ship missile.
- Ballistic Missiles
- Cruise Missiles such as the Kh55 Russian land attack cruise missile, effective against OI Platforms.

Source: Adapted from an Analysis by Dr. Abdullah Toukan..

# Missile Forces

# DIA Assessment of Iranian Missile Forces - I

Iran's ballistic missiles constitute a primary component of its strategic deterrent. Lacking a modern air force, Iran has embraced ballistic missiles as a long-range strike capability to dissuade its adversaries in the region—particularly the United States, Israel, and Saudi Arabia—from attacking Iran. Iran has the largest missile force in the Middle East, with a substantial inventory of close-range ballistic missiles (CRBMs), short-range ballistic missiles (SRBMs), and medium-range ballistic missiles (MRBMs) that can strike targets throughout the region as far as 2,000 kilometers from Iran's borders. Iran is also developing land-attack cruise missiles (LACMs), which present a unique threat profile from ballistic missiles because they can fly at low altitude and attack a target from multiple directions.

Decades of international sanctions have hampered Iran's ability to modernize its military forces through foreign procurement, but Tehran has invested heavily in its domestic infra-structure, equipment, and expertise to develop and produce increasingly capable ballistic and cruise missiles. Iran will continue to improve the accuracy and lethality of some of those systems and will pursue the development of new systems, despite continued international counterproliferation efforts and restrictions under UNSCR 2231. Iran is also extending the range of some of its SRBMs to be able to strike targets farther away, filling a capability gap between its MRBMs and older SRBMs.

Iran can launch salvos of missiles against large- area targets, such as military bases and population centers, throughout the region to inflict damage, complicate adversary military operations, and weaken enemy morale. Although it maintains many older, inaccurate missiles in its inventory, Iran is increasing the accuracy of many of its missile systems. The use of improved guidance technology and maneuverability during the terminal phase of flight enables these missiles to be used more effectively against smaller targets, including specific military facilities and ships at sea. These enhancements could reduce the miss-distance of some Iranian missiles to as little as tens of meters, potentially requiring fewer missiles to damage or destroy an intended target and broadening Iran's options for missile use.

Iran's more-accurate systems are primarily short range, such as the Fateh-110 SRBM and its derivatives. Iran's longer-range systems, such as the Shahab 3 MRBM, are generally less accurate. However, Iran is developing MRBMs with greater precision, such as the Emad-1, that improve Iran's ability to strike distant targets more effectively. Iran could also complicate regional missile defenses by launching large missile salvos.

Iran lacks intermediate-range ballistic missiles (IRBMs) and intercontinental ballistic missiles (ICBMs), but Tehran's desire to have a strategic counter to the United States could drive it to develop and eventually field an ICBM. Iran continues to develop space launch vehicles (SLVs) with increasing lift capacity—including boosters that could be capable of ICBM ranges and potentially reach the continental United States, if configured for that purpose. Progress in Iran's space program could shorten a path- way to an ICBM because SLVs use inherently similar technologies.

# DIA Assessment of Iranian Missile Forces - II

Iran has the largest and most diverse ballistic missile arsenal in the Middle East, with a substantial inventory of close-range ballistic missiles (CRBMs), short-range ballistic missiles (SRBMs), and medium range ballistic missiles (MRBMs) that can strike at targets throughout the region up to 2,000 kilometers from Iran's borders, as far as Israel and southeastern Europe. Iran's missile force—the Al-Ghadir Missile Command (AGMC), which falls under the control of the IRGC Aerospace Force (IRG- CASF)—serves as a critical strategic deterrent and a key tool of Iranian power projection.

The AGMC periodically conducts highly publicized national-level exercises demonstrating the capabilities and readiness of the force, often as part of the IRGC's NOBLE PROPHET series of exercises. In 2017, Iran for the first time used the name EQTEDAR-E VELAYAT for its major AGMC exercise. These show-of-force events typically include publicized missile launches and statements highlighting Iran's missile capabilities and deterrent posture. Prior exercises have showcased launches against a mock U.S. airfield and naval targets.

Iran has also used its missiles in combat on several occasions in recent years. In June 2017 and October 2018, Iran launched SRBMs from western Iran in high-profile strikes against ISIS targets in Syria. Iran conducted both operations in direct response to terrorist attacks in Iran, although some officials noted the attacks were also intended as a message to any of Iran's potential adversaries. In September 2018, Iran launched SRBMs against Kurdish militant targets in Iraq, damaging the Kurdish Democratic Party of Iran (KDPI) headquarters.

Iran's continued production of missiles and refinement of ballistic missile technology pose a growing threat to U.S. forces and allies in the Middle East. Tehran is also a major proliferator of ballistic missile technology to regional state actors and proxy groups. Although Iranian leaders emphasize self-reliance, Iran continues to depend on foreign suppliers for critical components and technology.

Iran has an extensive missile development program, and the size and sophistication of its missile force continues to grow despite decades of counterproliferation efforts aimed at curbing its advancement. Iran continues to attempt to increase the lethality, reliability, and accuracy of its missile force. In recent years, Iran has unveiled SRBMs with increasingly greater range and precision as well as MRBMs with claimed accuracy and warhead improvements. Iran is fielding an increasing number of theater ballistic missiles, improving its existing inventory, and developing technical capabilities that could enable it to produce an intercontinental ballistic missile (ICBM).

## ***Close- and Short-Range Ballistic Missiles***

Iran's liquid-propellant SRBMs—the Shahab 1, Shahab 2, and Qiam-1—are based on Scud technology. The Qiam-1 has a range of at least 750 kilometers, and variants of the system have been used as part of Iranian strikes on ISIS in Syria. Tehran has also supplied extended-range Qiam-1 variants to the Huthis in Yemen. These missiles, launched mostly at Riyadh, Saudi Arabia, have flown to a range of more than 900 kilometers.

Iran's solid-propellant CRBMs and SRBMs primarily consist of the many variants of the Fateh- 110 family of missiles. Most of these systems have ranges up to about 300 kilometers, but Iran

has unveiled a variant called the Fateh-313 with a 500-kilometer range. Iran has also advertised several variants of these missiles configured with different terminal seeker technologies, including electro-optical and antiradiation homing, which makes them capable of targeting ships. These systems—which include the Khalij Fars, Hormuz 1, and Hormuz 2—reportedly have ranges of about 300 kilometers.<sup>265</sup> In September 2016, Iran unveiled the new Zolfaghar SRBM, a solid-propellant system with a 700-kilometer range. Iran used these missiles in its 2017 and 2018 strikes against ISIS in Syria.

## ***Medium-Range Ballistic Missiles***

The liquid-propellant Shahab 3 is the main- stay of Iran's MRBM force. Iran has modified the Shahab 3, which is based on the North Korean No Dong MRBM, to extend its range and effectiveness, with the longest range variant being able to reach targets at a distance of about 2,000 kilometers. In 2015, Iran publicized the first launch of a Shahab 3 variant—called the Emad-1—equipped with a maneuverable reentry vehicle (MARV), which could allow the system to strike targets up to potentially 2,000 kilometers away with near-precision accuracy. Iran has also conducted multiple launches of the solid-propellant Sejil MRBM, which also has a range of 2,000 kilometers. Iranian officials have announced plans for an Emad-2 with greater precision as well as a new Sejil variant, which can also be guided all the way to the target.<sup>267</sup> In September 2016, Iran claimed production of the new Khorramshar MRBM would begin in 2017. The Khorramshahr, which Iran states has a 2,000-kilometer range, appears to be derived from North Korean Musudan technology.

## ***Land-Attack Cruise Missiles***

In 2012, Iran announced the development of its first land-attack cruise missile (LACM), called Meshkat. In 2015, Iran displayed what it called the Soumar LACM, a ground-launched system that appears to be based on the Russian air- launched AS-15. Iran claims the Soumar has a 2,000-kilometer range. LACMs can provide Iran with a precision-strike capability up to MRBM ranges that could further complicate missile defenses.<sup>270</sup>

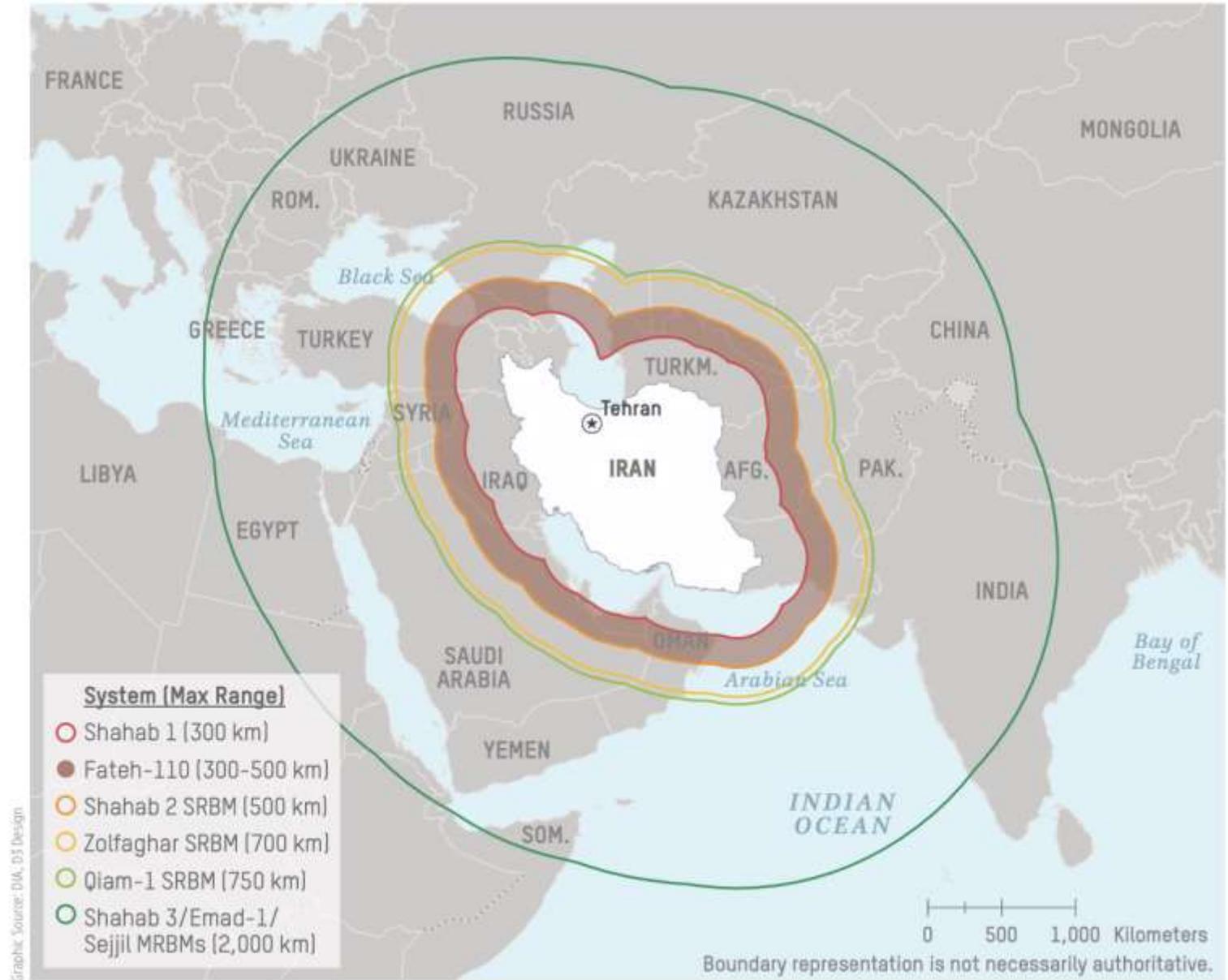
## ***Space Launch Vehicles***

Since 2008, Iran has launched multi-stage space launch vehicles (SLVs) that could also aid Iran's development of longer-range ballistic missiles because SLVs use inherently similar technologies. Iran has conducted multiple launches of the two-stage, liquid-propellant Safir SLV, a mix of successes and failures. It has also launched the larger two-stage, liquid-propellant Simorgh

## ***Selected Iranian Ballistic Missiles***

SLV, which is designed to carry satellites higher into orbit and could also serve as a test bed for developing ICBM technologies. The Simorgh could be capable of ICBM ranges if configured as a ballistic missile.

# DIA Estimate of Iranian Missile Ranges



Source: DIA, *Iran Military Power, Ensuring Regime Survival and Securing Regional Dominance*, DIA, November 2019, p. 47.

# DIA Estimate of Iranian Missile Profiles

System	Maximum Range (km)	Propellant Type	Deployment Mode
Fateh-110 SRBM (and variants)	300-500	Solid	Road-mobile
Shahab 1 SRBM	300	Liquid	Road-mobile
Shahab 2 SRBM	500	Liquid	Road-mobile
Zolfaghar SRBM	700	Solid	Road-mobile
Qiam-1 SRBM	At least 750	Liquid	Road-mobile, Silo
Shahab 3 MRBM	Up to 2,000	Liquid	Road-mobile, Silo
Emad-1 MRBM	Up to 2,000	Liquid	Road-mobile
Sejil (Ashura) MRBM	2,000	Solid	Road-mobile

Note: This chart does not include all systems in development. All ranges are approximate.

Source: DIA, *Iran Military Power, Ensuring Regime Survival and Securing Regional Dominance*, DIA, November 2019, p. 43.



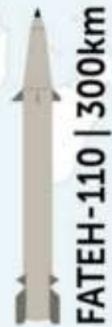
# IRAN'S BALLISTIC MISSILES



Iran possesses the largest and most diverse missile arsenal in the Middle East, with thousands of short- and medium-range ballistic and cruise missiles capable of striking as far as Israel and southeast Europe. Missiles have become a central tool of Iranian power projection and anti-access/area-denial capabilities in the face of U.S. and Gulf Cooperation Council naval and air power in the region.



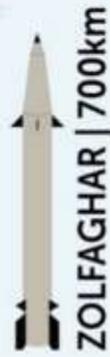
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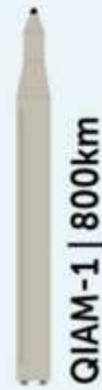
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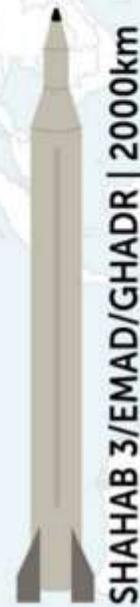
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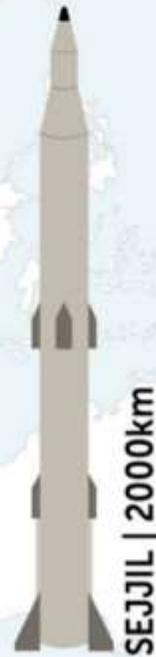
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5



6



7



8



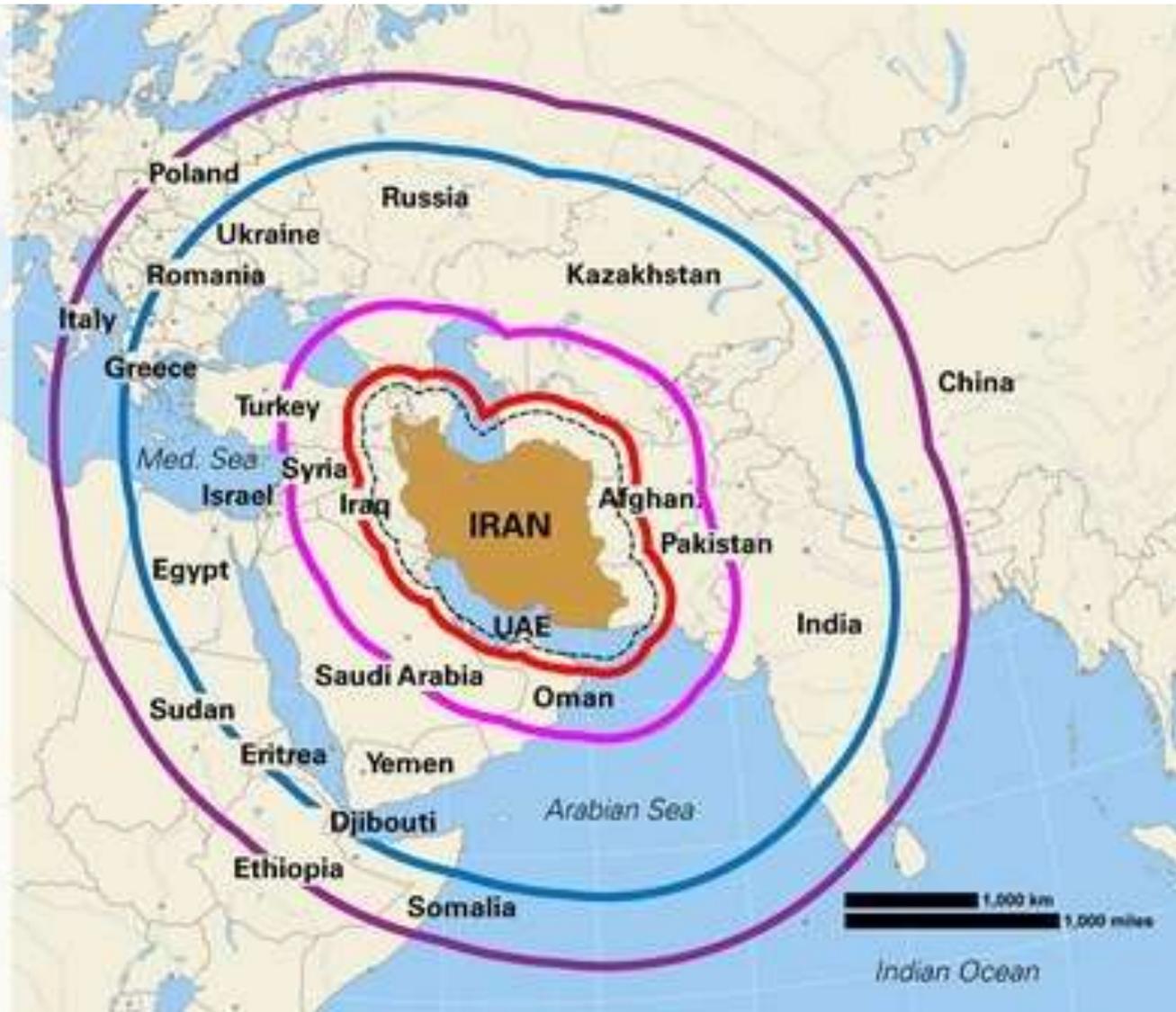
# Iranian Missile Ranges

## Iran's Missiles

Iran has developed a wide range of missiles, from the Shahab 1 ballistic missile, with a range of 300 kilometers, to the Soumar cruise missile with a reported range of 2,500 kilometers that could strike targets anywhere in the Gulf, Israel, Egypt, Afghanistan, parts of southern and eastern Europe and elsewhere.



200 km Limit of S-300 PMU2 air defense system



# Key Deployment Factors

## GCC vs Iran Airbases, Air Defense, and Ballistic Missile Military Balance

-  Iran Nuclear Program Sites
-  UAE THAAD Battery
-  PAC-2/3 Battery
-  AN/TPY-2 X-Band radar for BMD, with a Terminal Phase Range of 600km
-  Iran Ballistic Missile Launch Sites
-  Iran S-300 AD system deployed around Fordow (NYT August 29, 2016)

Reference: Abdullah Toukan adapted from:

IISS The 2016 Military Balance Chart Gulf Region Missile Defense.

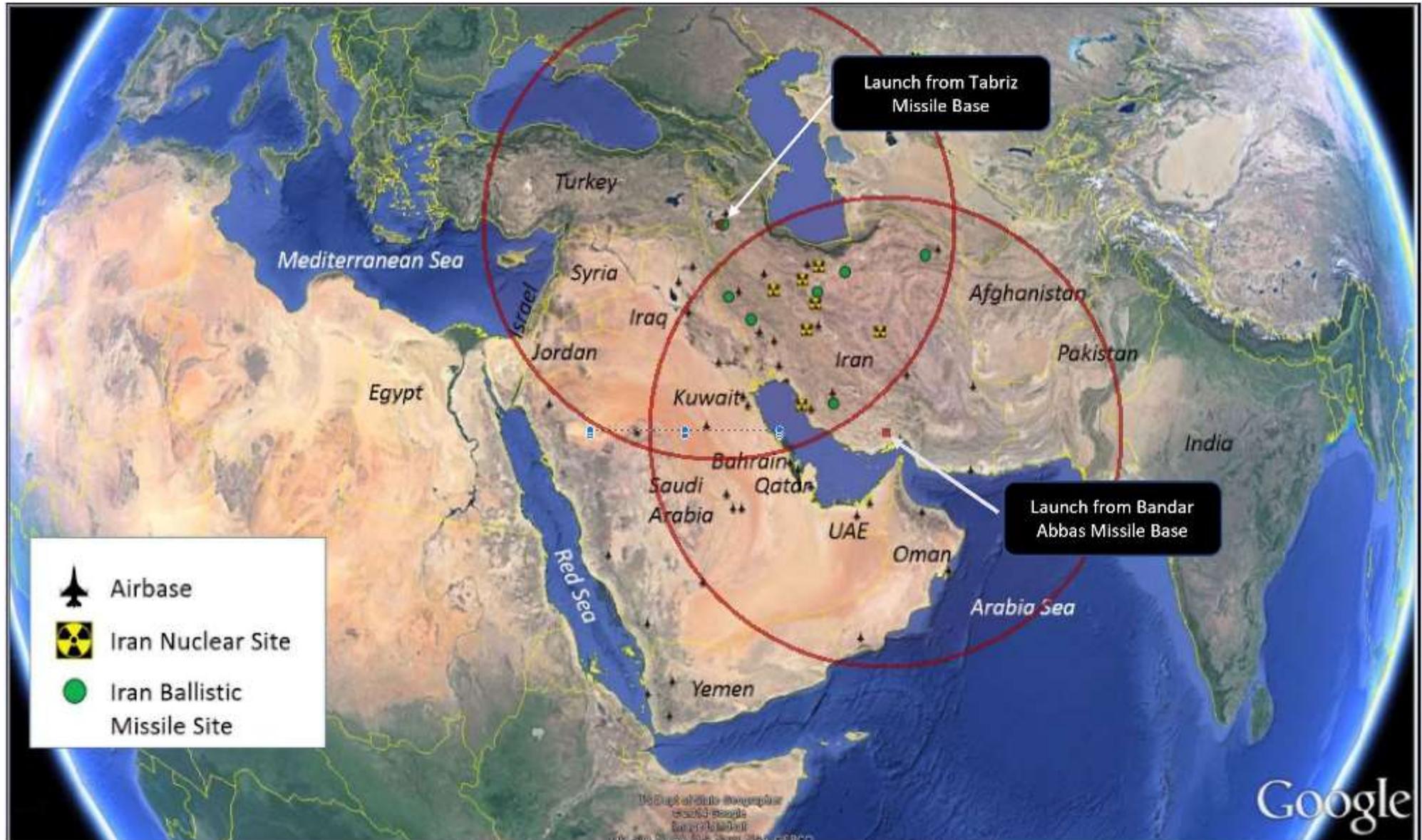
IHS Janes Sentinel 2016

NTI Iran Nuclear and Ballistic Missile Location



# Shahab 3M Coverage

(1,000kg Warhead,  
Maximum Range  
1.200 km)



Source: Dr. Abdullah Toukan,  
November 5, 2019.

# Iran's Major Missiles

Missile	Class	Range	News
<u>Safir</u>	SLV	350 km altitude	Operational
<u>Khorramshahr</u>	MRBM	2,000 km	In Development
<u>Qiam-1</u>	SRBM	700-800 km	Operational
<u>Shahab-1</u>	SRBM	285-330 km	Operational
<u>Simorgh</u>	SLV	500 km altitude	In Development
<u>Koksan M1978</u>	Artillery	40-60 km	Operational
<u>Zolfaghar</u>	SRBM	700 km	Operational
<u>Emad (Shahab-3 Variant)</u>	MRBM	1,700 km	In Development
<u>Sejjil</u>	MRBM	2,000 km	Operational
<u>Shahab 2 (Scud C-Variant)</u>	SRBM	500 km	Operational
<u>Shahab-3</u>	MRBM	1,300 km	Operational
<u>Ghadr 1 (Shahab-3 Variant)</u>	MRBM	1,950 km	In Development
<u>Fateh-110</u>	SRBM	200-300 km	Operational
<u>Tondar 69</u>	SRBM	150 km	Operational
<u>Soumar</u>	Cruise Missile	2,000-3,000 km	Operational (presumed)
<u>Ra'ad</u>	Cruise Missile	150 km	Operational

# Iran Strategic Missile Inventory

## IISS Estimate

Some estimates of Iran's actual ballistic missile forces from highly respected sources remain relatively small and only cover the number of launchers – not the numbers of missiles. The 2019 edition of the IISS *Military Balance* provides the following estimate for Iran's major missiles – which are operated by its Islamic Revolutionary Guard Corps Aerospace Force – although these figures do not include some short-range Army systems and long range artillery rockets, coastal defense systems, and efforts to develop ship and submarine-launched versions of the Fateh SRBM:

### Missile Forces

- 1 bde with *Shahab-1/-2*; *Qiam-1*?
- 1 bn with *Shahab-3*?

### Missile Launchers

- MRBM Conventional** up to 50: *Shahab-3* (mobile & silo); some *Ghadr-1* (in test); some *Emad-1* (in test); some *Sajjil-2* (in devt); some *Khorramshahr* (in devt)
- SRBM Conventional** up to 100: some *Fateh 110*; Some *Khalij Fars* (*Fateh 110* mod ASBM); some *Shahab- 1/-2*; some *Qiam-1*; some *Zelzal*; *Army has* €30 CH-SS-8 (175 msl); *Shahin-1/ Shahin-2*; *Nazeat*; *Oghab*

## UAVs – Unmanned Aerial Vehicles

- CISR Medium *Shahed 129*

## IHS Jane's Estimate

An April 2019 estimate by IHS Jane's, another widely respected source, is very different and seems to track better with official background briefings. It states that Iran has a major production facility in Parchin. It warns that many aspects of range and reliability are unclear, but that Iran has exported missiles to Iraq, Syria, and Yemen and states that Iran is establishing a missile production facility in Syria. It also notes that Iran has supplied Shahab (dubbed 'Burkan' by Houthi forces), Qiam-1 (dubbed 'Burkan-2' and 'Burkan-2H'), and Soumar cruise missiles to the Houthi in Yemen.

The IHS Jane's brief states that Iran's Islamic Revolutionary Guards Corps Air and Space Force (IRGCASF) has the following five brigades:

- 15th Ghaem Missile Brigade, with short-range missiles such as the Fajr
- 5th Ra'ad Missile Brigade equipped with Shahab-3/-4, based in the Karaj area, northwest of Tehran
- 7th Al-Hadid Missile Brigade equipped with Shahab-1 and -2 (Scuds B and C) missiles, based in the Karaj area; and controls the Imam Ali Missile Site in Khorramabad, western Iran. IHS Jane's notes that North Korea supplied Iran with 6-12 Scud-B TELs and up to 200 missiles between 1987 and 1992, and that the US-based Federation for American Scientists estimated in 2008 that Iran possessed between 300 and 400 Shahab-1s and Shahab-2s armed with conventional warheads and distributed among 3-4 battalions.
- 19th Zulfiqar Missile Brigade, equipped with Nazeat and Zelzal short-range missiles, based in the Karaj area
- 23rd Towhid Missile Brigade, based at Khorramabad.

IHS Janes estimates that Iran's short-range missile holdings are separate, and include the Fateh, Shahab-1 and Shahab-2, and enhanced and modified variants of the original Scud-B and Scud-C systems. It also describes five different variants of the Fateh – including anti-ship, anti-radar, and 750 -kilometer range systems. It also reports that China sold up CCS-8 (M-7/Project 8610) short-range, road-mobile, solid-propellant, single-warhead ballistic missiles and 30 TELs based on m modifications of the SA-2 to Iran in 1989. It is not clear they are still fully operational, but they have a 190 kg warhead, a 150 km range, and very poor accuracy. Iran calls them the Tondar 69. Some 90 missiles were delivered to Iran in 1992, and a further 110 may have been delivered later.

When it comes to Iran's longer-range missiles, the report indicates that the Nazeat 10 began to be tested in 2014, and is called an MRBM – although its range is unclear. It is felt to be more accurate than the Nazeat – although such reporting seems to focus on the guidance platform rather than missile tests.

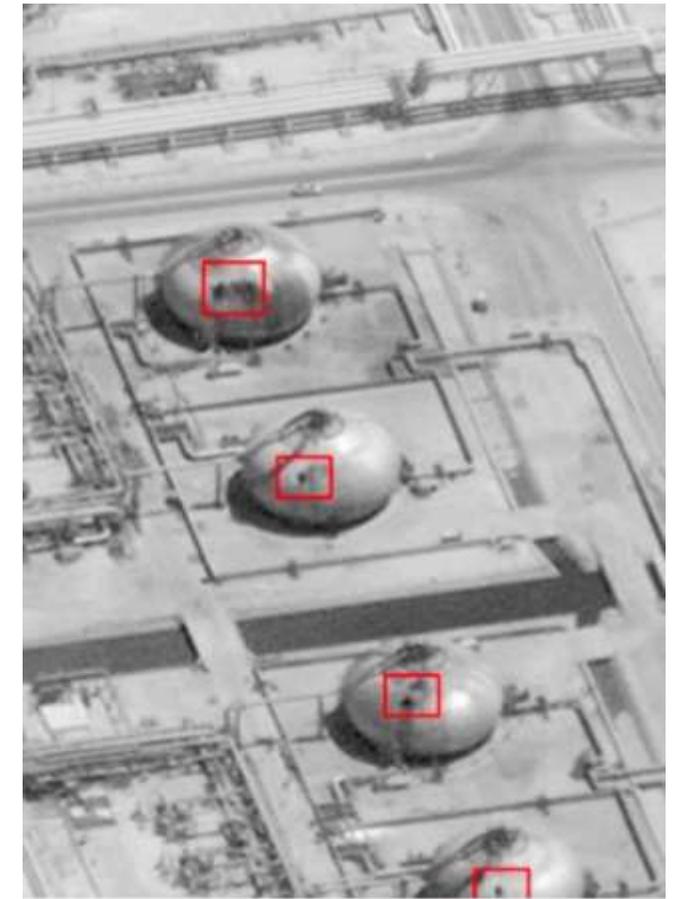
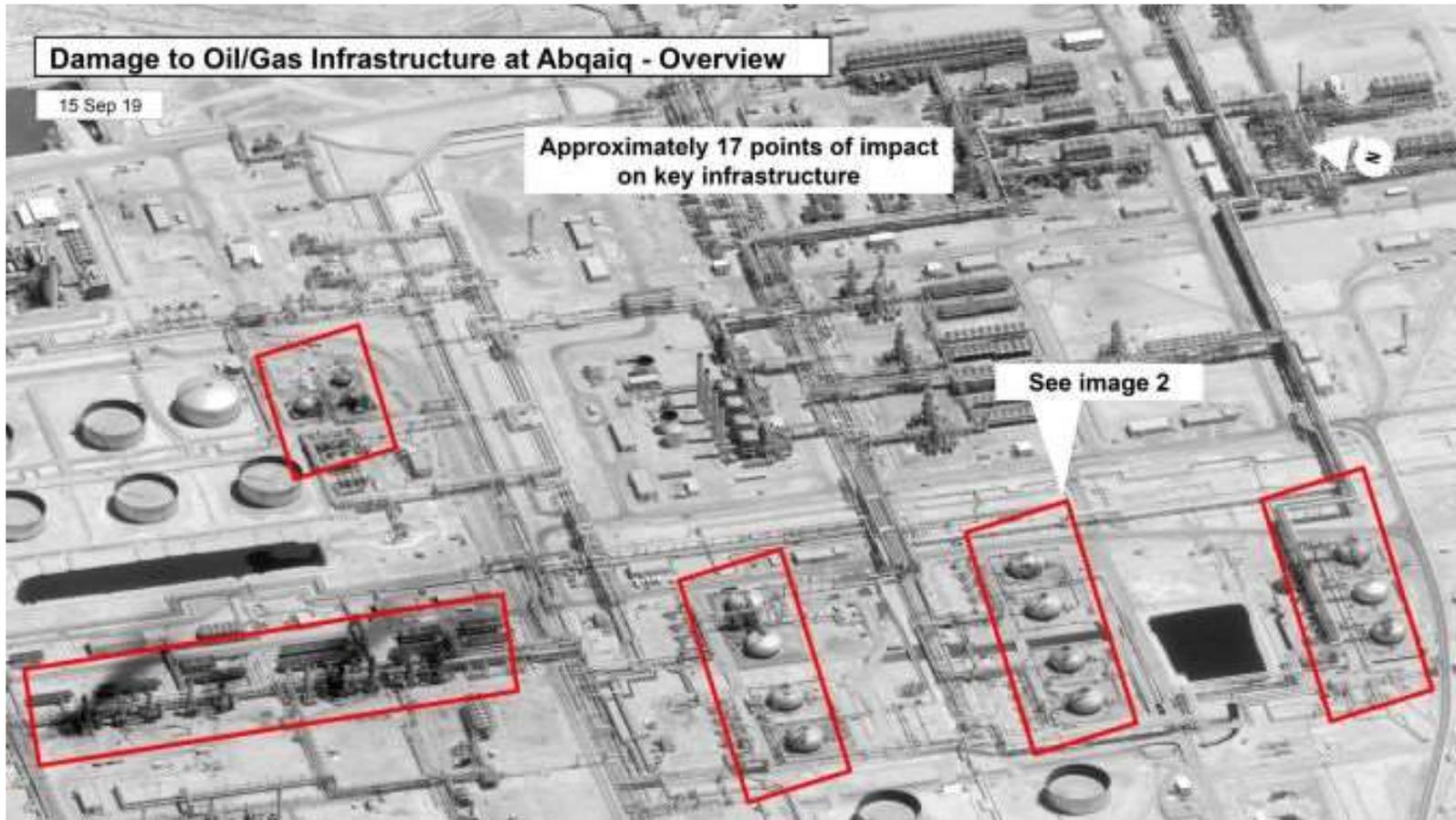
IHS Janes indicates that its liquid-fueled Qiam missiles have been mass produced since 2011, and has a range of up to 700 km with a 650 kg payload. It also cites three different versions of the liquid-fueled Shahab missile – which is derived from the North Korean No Dong, and exceeds the 1,000-kilometer range limit set by the UN. These versions include the Shahab-3A (Ghadr 101) with a range of 1,500-1,800 km, the Ghadr-1 with a range of 1,800 km, and Shahab-3B (Ghadr 110) with a range of 2,000-2,500 km.

The Shahab is being replaced or supplemented by the more accurate Qadr F with a range of 1,600 km, the Qadr H with a range of 2,000 km and improved multiple re-entry vehicle, and the Qadr S with a range of 2,000 km with cluster munitions warhead.

The Khorramshahr is said to still be in the test phase, and similar to the North Korean Hwasong-10 (KN-07) liquid-fueled missile with a maximum range of 2,000 km. The Seiji-2 is estimated to be another longer-range solid fueled system with a range of 2,200 km with a 750 kg warhead. A third system called the Emad may be a modification of the Qadr and to have started delivery in 2016. Finally, Iran seems to be developing an ICBM called the Simorgh (Safir-2) out of its Simorgh satellite launch system.

According to work by Jeffery Lewis of NTI, Iran also displayed new 1,000-km long-range ballistic missile called the *Dezful* in February 2019. Lewis notes that Major General Mohammad Ali Jafar, a former commander of the IRGC, called the missile as “an answer to Westerners ... who think they can stop us from reaching our goals through sanctions and threats,” and state that its purpose was to “to protect our nation and the oppressed and downtrodden nations in the region that may ask for help from the Islamic Republic.”

# Iranian Precision Strikes on Abqaiq in September 2019



In March 2015 Iran unveiled a cruise missile named Soumar. The missile retains several characteristics of the Russian-made Kh-55, six of which were acquired by Iran from Ukraine, but without the Ukrainian R95-300 turbofan engine the original terrain counter-matching (TERCOM) navigation system. The missile displayed did not appear to possess an advanced seeker head, suggesting that the navigation system is likely a mechanical inertial navigation system (INS) coupled with a GPS system. Other modifications to the original Kh-55 include a solid rocket booster rather than liquid, making it suitable for ground-launched rather than air-launched platforms. With a warhead of between 150 and 170 kg and calculated cruise speed of Mach 0.7, the potential addition of the Soumar is viewed more as a substantial expansion of capabilities rather than a revolutionary enhancement of its missile arsenal.

## Southern Arab Gulf State Tactical Missile Inventories

	Saudi Arabia	UAE	Qatar	Oman	Bahrain	Kuwait
<b>Air-Launched Missiles</b>	AAM: <b>IR</b> AIM-9P/L <i>Sidewinder</i> ; <b>IIR</b> AIM-9X <i>Sidewinder II</i> ; <b>IRIS-T</b> ; <b>SARH</b> AIM-7 <i>Sparrow</i> ; AIM-7M <i>Sparrow</i> ; <b>ARH</b> AIM-120C AMRAAM <b>ASM</b> AGM-65 <i>Maverick</i> ; AR-1 <b>AShM</b> <i>Sea Eagle</i> <b>ARM</b> <b>ALARM</b> <b>ALCM</b> <i>Storm Shadow</i>	AAM: <b>IR</b> AIM-9L <i>Sidewinder</i> ; R-550 <i>Magic</i> ; <b>IIR</b> AIM-9X <i>Sidewinder II</i> ; <b>IIR/ARH</b> <i>Mica</i> ; <b>ARH</b> AIM-120B/C AMRAAM <b>ASM</b> AGM-65G <i>Maverick</i> ; <i>Hakeem 1/2/3</i> (A/B) <b>ARM</b> AGM-88C <b>HARM</b> <b>ALCM</b> <i>Black Shaheen</i> ( <i>Storm Shadow/ SCALP EG</i> variant)	AAM • <b>IR</b> R-550 <i>Magic 2</i> ; <b>ARH</b> <i>Mica</i> RF <b>ASM</b> <i>Apache</i> ; HOT <b>AShM</b> AM39 <i>Exocet</i>	<b>IR</b> AIM-9/M/P <i>Sidewinder</i> ; <b>IIR</b> AIM-9X <i>Sidewinder II</i> ; <b>ARH</b> AIM-120C7 AMRAAM <b>ASM</b> AGM-65D/G <i>Maverick</i> <b>AShM</b> AGM-84D <i>Harpoon</i>	AAM • <b>IR</b> AIM-9P <i>Sidewinder</i> ; <b>SARH</b> AIM-7 <i>Sparrow</i> ; <b>ARH</b> AIM-120B/C AMRAAM <b>ASM</b> AGM-65D/G <i>Maverick</i> ; some TOW	AAM • <b>IR</b> AIM-9L <i>Sidewinder</i> ; R-550 <i>Magic</i> ; <b>SARH</b> AIM-7F <i>Sparrow</i> ; <b>ARH</b> AIM-120C7 AMRAAM <b>ASM</b> AGM-65G <i>Maverick</i> ; AGM-114K <b>Hellfire</b> <b>AShM</b> AGM-84A <i>Harpoon</i>
<b>Surface-to-Surface Missiles</b>		<b>SRBM</b> : 6 Scud-B (up to 20 msl); MGM-140A/B ATACMS (launched from M142 HIMAzRS)			<b>SRBM • Conventional</b> MGM-140A ATACMS (launched from M270 MLRS)	
<b>Bombs</b>	<b>Laser-guided</b> GBU-10/12 <i>Paveway II</i> ; <i>Paveway IV</i> <b>INS/GPS-guided</b> GBU-31 JDAM; FT-9	<b>INS/SAT guided</b> <i>Al Tariq</i> <b>Laser-guided</b> GBU-12/58 <i>Paveway II</i>		<b>Laser-guided</b> EGBU-10 <i>Paveway II</i> ; EGBU-12 <i>Paveway II</i> <b>INS/GPS guided</b> GBU-31 JDAM	<b>Laser-guided</b> GBU-10/12 <i>Paveway II</i>	

# Saudi and UAE Missile Inventories

## Saudi Arabia

### Strategic Missile Forces

- MSL • Tactical
  - **IRBM** 10+ DF-3 (CH-SS-2) (service status unclear)
  - **MRBM** Some DF-21 (CH-SS-5) (reported)

### Air-Launched Missiles

- **AAM: IR** AIM-9P/L *Sidewinder*; **IIR** AIM-9X *Sidewinder II*; IRIS-T; **SARH** AIM-7 *Sparrow*; AIM-7M *Sparrow*; **ARH** AIM-120C AMRAAM
- **ASM** AGM-65 *Maverick*; AR-1
- **AShM** *Sea Eagle*
- **ARM** ALARM
- **ALCM** *Storm Shadow*

### Bombs

- **Laser-guided** GBU-10/12 *Paveway II*; *Paveway IV*
- **INS/GPS-guided** GBU-31 JDAM; FT-9

## UAE

### Surface-to-Surface Missile Launchers

- **SRBM**: 6 Scud-B (up to 20 msl); MGM-140A/B ATACMS (launched from M142 HIMARS)

### Air-Launched Missiles

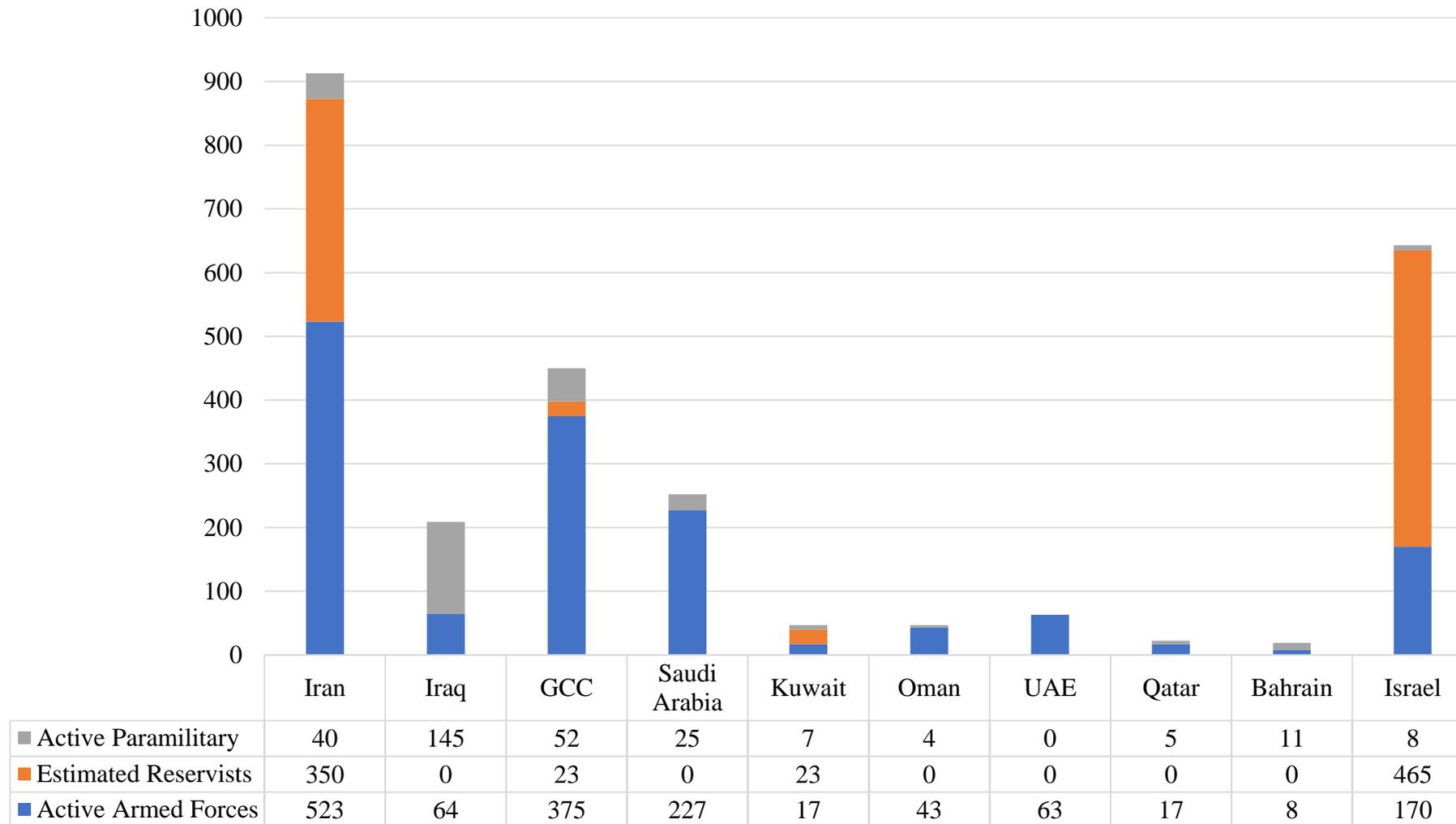
- **AAM: IR** AIM-9L *Sidewinder*; R-550 *Magic*; **IIR** AIM-9X *Sidewinder II*; **IIR/ARH** *Mica*; **ARH** AIM-120B/C AMRAAM
- **ASM** AGM-65G *Maverick*; *Hakeem 1/2/3 (A/B)*
- **ARM** AGM-88C HARM
- **ALCM** *Black Shaheen (Storm Shadow/ SCALP EG variant)*

### Bombs

- **INS/SAT guided** *Al Tariq*
- **Laser-guided** GBU-12/58 *Paveway II*

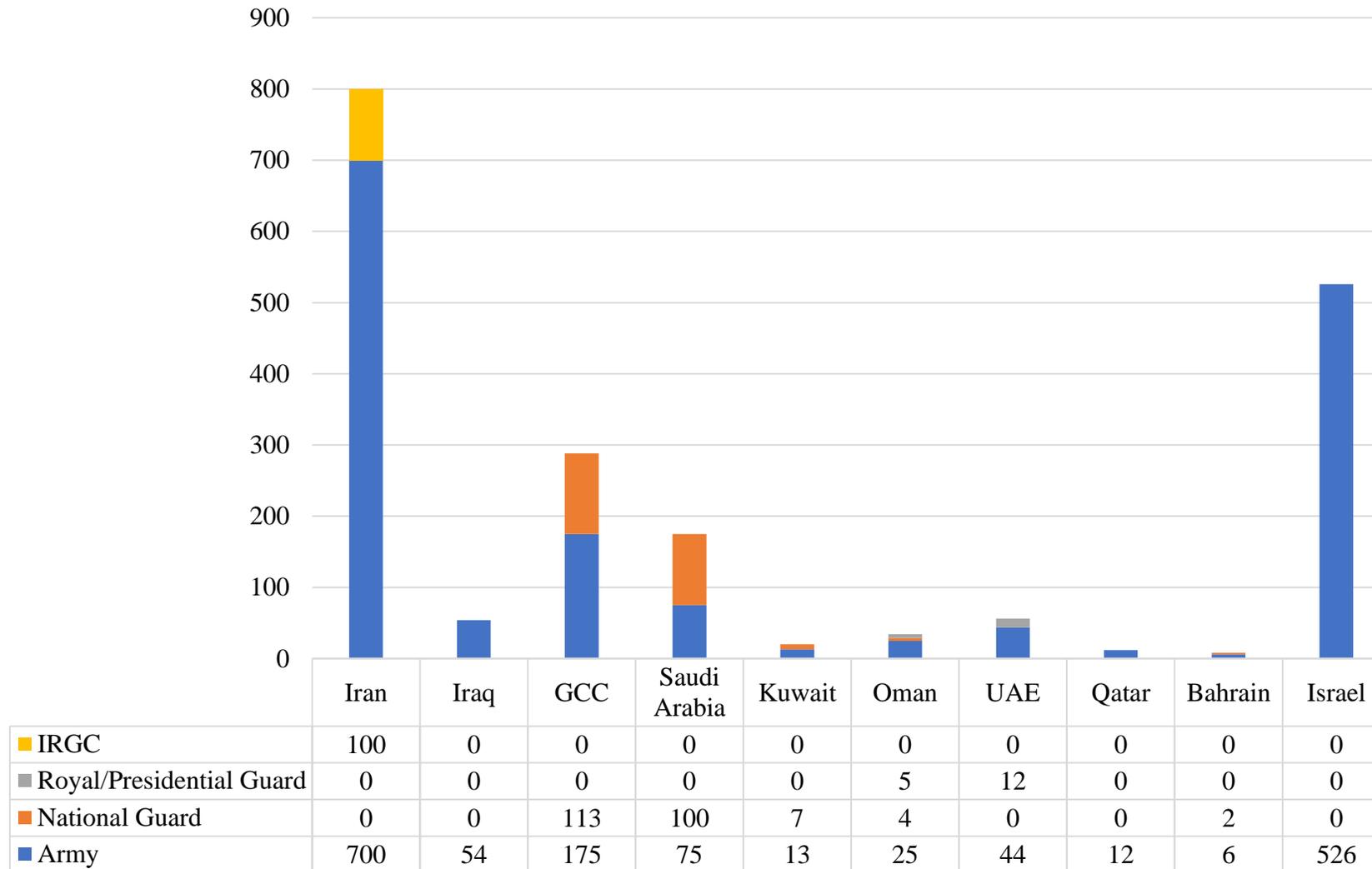
# Land Forces

## Comparative Active Armed Forces, Estimated Reservist, and Active Paramilitary Personnel (thousands)



Source: IISS Country Comparison and Defense Data. 2019

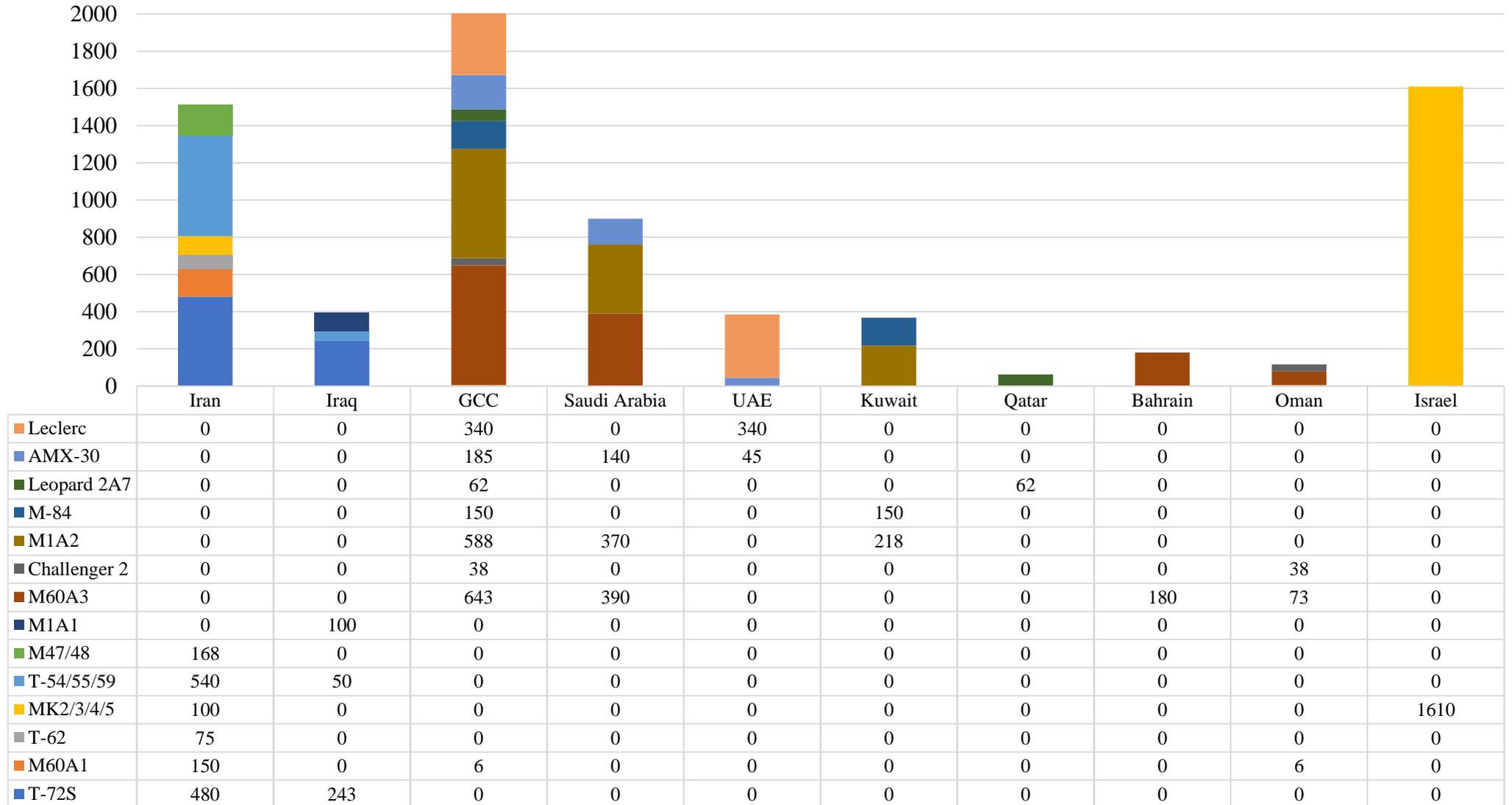
# Comparative Army, National Guard, Royal/Presidential Guard, IRGC Military Personnel (thousands)



## Comparative Total Land force Major Weapons Holdings

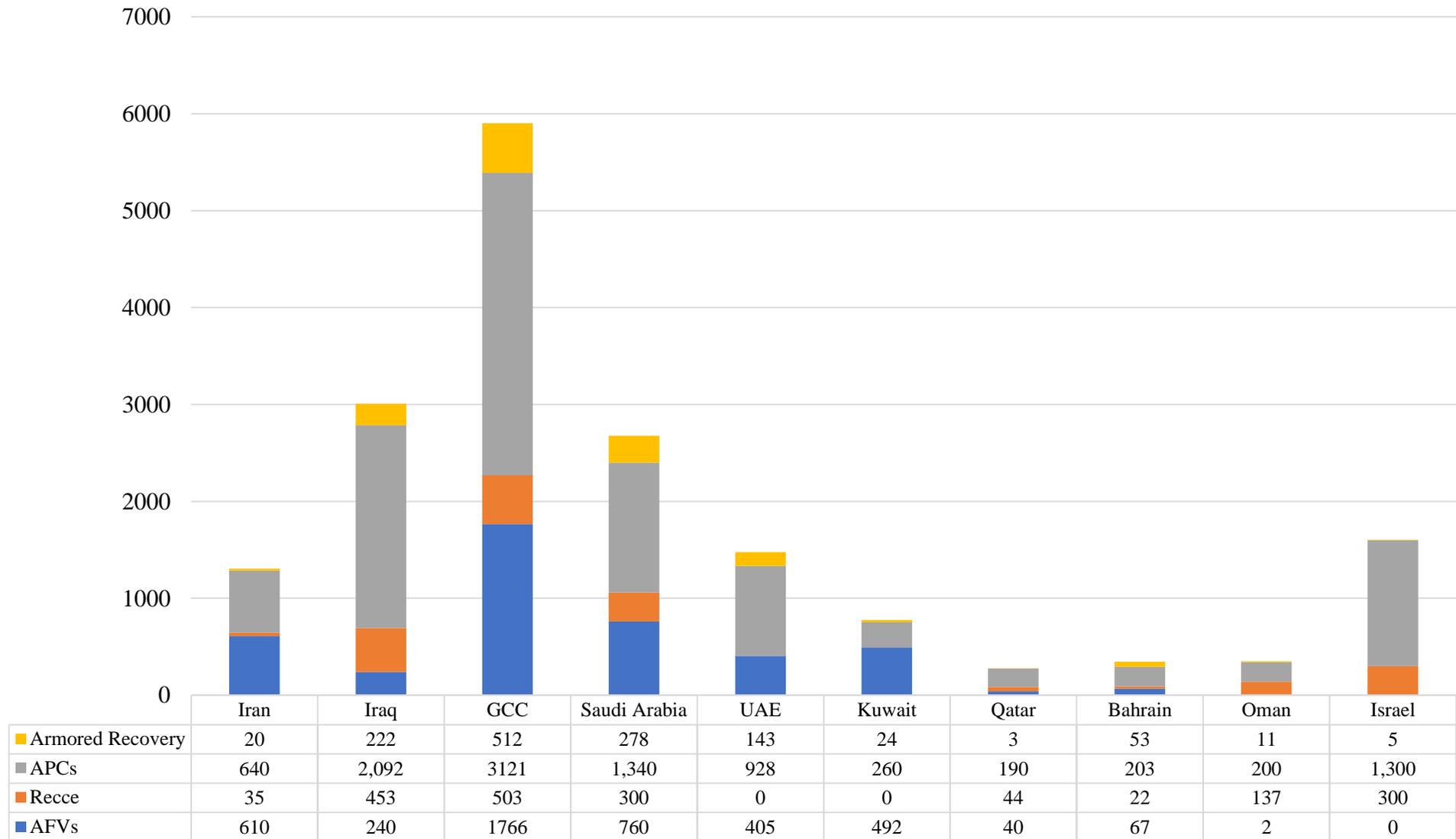
	Iraq	Iran	GCC	Saudi	UAE	Bahrain	Kuwait	Oman	Qatar
<b>Main Battle Tanks</b>	<b>393</b>	<b>1,513</b>	<b>1,937</b>	<b>900</b>	<b>385</b>	<b>180</b>	<b>293</b>	<b>117</b>	<b>62</b>
<b>AIFVs</b>	<b>240</b>	<b>610</b>	<b>1,766</b>	<b>760</b>	<b>405</b>	<b>67</b>	<b>492</b>	<b>2</b>	<b>40</b>
<b>APCs</b>	<b>2,092</b>	<b>640</b>	<b>3,121</b>	<b>1,340</b>	<b>928</b>	<b>203</b>	<b>260</b>	<b>200</b>	<b>190</b>
<b>Towed Artillery</b>	<b>60</b>	<b>2,030</b>	<b>359</b>	<b>110</b>	<b>93</b>	<b>36</b>	<b>-</b>	<b>108</b>	<b>12</b>
<b>Self-Propelled Artillery</b>	<b>72</b>	<b>292</b>	<b>669</b>	<b>224</b>	<b>181</b>	<b>82</b>	<b>106</b>	<b>24</b>	<b>52</b>
<b>Multiple Rocket Launchers</b>	<b>3</b>	<b>1,476</b>	<b>194</b>	<b>60</b>	<b>88</b>	<b>13</b>	<b>27</b>	<b>-</b>	<b>6</b>
<b>Combat Aircraft</b>	<b>65</b>	<b>336</b>	<b>748</b>	<b>407</b>	<b>156</b>	<b>38</b>	<b>66</b>	<b>63</b>	<b>18</b>
<b>Attack Helicopters</b>	<b>28</b>	<b>-</b>	<b>79</b>	<b>35</b>	<b>-</b>	<b>28</b>	<b>16</b>	<b>-</b>	<b>-</b>
<b>Major SAM Launchers</b>	<b>0</b>	<b>205</b>	<b>296</b>	<b>236</b>	<b>14</b>	<b>6</b>	<b>40</b>	<b>-</b>	<b>-</b>

## Comparative Main Battle Tank Strength, 2019



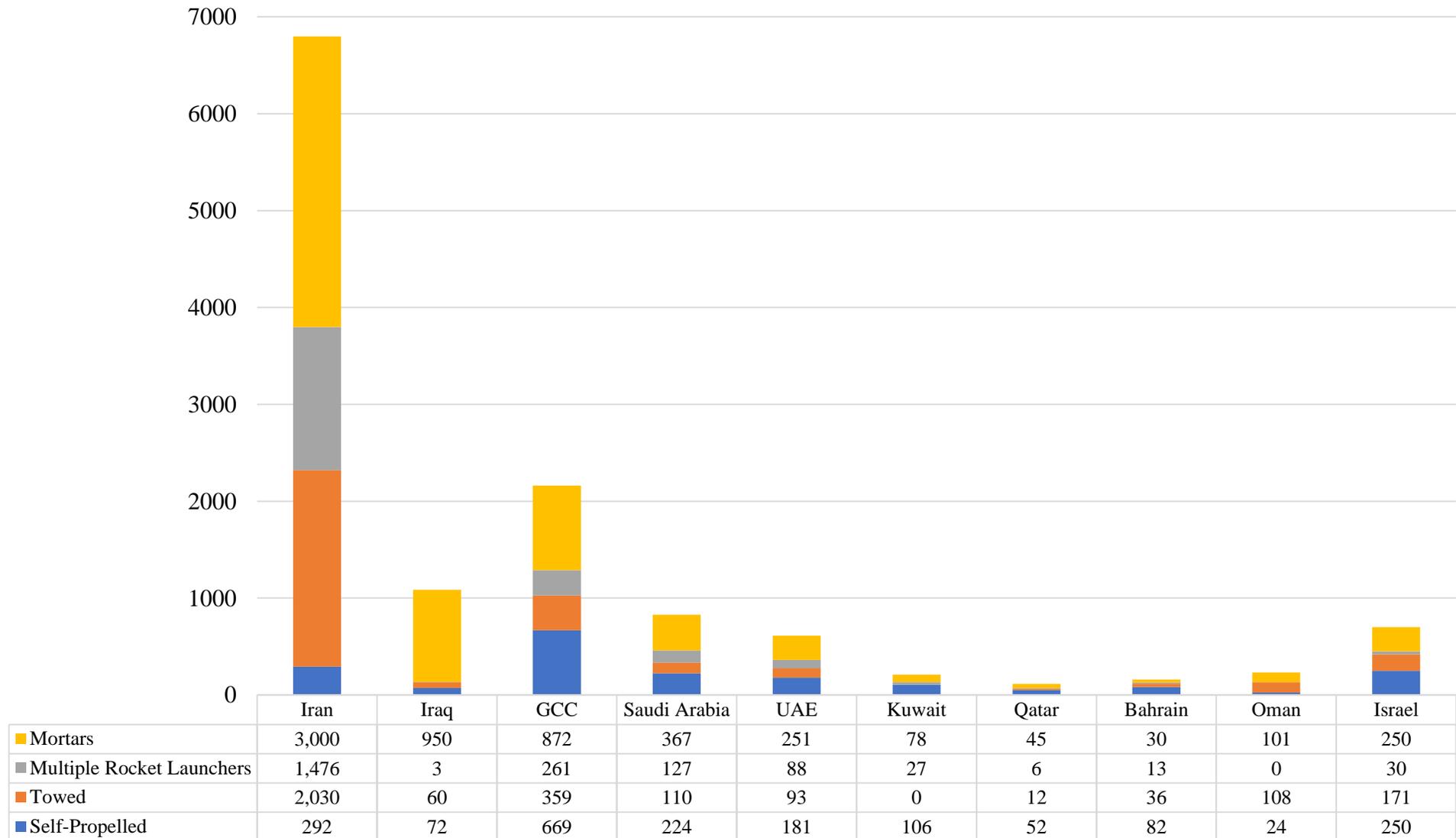
Source: Adapted from IISS, "Middle East Balance," *Military Balance 2019*, pp 334-373.

# Comparative Other Armored Vehicle Strength by Major Category, 2019



Source: Adapted from IISS, "Middle East Balance," *Military Balance 2019*, pp 334-373.

## Comparative Artillery Strength by Major Category, 2019



Source: Adapted from IISS, “Middle East Balance,” *Military Balance 2019*, pp 334-373.

# DIA Assessment of Iranian Ground Forces

Iran maintains two independent ground forces: the Islamic Republic of Iran Ground Force (IRIGF) under the Artesh and the IRGC Ground Force (IRGCGF) under the IRGC. Despite deploying some ground forces to Iraq and Syria in recent years, their mission continues to focus primarily on Iran's territorial defense and internal security. The IRGC also oversees Iran's reserve paramilitary force, the Basij, which comprises some units aligned with the IRGCGF as well as the larger Basij Organization of the Oppressed. *Islamic*

## **Republic of Iran Ground Force**

The IRIGF maintains approximately 350,000 soldiers and serves as Iran's first line of defense against an invading force. Many of its personnel consist of conscripts who serve for 2 years. The IRIGF consists of about 50 combat arms brigades, many of which are light infantry units with a sizable contingent of armored and mechanized infantry units. The IRIGF also has its own special operations units and several artillery groups for fire support. Most units are concentrated along the Iran-Iraq border, reflecting the force's primary mission to defend against foreign invasion. The IRIGF commander is Brigadier General Kiomars Heidari.

For more than a decade, the IRIGF has focused on improving its abilities to defend against a technologically superior enemy. In 2011, the IRIGF began a service-wide reorganization, transitioning from a division-centric to a brigade-centric structure. This transformation was intended to decentralize C2 and enable main force units to operate with greater flexibility and mobility. Under this model, the IRIGF is better postured to conduct counteroffensives against a superior invading adversary, giving brigade commanders the ability to act independently while decreasing response times. The IRIGF also has five regional headquarters, each of which is responsible for multiple provinces.

IRIGF units generally are organized with three main subordinate units per higher echelon unit. For example, each infantry brigade usually consists of three infantry battalions, each armored brigade usually consists of two armored battalions and a mechanized infantry battalion, and each mechanized infantry brigade generally consists of two mechanized infantry battalions and an armored battalion.

The IRIGF also has an Army Aviation (AA) component, called Islamic Republic of Iran Army Aviation (IRIAA), which serves as Iran's primary helicopter force, with about 90 percent of the helicopters in the Iranian ground forces. The IRIAA has several hundred attack, transport, and reconnaissance helicopters in its inventory—including AH-1 Cobras, Bell 214s, CH-47 Chinooks, and AB 206s—nearly all of which are legacy U.S. plat- forms that predate the Islamic Revolution.

In 2016, the IRIGF began deploying a small number of personnel to support combat operations in Syria. Although Iran claimed they were sent in an advisory capacity, press reports indicate they have played an active role in combat operations. This marked the first Artesh deployment abroad since the Iran-Iraq War. The IRIGF usually holds two major annual exercises each year. The MUHAMMAD RASULO- LLAH exercises occur along Iran's border and coastal regions, emphasizing either a defense against a conventional military invasion or counterterrorism operations.<sup>405.406</sup> The BEIT OL-MO- QADDAS exercises typically occur in May near Esfahan. The IRIGF often uses these events to unveil new ground forces equipment and as

capstone exercise for graduating cadets.<sup>407</sup>

## **Islamic Revolutionary Guard Corps Ground Force**

The IRGCGF is the largest component of the IRGC, consisting of approximately 150,000 personnel. In addition to its conventional military role of protecting Iranian territory against external threats, the IRGCGF along with the IRGC's paramilitary reserve component, the Basij, also have responsibilities to counter internal threats. For many years, the IRGCGF has regularly conducted counterinsurgency missions against Kurdish militants along Iran's northwest border and Baluchi militants in the southeast. Since as early as 2012, IRGCGF units have deployed to support combat operations in Syria and Iraq, with a surge of IRGCGF soldiers sent to Syria in 2015.<sup>408,409,410</sup> The commander of the IRGCGF is Brigadier General Mohammad Pakpur.<sup>411</sup>

The IRGCGF is structured with 31 provincial corps and a Tehran city corps, which are postured to counter ground invasion and internal unrest, along with independent conventional maneuver formations, such as infantry and armor. The IRGCGF consists of primarily light infantry and commando units, fairly evenly distributed around the country, particularly owing to the internal security aspects of its mission set. Its artillery batteries employ towed- and self-propelled guns and multiple rocket launchers (MRLs) while

## **Key Ground Forces Equipment<sup>416,417,418</sup>**

its air defense groups mainly use Soviet-origin mobile anti-aircraft artillery. IRGCGF armored units use 1970s-era Soviet tanks and tracked vehicles, as well as pre-1979 U.S.-imported tanks. The IRGCGF also maintains special operations forces, called *Saberin* ("patient ones").<sup>412</sup> In 2016, the IRGCGF established its own AA component, transferring helicopters from the IRGCASF. The new unit provides the IRGCGF with its first organic helicopter support.<sup>413</sup>

Many iterations of the IRGC's main annual exercise series—NOBLE PROPHET—incorporate IRGCGF elements demonstrating defensive operations against a potential invading force. The IRGCGF also frequently uses these exercises to test or display new military hardware.<sup>41</sup>

# Iran-Iraq Border Area



Source: AustralianNationalUniversity,  
[https://www.google.com/search?q=Iraq-Iran+border+map&client=firefox-b-1&tbm=isch&source=iu&ictx=1&fir=Zx8dCVG47k3E4M%253A%252CwFRRnFBYkytTuM%252C\\_&usg=\\_\\_cnRP2OFoY0kS9hilA3osRQOe5BE%3D&sa=X&ved=2ahUKEwjq6S4rMfcAhXNJt8KHSc8DCsQ9QEwAXoECAyQBg#imgrc=slz3ntU760J6uM](https://www.google.com/search?q=Iraq-Iran+border+map&client=firefox-b-1&tbm=isch&source=iu&ictx=1&fir=Zx8dCVG47k3E4M%253A%252CwFRRnFBYkytTuM%252C_&usg=__cnRP2OFoY0kS9hilA3osRQOe5BE%3D&sa=X&ved=2ahUKEwjq6S4rMfcAhXNJt8KHSc8DCsQ9QEwAXoECAyQBg#imgrc=slz3ntU760J6uM)

# The Kuwaiti “Hinge” in Land Combat in the Gulf



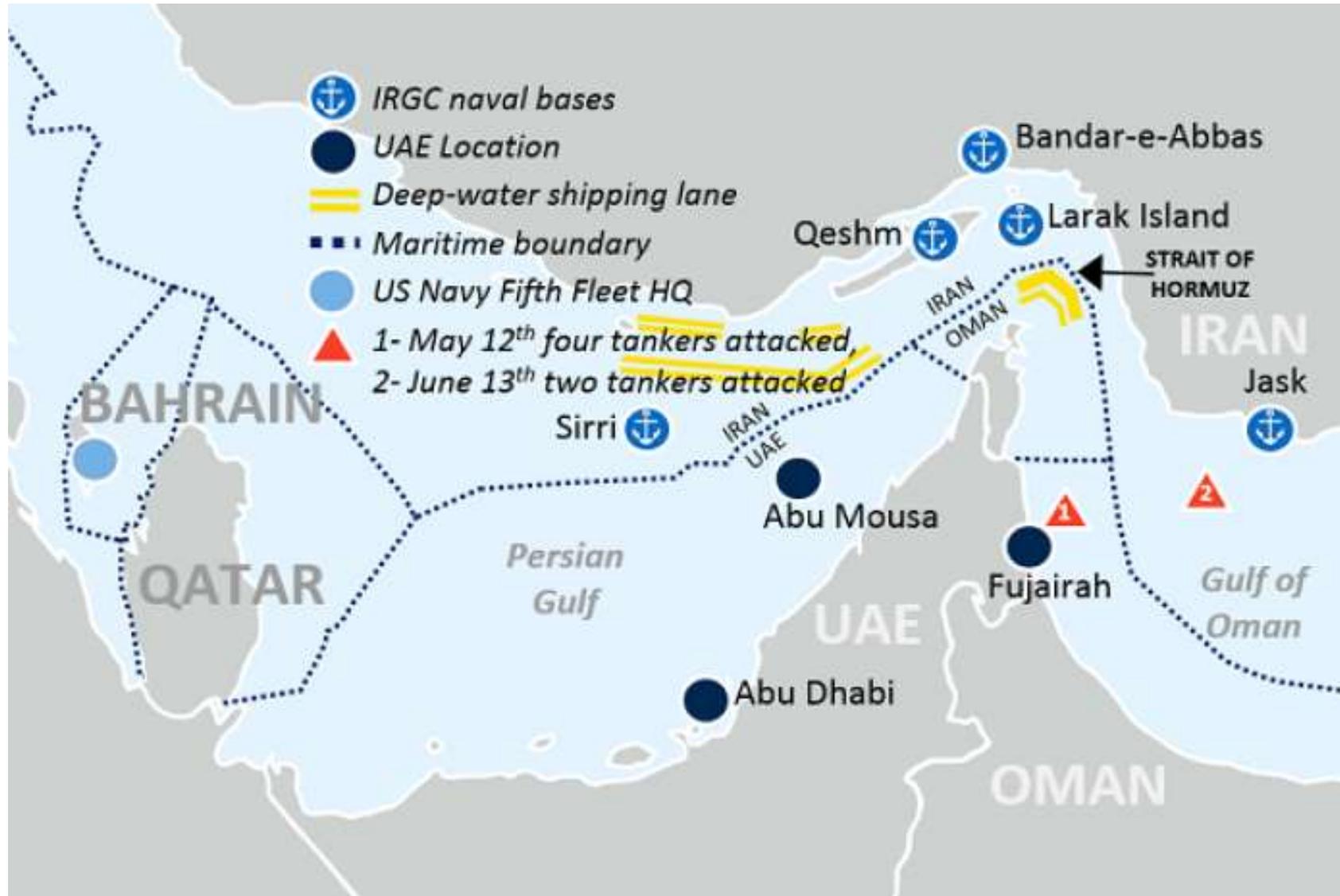
# Naval Forces

## Iran and the Arab Gulf Naval Forces in 2019

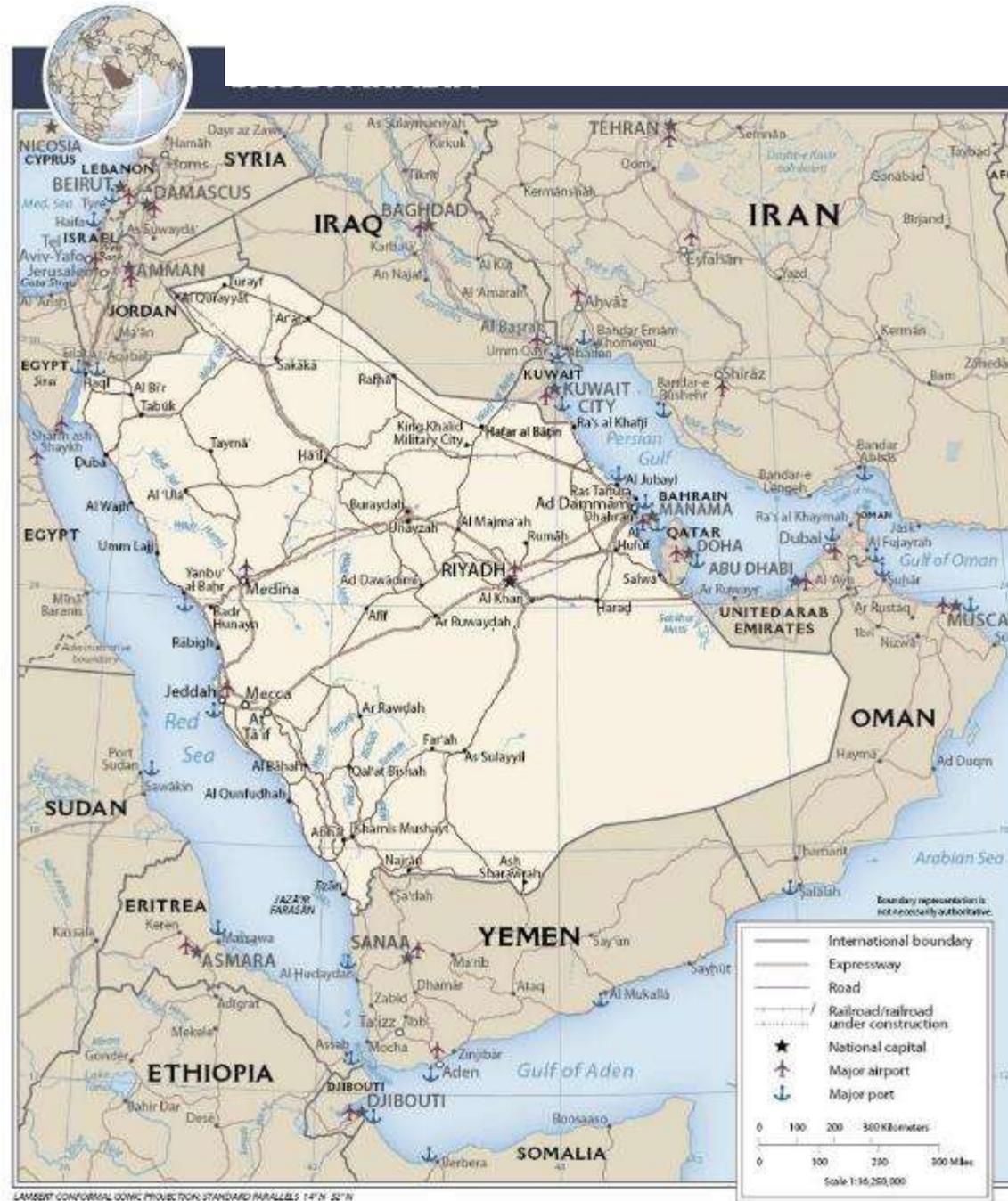
	Iraq	Iran	GCC	Saudi	UAE	Bahrain	Kuwait	Oman	Qatar
<b>Active Naval Personnel</b>	<b>3,000</b>	<b>18,000</b>	<b>25,400</b>	<b>13,500</b>	<b>2,500</b>	<b>700</b>	<b>2,000</b>	<b>4,200</b>	<b>2,500</b>
<b>Marines</b>	<b>1,000</b>	<b>2,600</b>	<b>3,000</b>	<b>3,000</b>	-	-	-	-	-
<b>Naval IRGC</b>	-	<b>20,000</b>	-	-	-	-	-	-	-
<b>Destroyers (with missiles)</b>	-	-	<b>3</b>	<b>3</b>	-	-	-	-	-
<b>Destroyers (without missiles)</b>	-	-	-	-	-	-	-	-	-
<b>Frigates (with missile)</b>	-	-	<b>8</b>	<b>4</b>	<b>1</b>	<b>1</b>	-	<b>3</b>	-
<b>Frigates (without missiles)</b>	-	-	-	-	-	-	-	-	-
<b>Corvettes</b>	-	<b>6</b>	<b>21</b>	<b>4</b>	<b>10</b>	<b>2</b>	-	<b>5</b>	-
<b>Coastal Patrol Boats (with missiles)</b>	-	<b>78</b>	<b>53</b>	<b>9</b>	<b>20</b>	<b>4</b>	<b>10</b>	<b>3</b>	<b>7</b>
<b>Coastal Patrol Boats (without missiles)</b>	<b>32</b>	<b>108</b>	<b>58</b>	<b>19</b>	<b>12</b>	<b>6</b>	<b>10</b>	<b>7</b>	<b>4</b>
<b>Submarines</b>	-	<b>21</b>	-	-	-	-	-	-	-
<b>Submersibles</b>	-	<b>3</b>	-	-	-	-	-	-	-
<b>Mine Warfare</b>	-	-	<b>5</b>	<b>3</b>	<b>2</b>	-	-	-	-
<b>Landing Ships</b>	-	<b>13</b>	<b>3</b>	-	<b>2</b>	-	-	<b>1</b>	-
<b>Landing Craft</b>	-	<b>13</b>	<b>42</b>	<b>5</b>	<b>17</b>	<b>9</b>	<b>6</b>	<b>5</b>	-

Source: Adapted from IISS, “Middle East Balance,” *Military Balance 2019*, pp 334-373.

# Iranian Tanker Attacks in 2019



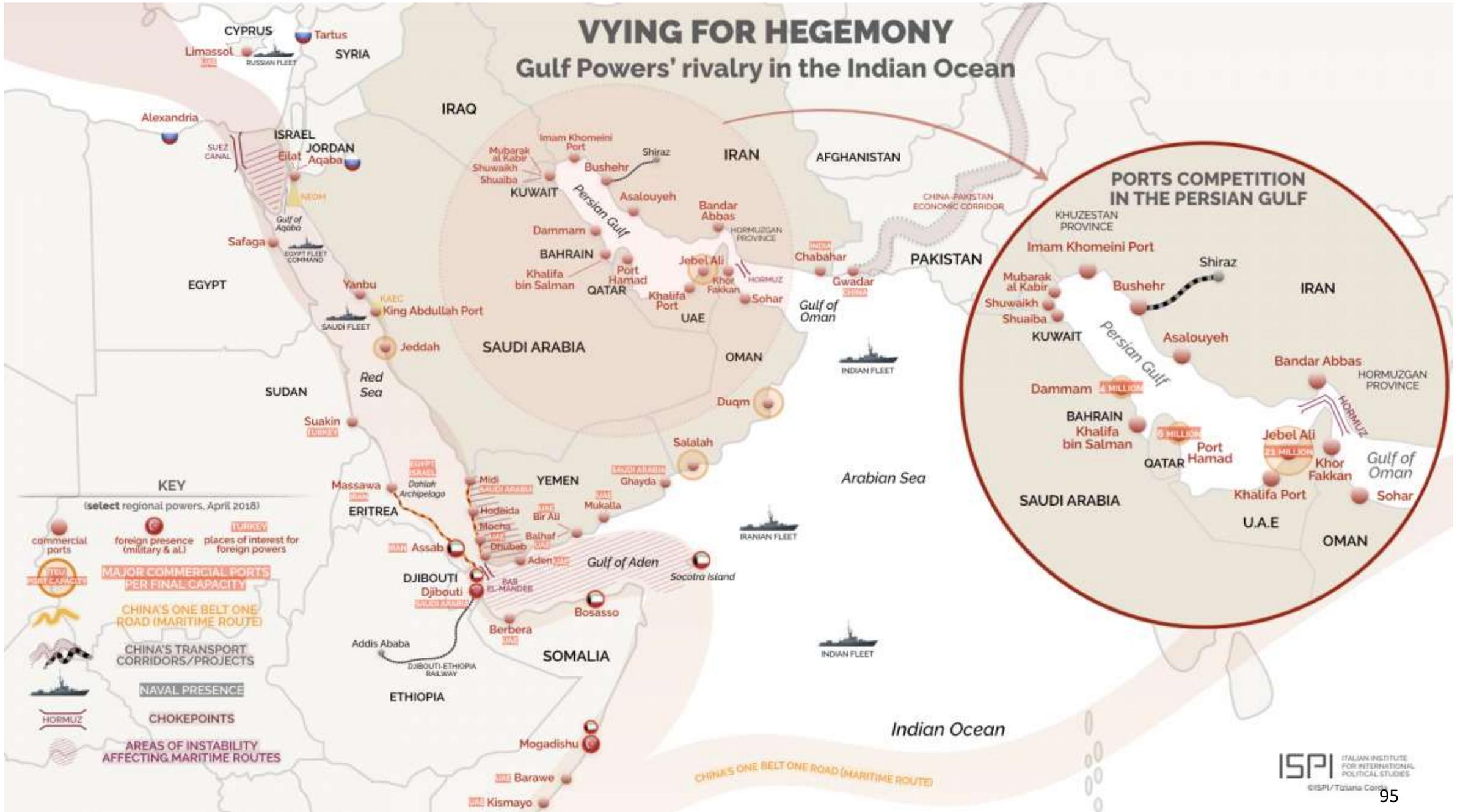
# Key Naval Operating Areas in the Arabian Peninsula, Gulf of Oman, Indian Ocean, and Red Sea Areas



Source: Google, CIA and EIA

# VYING FOR HEGEMONY

## Gulf Powers' rivalry in the Indian Ocean



# Strait of Hormuz

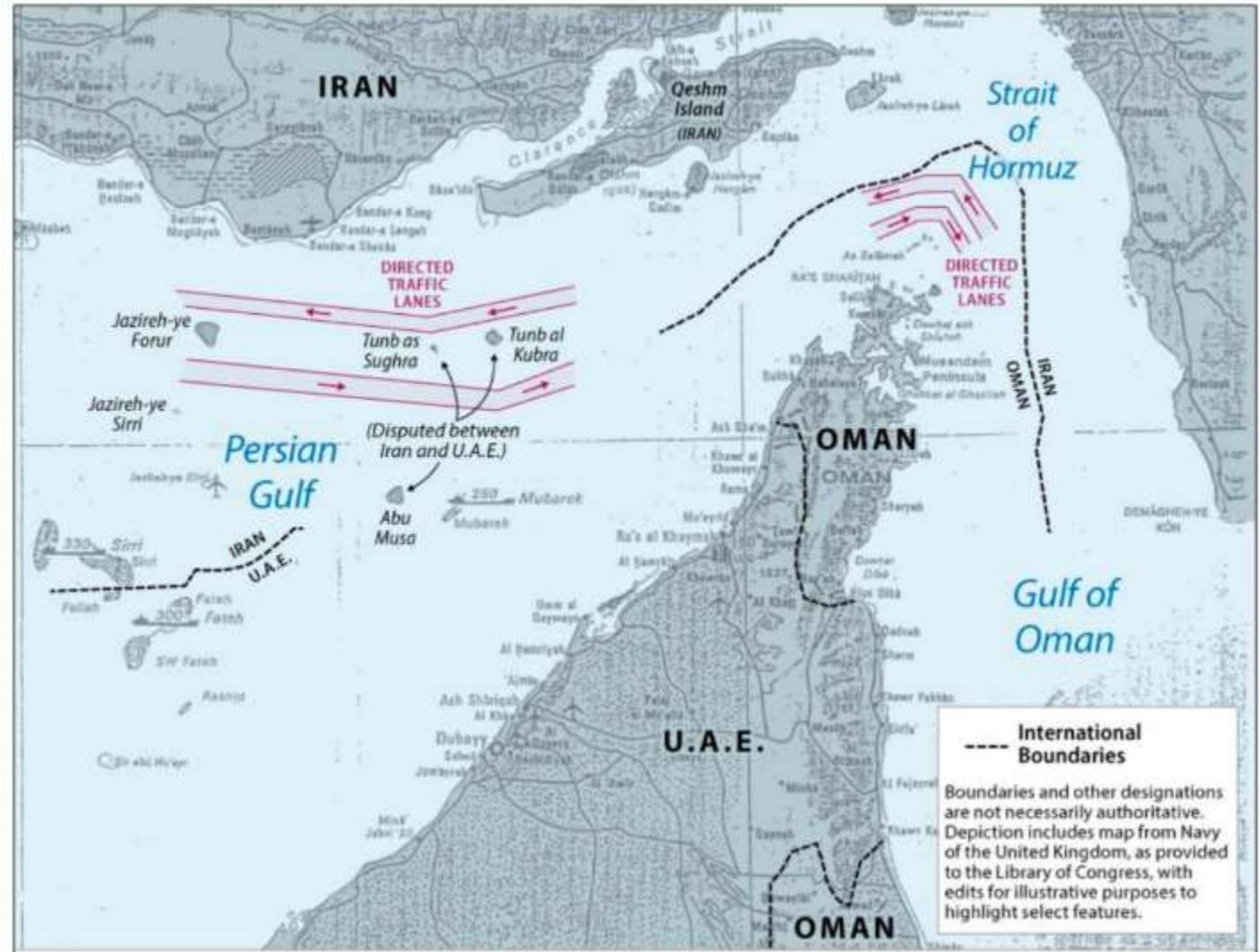
The Strait of Hormuz is the world's most important oil chokepoint because of the large volumes of oil that flow through the strait. In 2018, its daily oil flow averaged 21 million barrels per day (b/d), or the equivalent of **about 21% of global petroleum liquids consumption**.

Flows through the Strait of Hormuz in 2018 made up about one-third of total global seaborne traded oil. **More than one-quarter of global liquefied natural gas trade** also transited the Strait of Hormuz in 2018.

At the end of 2018, the total available crude oil pipeline capacity from the two countries combined was estimated at 6.5 million b/d. In that year, 2.7 million b/d of crude oil moved through the pipelines, leaving about 3.8 million b/d of unused capacity that could have bypassed the strait.

76% of the crude oil and condensate that moved through the Strait of Hormuz went to Asian markets in 2018. China, India, Japan, South Korea, and Singapore were the largest destinations for crude oil moving through the Strait of Hormuz to Asia, accounting for 65% of all Hormuz crude oil and condensate flows in 2018.

	2014	2015	2016	2017	2018
<b>Total oil flows through Strait of Hormuz</b>	<b>17.2</b>	<b>18.4</b>	<b>20.6</b>	<b>20.3</b>	<b>20.7</b>
Crude and condensate	14.4	15.2	17.3	17.2	17.3
Petroleum products	2.8	3.2	3.3	3.1	3.3
World maritime oil trade	56.4	58.9	61.2	62.5	N/A
World total petroleum and other liquids consumption	93.9	95.9	96.9	98.5	99.9
<b>LNG flows through Strait of Hormuz (Tcf per year)</b>	<b>4.0</b>	<b>4.2</b>	<b>4.2</b>	<b>4.1</b>	<b>4.1</b>

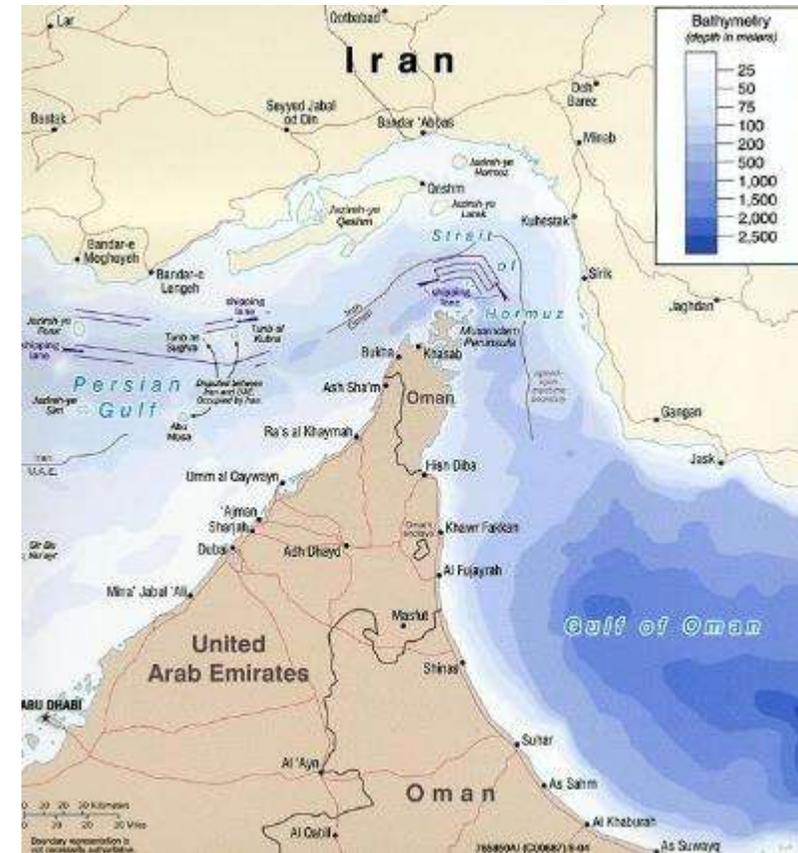


**Vessels transiting to the Western part of the Persian Gulf** must first enter from the Gulf of Oman, and pass through the Strait of Hormuz. The shipping lanes separate inbound and outbound traffic and keep vessels in navigable waters. The inbound lane, outbound lane, and separation lane (a median strip in between) occupy a width of 4 miles, completely in Omani territorial waters and as far from Iran's shore as safe navigation permits, but never further than 30 miles from Iran's Qeshm Island.

**Upon entering the Persian Gulf, east of the Strait of Hormuz**, vessels navigate a second set of directed traffic lanes keeping vessels headed in opposite directions apart, and clear of obstacles. The inbound lane, which is to the north, at one point comes within 6 miles of the Iranian mainland. The outbound lane lies to the south of the inbound lane; the separation lane directs traffic on either side of the Tunb islands.

**During the Iran-Iraq war, to avoid Iranian naval forces**, ships entered the Gulf through the Strait of Hormuz shipping lane and headed along the U.A.E. coast to a point 12 miles south of Abu Musa island.

# L6: Key Naval Operating Areas in and Near the Gulf



Source: Google, CIA and EIA

# DIA Assessment of Iranian Naval Forces - I

Iran operates two independent naval forces—the Islamic Republic of Iran Navy (IRIN), the Artesh’s naval branch, and the IRGC Navy (IRGCN). Iran established the IRGCN in 1985; the IRIN existed

as part of the Artesh before the 1979 revolution. The commander of the IRIN is Rear Admiral Hossein Khanzadi, and the commander of the IRGCN is Rear Admiral Alireza Tangsiri.

In 2007, the two naval forces reorganized, and Iran assigned specific areas of operation for each. Tehran assigned the IRGCN sole responsibility for the Persian Gulf and assigned the IRIN the Gulf of Oman and Caspian Sea. Both services continued to share responsibility for the Strait of Hormuz. The geographic split helped streamline command and control (C2) while reducing confusion, miscommunication, and duplication of efforts. With the added responsibility, the IRGCN established two new naval districts (NDs) in the central and southern Persian Gulf. The reorganization also provided the IRIN with a greater mandate to operate farther from the Iranian coast.

U.S. and Iranian naval forces interact on a routine basis in the Persian Gulf. Historically, more than 90 percent of such interactions have been deemed safe and professional, and the vast majority continue to be. However, Iran has increased maritime surveillance of U.S. forces in the Persian Gulf using unmanned aerial vehicles (UAVs), and the potential remains for additional unsafe and unprofessional interactions.

Amid increased tension with the United States in mid-2019, Iran has used its naval forces to demonstrate resolve and threaten freedom of navigation. In May and June 2019, Iran conducted limpet mine attacks against several merchant vessels in the Gulf of Oman. In July 2019, the IRGCN also seized a UK-flagged oil tanker in the Strait of Hormuz after the United Kingdom seized an Iranian-flagged oil tanker near Gibraltar.

## ***Islamic Republic of Iran Navy***

The IRIN comprises approximately 18,000 personnel and is considered Iran’s “blue water navy” with its larger and more traditional surface ships compared with the IRGCN. Iran is the only Persian Gulf nation with a submarine force, which the IRIN operates. The service’s primary mission is to defend Iranian territorial waters and protect the country’s economic interests in the Caspian Sea, Gulf of Oman, and beyond. It consists of primarily older, small surface combatants along with mostly small submarines and some logistic support vessels. As part of Iran’s layered maritime defenses, the IRIN provides antisurface warfare capabilities focused on the Gulf of Oman with coastal defense cruise missiles (CDCMs), naval mines, surface combatants, and submarines. The IRIN is Iran’s first line of defense in the Gulf of Oman and the Arabian Sea. The IRIN also aims to secure Iranian economic interests by safeguarding the flow of commerce in the region from piracy and interdiction.

The IRIN is geographically divided into four NDs, with the central IRIN headquarters in Tehran.

- **1st ND:** Headquartered at Bandar Abbas (Strait of Hormuz); also the location of the IRIN’s Southern Forward Naval Headquarters (SFNHQ), which coordinates across all southern IRIN NDs
- **2nd ND:** Headquartered at Bushehr (Persian Gulf) and Jask (Gulf of Oman); 2nd ND HQ moving to Jask following 2007 reorganization
- **3rd ND:** Headquartered at Chah Bahar (Gulf of Oman)
- **4th ND:** Headquartered at Bandar Anzali (Caspian Sea)

One of the IRIN’s key missions is to conduct out-of-area operations and naval diplomacy in the region and beyond. Since 2009, the IRIN has maintained near-continuous out-of-area naval deployments for counterpiracy operations in the Gulf of Aden, foreign port visits, and bilateral exercises with regional navies.

Despite its aging platforms, the IRIN has been moderately effective in maintaining readiness and sustaining operations. If the IRIN is to fulfill its longer term ambitions to function as a true blue-water navy, it will have to invest in more modern combatants and support ships. Iran has been able to domestically build corvettes and patrol boats for the IRIN and upgrade legacy platforms with new capabilities, including antiship cruise missiles (ASCMs). Despite its need for new auxiliaries, Iran has given no indication it is planning to invest in acquiring new support vessels. Iran acquired three Russian Kilo class attack submarines in the 1990s and began domestically producing North Korean Yono class midget submarines in the mid-2000s. Iran continues to invest in domestically developing and producing more-capable subsurface platforms, including larger coastal submarines.

The IRIN typically conducts a major national-level exercise each year called VELAYAT. The event usually entails a series of naval maneuvers involving IRIN surface combatants, submarines, and CDCM forces

## ***Islamic Revolutionary Guard Corps Navy***

The IRGCN, which comprises approximately 20,000 personnel, is tasked with protecting primarily the Iranian littoral. It employs an asymmetric doctrine that emphasizes speed, mobility, large numbers, surprise, and survivability and takes advantage of Iran’s geography with the shallow and confined waterways of the Persian Gulf and Strait of Hormuz. Although the IRGCN has significantly upgraded its fleet in terms of size and lethality since the end of the Iran-Iraq War, it remains a force composed of smaller platforms. Rather than acquire larger ships as a more traditional navy might, the IRGCN has pursued smaller, faster vessels armed with a variety of weapon systems. Iran views acquiring these types of vessels in sufficient numbers will allow it to threaten foreign navies and overcome wartime attrition.

The IRGCN aims to overwhelm an adversary’s defenses by using multiple platforms and weapons together to achieve tactical surprise. These systems include small boats armed with guns, rockets, torpedoes, and missiles; CDCMs; naval mines; and maritime special operations forces. IRGCN units train to use hit-and-run attacks against larger enemy naval vessels using swarms of small boats. The IRGCN could also restrict access or even attempt to fully close the Strait of Hormuz. Iran has modified a range of small boats to be able to deliver naval mines rapidly. In support of these goals, IRGCN acquisition efforts have focused on fielding a large fleet of faster and more-capable small boats; developing more-advanced ASCMs to be launched from sea, ground, or air; and building a large inventory of more-sophisticated naval mines.

The IRGCN is geographically divided into five NDs, with the central IRGCN headquarters at Bandar Abbas.

# DIA Assessment of Iranian Naval Forces - II

- **1st ND:** Headquartered at Bandar Abbas (Shahid Bahonar); responsible for the Strait of Hormuz
- **2nd ND:** Headquartered at Bushehr; responsible for the north-central Persian Gulf
- **3rd ND:** Headquartered at Bandar Mahshahr; responsible for the northern Persian Gulf
- **4th ND:** Headquartered at Asaluyeh; responsible for the central Persian Gulf
- **5th ND:** Headquartered at Bandar Lengeh; responsible for the southern Persian Gulf, including the disputed islands of Lesser Tunb, Greater Tunb, and Abu Musa

Many of Iran's NOBLE PROPHET exercises— the IRGC's typical large-scale annual exercise— are naval-focused with IRGCN elements leading the activities. IRGCN NOBLE PROPHETs are usually deterrent-themed events intended largely for strategic messaging, primarily aimed at the West and regional states.

## **Major Naval Capabilities**

### **Fast Attack Craft and Fast Inshore Attack Craft**

The IRGCN is the primary operator of Iran's hundreds of fast attack craft (FAC) and fast inshore attack craft (FIAC). These platforms have been the mainstay of the IRGCN since its inception in the 1980s, although the Iranian FAC/FIAC inventory has grown significantly in terms of size and lethality since that time. Larger and more-capable, Iranian FAC are usually armed with ASCMs or torpedoes. The largest of these vessels are Iran's 10 Chinese-built Houdong missile boats acquired in the mid-1990s, which serve as the capital ships of the IRGCN fleet; these vessels are frequently used in Persian Gulf and Strait of Hormuz patrols. Originally equipped with C802 missiles, Iran has since upgraded the Houdongs with extended-range Ghader ASCMs. Iranian FIAC, which are smaller but far more numerous, are lightly armed and usually fitted with only machine guns or rockets. Used en masse, these vessels can harass merchant shipping and conduct swarm tactics during a force-on-force naval engagements.

### **Surface Combatants**

The IRIN operates Iran's larger surface combatants, which include three 1960s-era British-built Vosper Mk 5 class corvettes and several French-built Combattante class patrol craft acquired before the Islamic Revolution. To expand the IRIN fleet, Iran has since domestically built several of its own Combattante patrol craft and three new Jamaran class corvettes, which closely resemble Iran's Vospers with modifications, such as an added helicopter flight deck. Iran has commissioned three of the vessels, including one on the Caspian Sea, which was severely damaged in early 2018. The IRIN has also expanded its number of missile combatants by upgrading older auxiliaries and patrol ships with short- and medium-range ASCMs.

### **Submarines**

Submarines are a critical component of the IRIN, which has undertaken an ambitious construction program to increase its subsurface production capabilities and expand its fleet. Iran has four classes of submarines in its order of battle. Iran's largest and most capable subsurface platforms are the three Kilo class attack submarines it purchased from Russia in the 1990s. The IRIN also has 14 North Korean-designed Yono class midget submarines, which it can arm with Iranian Valfajr heavy-weight torpedoes.

In February 2019, Iran presented its first submarine-launched ASCM, the Jask-2, which can be launched from the Yono. Iran also has a single domestically designed and produced Nahang midget submarine, which lacks torpedo tubes and may serve as a special operations platform. Also in February 2019, the IRIN officially commissioned its first coastal submarine, the *Fateh*. Iran claims the Fateh class, Iran's largest domestically built submarine, can launch both torpedoes and ASCMs.

### **Naval Mines**

Mine warfare has been an integral part of Iran's naval strategy since the Tanker War. Iran has an estimated inventory of more than 5,000 naval mines, which include contact and influence mines. Both navies have devised strategies to rapidly deploy mines while improving force survivability. Iran has a variety of vessels that can lay mines, but the IRGCN has integrated its doctrine of using smaller, faster vessels into its mine-laying strategy. Iran has equipped many of its Ashoora small boats with mine rails capable of holding at least one mine.

# Iran's Anti-Access, Area Denial Strategy

## **Antiaccess/Area Denial**

Iran's antiaccess/area denial (A2/AD) strategy seeks to prevent an adversary from entering or operating in areas that it considers essential to its security and sovereignty. Iranian A2/AD relies primarily on Iran's naval forces and geostrategic position along the Persian Gulf and Strait of Hormuz—a critical chokepoint for the world's oil supply. Iran's layered maritime defenses consist of numerous platforms and weapons intended, when used in a combined fashion, to overwhelm an adversary's naval forces. Iran emphasizes asymmetric tactics, such as small boat attacks, to saturate a ship's defenses. The full range of Iran's A2/AD capabilities include ship- and shore-launched antiship cruise missiles (ASCMs), fast attack craft (FAC) and fast inshore attack craft (FIAC), naval mines, submarines, UAVs, antiship ballistic missiles (ASBMs), and air defense systems.

## **Maritime Threat Capabilities**

Capitalizing on the strategic nature of its littoral, Iran's maritime A2/AD strategy employs a combination of surface combatants, undersea warfare, and antiship missiles to deter naval aggression and hold maritime traffic at risk. Particularly with its large fleet of small surface vessels—high-speed FAC and FIAC equipped with machine guns, unguided rockets, torpedoes, ASCMs, and mines—Iran has developed a maritime guerrilla-warfare strategy intended to exploit the perceived weaknesses of traditional naval forces that rely on large vessels. Iran can also use its undersea warfare capabilities, which include Yono class midget submarines and Kilo class attack submarines, to attack surface ships in the Persian Gulf, Strait of Hormuz, and Gulf of Oman. Iran operates coastal defense cruise missiles (CDCMs) along its southern coast, which it can launch against military or civilian ships as far as 300 kilometers away. Iran also maintains an estimated inventory of more than 5,000 naval mines, including contact and influence mines, which it can rapidly deploy in the Persian Gulf and Strait of Hormuz using high-speed small boats equipped as minelayers.

## **Long-Range Strike**

During a conflict, Iran probably would attempt to attack regional military bases and possibly energy infrastructure and other critical economic targets using its missile arsenal. Even with many of its missile systems having poor accuracy, Iran could use large salvos of missiles to complicate an adversary's military operations in theater, particularly if some of Iran's newer, more-accurate systems are incorporated. Iran has also developed short-range ASBMs based on its Fateh-110 system. Iran could use these ASBMs, in concert with its other counter maritime capabilities, to attack adversary naval or commercial vessels operating in the Persian Gulf or Gulf of Oman.

## **Air Defenses**

Iran operates a diverse array of SAM and radar systems intended to defend critical sites from attack by a technologically superior air force. Operational since 2017, Iran's Russian-provided SA-20c long-range SAM system is the most capable component of its integrated air defense system (IADS). Iran is also fielding more-capable, domestically developed SAM and radar systems to help fill gaps in its air defenses.

## **Unconventional Warfare**

Iran's unconventional warfare capability serves as a means of power projection and as part of its A2/AD strategy. Iran could use its strong ties to militant and terrorist groups in the region— such as Hizballah, Iraqi Shia militias, and the Huthis—to target critical adversary military and civilian facilities. Proxy attacks against adversary military bases in the region could complicate operations in theater.

# Iranian Port Visits and Naval Exercises



Source: DIA, *Iran Military Power, Ensuring Regime Survival and Securing Regional Dominance*, DIA, November 2019, p. 19.

# Iranian Naval and IRGC Naval Asymmetric Forces in 2019

## Islamic Revolutionary Guard Corps Naval Forces 20,000+ (incl 5,000 Marines)

Some arty bty

Some ASHM bty with HY-2 (CH-SSC-3 *Seersucker*) ASHM

### EQUIPMENT BY TYPE

In addition to the vessels listed, the IRGC operates a substantial number of patrol boats with a full-load displacement below 10 tons, including ε40 *Boghammar*-class vessels and small *Bavar*-class wing-in-ground effect air vehicles

### PATROL AND COASTAL COMBATANTS 126 PBF 56:

5 C14 with 2 twin Inchr with C-701 (*Kosar*)/C-704 (*Nasr*) ASHM

10 Mk13 with 2 single Inchr with C-704 (*Nasr*) ASHM, 2 single 324mm TT

10 *Thondor* (PRC *Houdong*) with 2 twin Inchr with C-802A (*Ghader*) ASHM, 2 twin AK230 CIWS

25 *Peykaap* II (IPS-16 mod) with 2 single Inchr with C-701 (*Kosar*) ASHM/C-704 (*Nasr*), 2 single 324mm TT

6 *Zolfaghar* (*Peykaap* III/IPS-16 mod) with 2 single Inchr with C-701 (*Kosar*)/C-704 (*Nasr*) ASHM PBF 15 *Peykaap* I (IPS -16) with 2 single 324mm TT

PBF 35: 15 *Kashdom* II; 10 *Tir* (IPS-18); ε10 *Pashe* (MIG-G-1900)

PB ε20 *Ghaem* AMPHIBIOUS

LANDING SHIPS • LST 3 *Hormuz* 24 (*Hejaz* design for commercial use)

LANDING CRAFT • LCT 2 *Hormuz* 21 (minelaying capacity)

LOGISTICS AND SUPPORT • AP 3 *Naser* COASTAL DEFENCE • ASHM C-701 (*Kosar*); C-704 (*Nasr*); C-802; HY-2 (CH-SSC-3 *Seersucker*)

### HELICOPTERS

MRH 5 Mi-171 *Hip*

TPT • Light some Bell 206 (AB-206) *Jet Ranger*

### Islamic Revolutionary Guard Corps Marines

5,000+

Amphibious 1 marine bde

## Navy 18,000

In addition to the vessels listed, the Iranian Navy operates a substantial number of patrol boats with a full-load displacement below 10 tons

### SUBMARINES 21

### TACTICAL 21

SSK 3 *Taregh* (RUS *Paltus* Project-877EKM) with 6 single 533mm TT

SSC 1 *Fateh* (in trials)

SSW 17: 16 *Qadir* with 2 single 533mm TT with *Valfajar*

HWT (additional vessels in build); 1 *Nahang*

### PATROL AND COASTAL COMBATANTS 67

PCFG 13 *Kaman* (FRA *Combattante* II) with 1–2 twin Inchr with C-802 (*Noor*) (CH-SS-N-8 *Saccade*) ASHM, 1 76mm gun

### PBG 9:

3 *Hendijan* with 2 twin Inchr with C-802 (*Noor*) (CH-SS-N-8 *Saccade*) ASHM

3 *Kayvan* with 2 single Inchr with C-704 (*Nasr*) ASHM 3 *Parvin* with 2 single Inchr with C-704 (*Nasr*) ASHM

PBFT 3 *Kajami* (semi-submersible) with 2 324mm TT

### PBF 1 MIL55

PB 34: 9 C14; 9 *Hendijan*; 6 MkII; 10 MkIII

### AMPHIBIOUS LANDING SHIPS 12

LSM 3 *Farsi* (ROK) (capacity 9 tanks; 140 troops)

LST 3 *Hengam* with 1 hel landing platform (capacity 9 tanks; 225 troops) LSL 6 *Fouque*

### LANDING CRAFT 11 LCT 2

LCU 1 *Liyan* 110

UCAC 8: 2 *Wellington* Mk 4; 4 *Wellington* Mk 5; 2 *Tondar* (UK *Winchester*)

### NAVAL AVIATION 2,600

### Aircraft:

TPT 16: Light 13: 5 Do-228; 4 F-27 *Friendship*; 4 *Turbo Commander* 680; PAX 3 *Falcon* 20 (ELINT) HELICOPTERS

ASW ε10 SH-3D *Sea King*

MCM 3 RH-53D *Sea Stallion*

TPT • Light 17: 5 Bell 205A (AB-205A); 2 Bell 206 *Jet Ranger* (AB-206); 10 Bell 212 (AB-212)

### MARINES 2,600

Amphibious 2 marine bde

Does not include air forces or land and air-based anti-ship missile and mine warfare capabilities.

Source: Adapted from IISS, “Middle East Balance,” *Military Balance* 2019, pp 334-373.

# DIA Estimate of Iranian Naval Forces

IRIN Order of Battle<sup>285</sup>

1805-17887

Class	Type	Inventory
Kilo	Attack submarine	3
Fateh	Coastal submarine	1
Yono (Ghadir)	Midget submarine	14
Nahang	Midget submarine	1
Jamaran (Mowj)	Corvette	3
Vosper Mk 5	Corvette	3
PF 103 (Bayandor)	Corvette	2
Combattante II (Kaman)	Fast attack craft, missile	13
Hendijan	Patrol craft, missile	3
PGM-71 (Parvin)	Patrol craft, missile	3
Cape (Kayvan)	Patrol craft, missile	3
U.S. Mk II	Patrol craft, coastal	6
U.S. Mk III	Patrol craft, coastal	10
C-14	Patrol craft, coastal	9
FB 40	Patrol craft, inshore	6
Hengham	Landing ship, tank	3
Karbala	Landing ship, logistic	6
Wellington Mk 4	Hovercraft	2
Wellington Mk 5	Hovercraft	4
Kharg	Replenishment ship	1
Bandar Abbas	Fleet supply ship	2
Delvar	Support ship	6
Hendijan	Tender	7
Shahsavari	Training ship	1

IRGCN Order of Battle<sup>294</sup>

1805-17887

Class	Type	Inventory
Houdong (Thondor)	Fast attack craft, missile	10
Peykaap I	Patrol craft, coastal, torpedo	15
Peykaap II	Patrol craft, coastal, missile	25
Peykaap III	Patrol craft, coastal, missile	5
Mk 13	Patrol craft, coastal, missile	10
C-14	Patrol craft, coastal, missile	5
Tir	Patrol craft	10
Tarlan	Patrol craft, inshore	15
Kashdom II	Patrol craft, inshore	15
Ashoora	Patrol craft, inshore	Unknown*
Cougar	Patrol craft, inshore	Unknown*
FB RIB-33	Patrol craft, inshore	Unknown*
Gashti	Patrol craft, inshore	Unknown*
Kuch	Patrol craft, inshore	Unknown*
Bladerunner (Siraj)	Patrol craft, inshore	Unknown*
Boghammar	Patrol craft, inshore	20
Hormuz 21	Landing ship	2
Hormuz 24	Landing ship	3
Harth 55	Support ship	1
Safir Kish	Transport	3
Naser	Transport	3

\*Note: The exact numbers for many Iranian small boat types are unknown, but the IRGCN has hundreds of small boats throughout the Persian Gulf.

# Iranian Coastal Defense Cruise Missile Ranges

CDCMs have been one of Iran's primary layers of defense for both navies to protect the country's littoral and maritime approaches. Iran initially gained experience with CDCMs using Chinese-built Silkworm missiles during the Tanker War. Both the IRGCN and IRIN operate CDCM forces, and Iran has invested greatly in developing and producing more-capable ASCMs, primarily based on Chinese C802 and C700-series missiles. Based on its domestic copy of the C802, called the Noor, Iran has developed the 200-kilometer-range Ghader and the 300-kilometer-range Ghadir ASCMs.<sup>301</sup> Iran also domestically produces the 35-kilometer-range Chinese C704 ASCM as the Nasr.<sup>302</sup>

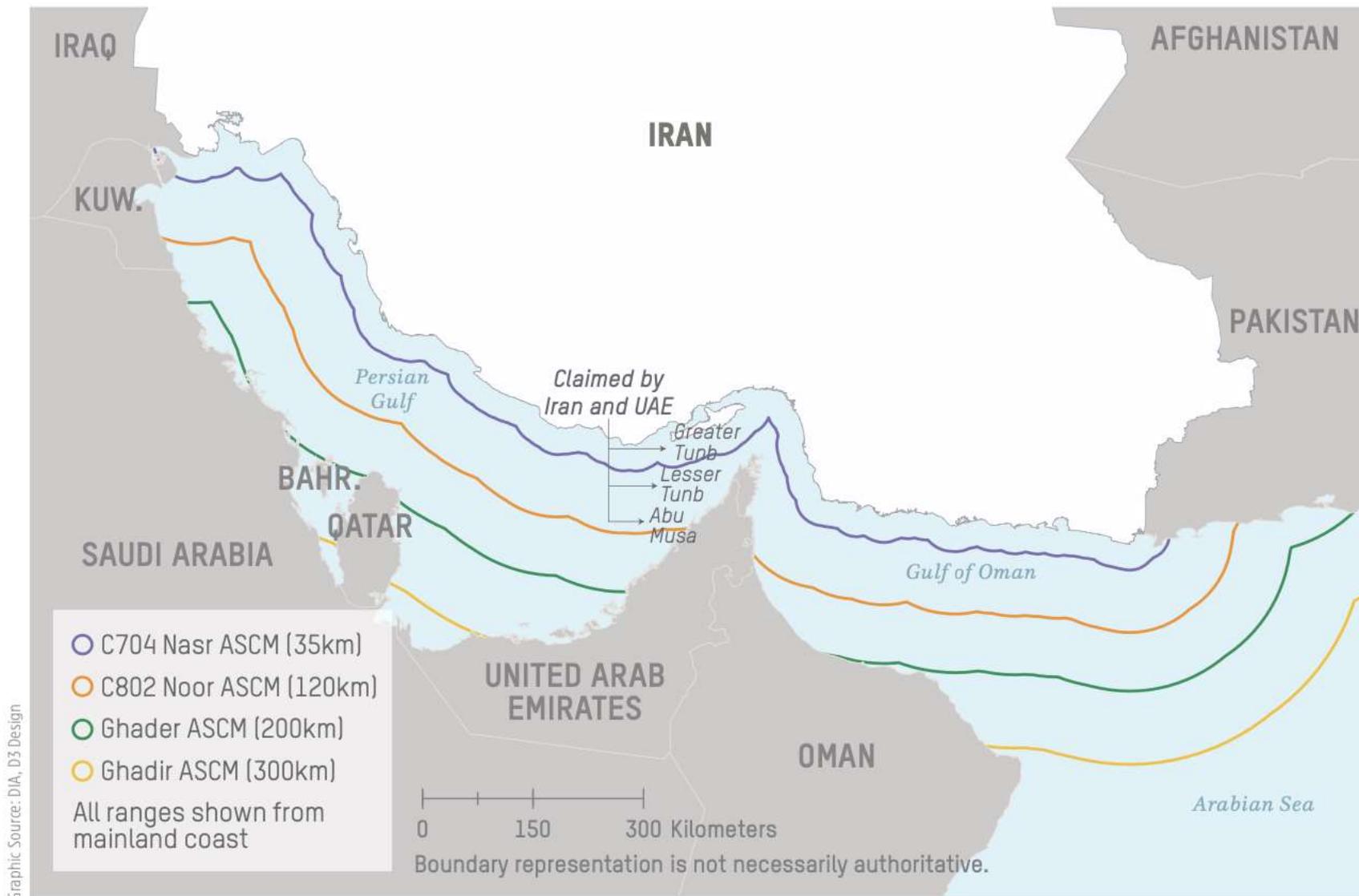
## Antiship Ballistic Missiles

The IRGCASF has publicly announced and tested its ability to target ships with several ballistic missile models—including the Khalij Fars, Hormuz 1, and Hormuz 2— based on the Fateh-110 SRBM. These anti-ship ballistic missiles (ASBMs) have ranges of up to 300 kilometers and are equipped with terminal seekers that steer the missile to its target. These systems use a variety of seekers, including electro-optical and antiradiation homing.<sup>3</sup>

Source: DIA, *Iran Military Power, Ensuring Regime Survival and Securing Regional Dominance*, DIA, November 2019, p. 19, 54-56.

## Iranian CDCM Ranges

1805-17885



# **Air and Air Defense Forces**

## Ballistic Missiles

Iran:	Operational Sites
Tabriz	Missile Base
Karaj	Production
Parchin	Production
Tehran	Production/Training/ Education
Semnan	Production/Missile Base
Hamadan	Missile Base
Kermanshahan	Missile Base
Korramabad	Missile Base
Esfahan	Production
Tabas	Test Site
Shiraz	Production
Bandar Abbas	Missile Base
Kuhestak	Missile Base
Abu Musa Island	Missile Base
Sirjan	Production

## Gulf Air Power and Missile Bases (2019)

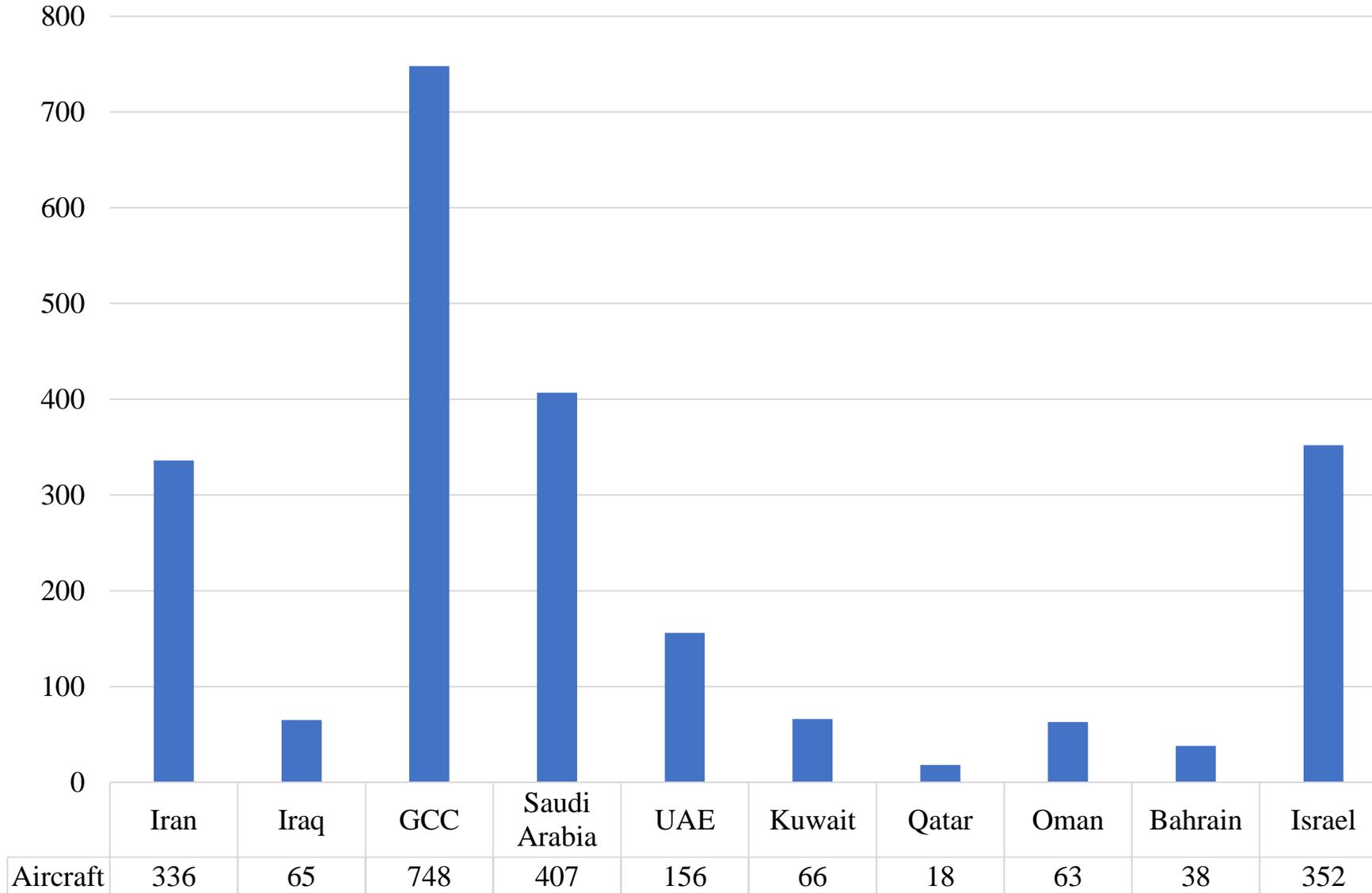
Reference Abdullah Toukan adapted from:  
(DIA "Iran Military Power" August 2019  
Jane's IHS Markit  
NTI: ([https://gmap.nti.org/missile\\_iran.html](https://gmap.nti.org/missile_iran.html))



## Air Defense/Attack Mission

Iran (Operational):	Inventory
Tabriz	12 F5E/F – 24 MIG-29
Tehran - Mehrabad	24 MIG-29
Mashhad	12 F-5E
Hamadan	12 F-4E
Esfahan	44 F-14A – 12 F-5E
Dezful	12 F-5E
Omidyeh	30 F-7N
Shiraz	28 Su-24 MK
Bushehr	12 F-14E
Bandar Abbas	12 F-4E
Chah Bahar	7 F-4D – 9 F1-E
GCC (Operational):	Inventory
Tabuk (Saudi Arabia)	24 F-15C
Taif (Saudi Arabia)	72 Typhoon
Khamis Mushait (Saudi Arabia)	84 F-15S
Dhahran (Saudi Arabia)	67 Tornado IDS
Ahmed al-Jaber (Kuwait)	39 F-18C
Issa (Bahrain)	16 F-16C
Doha (Qatar)	9 Mirage-2000-5
Al-Safran (UAE)	42 Mirage 2000-9
Al-Dhafra (UAE)	55 F-16C
Adam (Oman)	10 Typhoon
Thumrait (Oman)	23 F-16C

## Comparative Total Fixed-Wing Combat Aircraft Strength, 2019



Source: adapted from the IISS, *Military Balance*, 2019.

## Gulf Modern Combat Aircraft Inventory in 2019

**Iran: 336 combat Aircraft: No fully modern, 94 semi-modern. FTR 184+:** 20 F-5B *Freedom Fighter*; 55+ F-5E/F *Tiger* 24 F-7M *Airguard*; 43 F-14 *Tomcat*; 36 MiG-29A/U/UB *Fulcrum*; up to 6 *Azarakhsh* (reported) **FGA 89:** 64 F-4D/E *Phantom II*; 10 *Mirage F-1E*; up to 6 *Saegheh* (reported); up to 7 Su-22M4 *Fitter K*; 3+ Su-22UM-3K *Fitter G*. **ATK 39:** 29 Su-24MK *Fencer D*; 7 Su-25K *Frogfoot* (status unknown); 3 Su-25UBK *Frogfoot* (status unknown), **ISR:** 6+ RF-4E *Phantom II*\*

**Bahrain: 28 combat Aircraft: 20 fully modern.** 8 F-5E *Tiger II*; 4 F-5F *Tiger II*, **FGA 20:** 16 F-16C Block 40 *Fighting Falcon*; 4 F-16D Block40 *Fighting Falcon*

**Kuwait: 66 combat capable, 39 fully modern. FGA 39:** 31 F/A-18C *Hornet*; 8 F/A-18D *Hornet*. **TRG 11** *Hawk Mk64\**; 16 EMB-312 *Tucano\**

**Oman: 63 combat capable, 35 fully modern, FGA 35:** 17 F-16C Block 50 *Fighting Falcon*; 6 F-16D Block 50 *Fighting Falcon*; 12 *Typhoon* **TRG 4** *Hawk Mk103\**; 8 *Hawk Mk166*; 12 *Hawk Mk203\**; 12 PC-9\*

**Qatar: 18 combat capable, 12 Fully modern. FGA 12:** 9 *Mirage 2000ED*; 3 *Mirage* **TRG 6** *Alpha Jet\**.

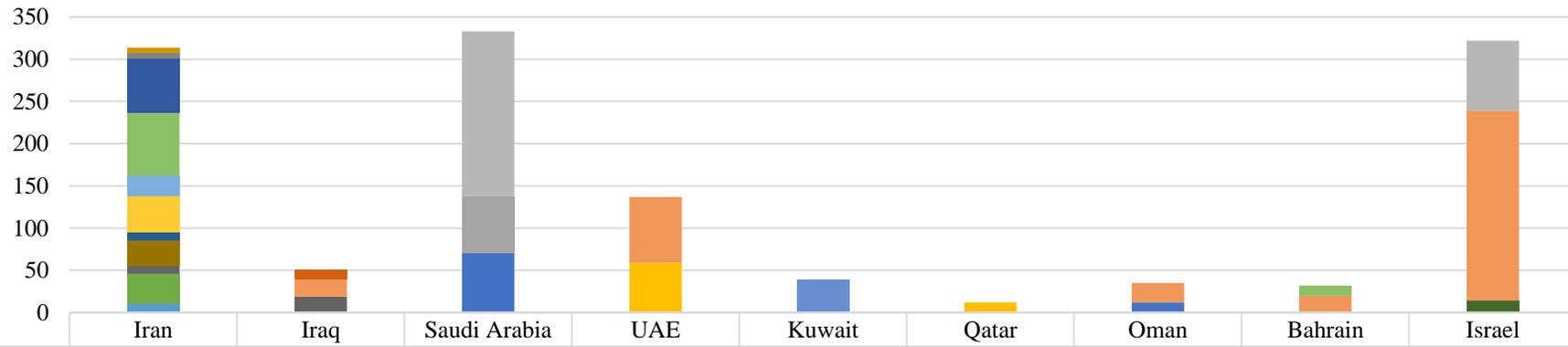
**Saudi Arabia: 407 combat capable, 266 fully modern, 79 semi-modern. FTR 81:** 56 F-15C *Eagle*; 25 F-15D *Eagle*. **FGA 185+:** up to 67 F-15S *Eagle* (being upgraded to F-15SA configuration); 47+ F-15SA *Eagle*; 71 **ATK 67** *Tornado IDS*. **ISR 14+:** 12 *Tornado GR1A\**; 2+ *Beech 350ER King Air*. **AEW&C 7:** 5 E-3A *Sentry*; 2 *Saab 2000 Erieye*. **ELINT 2:** 1 RE-3A; 1 RE-3B. **TRG:** 24 *Hawk Mk65\** (incl aerobatic team); 16 *Hawk Mk65A\**; 22 *Hawk Mk165*.

**UAE: 156 combat capable, 78 fully modern, 66 semi-modern. FGA 137:** 54 F-16E Block 60 *Fighting Falcon (Desert Eagle)*; 24 F-16F Block 60 *Fighting Falcon* (13 to remain in US for trg); 15 *Mirage 2000-9DAD*; 44 *Mirage 2000-9EAD*. **ISR 7** *Mirage 2000 RAD\**. **SIGINT 1** *Global 6000* **AEW&C 2** *Saab 340* **TRG 12** *Hawk Mk102\**;

**Iraq: 65 combat capable. 21 fully modern, 19 semi-modern. FGA 21:** 18 F-16C *Fighting Falcon*; 3 F-16D *Fighting Falcon*; **ATK 30:** 10 L-159A; 1 L-159T1; 19 Su-25/Su-25K/Su-25UBK *Frogfoot* **ISR 10:** 2 *Cessna AC-208B Combat Caravan\**; 2 SB7L-360 *Seeker*; 6 *Beech 350ER King Air*.

**Israel: 352 combat capable. 322 fully modern. FTR 58:** 16 F-15A *Eagle*; 6 F-15B *Eagle*; 17 F-15C *Eagle*; 19 F-15D *Eagle*. **FGA 264:** 25 F-15I *Ra'am*; 78 F-16C *Fighting Falcon*; 49 F-16D *Fighting Falcon*; 98 F-16I *Sufa*; 14 F-35I *Adir* **ISR 6** RC-12D *Guardrail* **ELINT 4:** 1 EC-707; 3 *Gulfstream G550 Shavit* **AEW 4:** 2 B-707 *Phalcon*; 2 *Gulfstream G550 Eitam* (1 more on order)

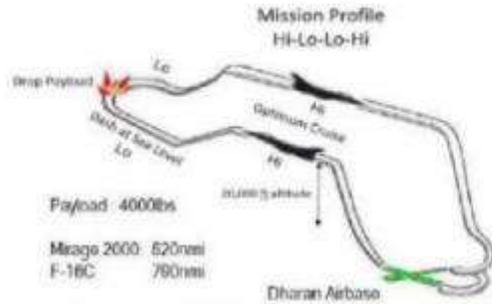
### J3. Comparative Fixed-Wing Combat Aircraft Strength By Type, 2019



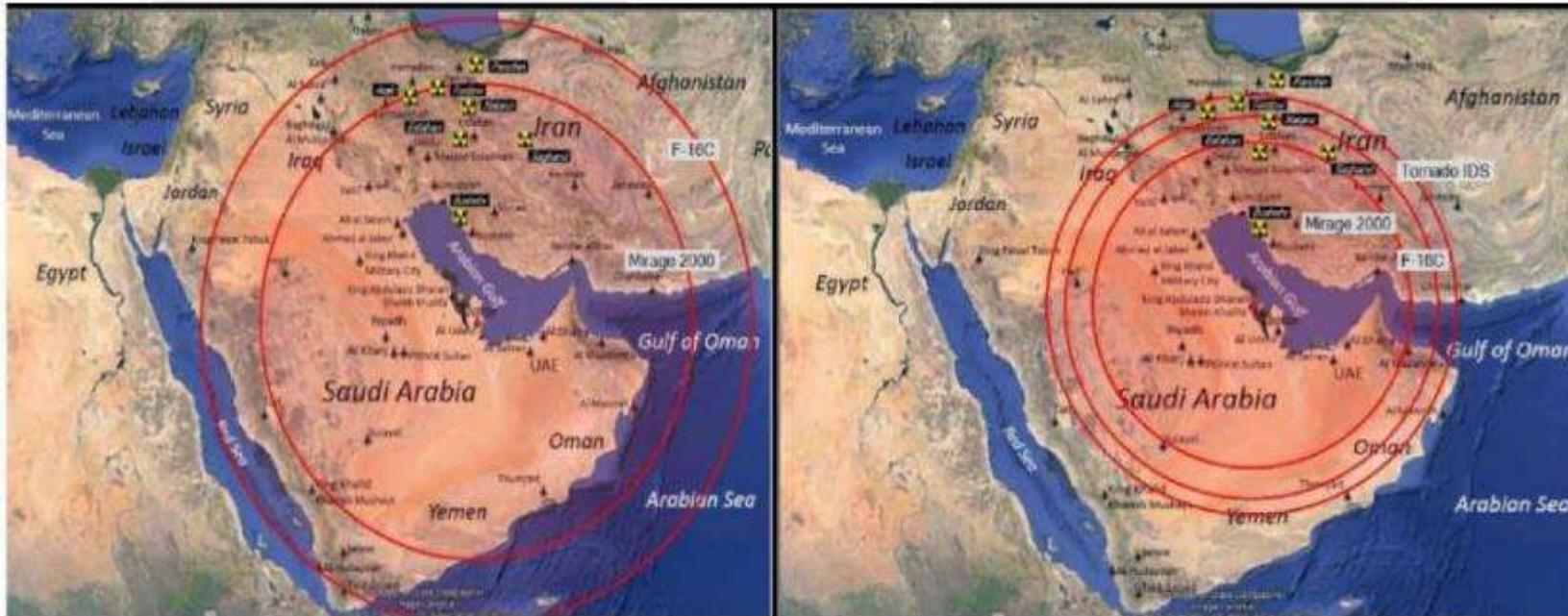
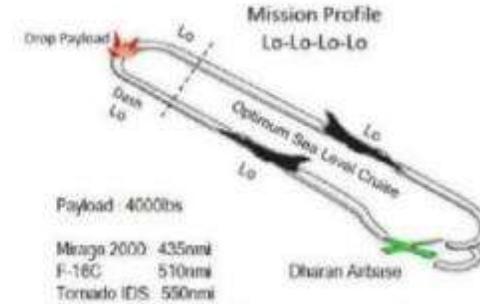
	Iran	Iraq	Saudi Arabia	UAE	Kuwait	Qatar	Oman	Bahrain	Israel
Azarakhsh	6								
Seagheh	6								
L-159		11							
F-4	64								
F-5	75							12	
F-7	24								
F-14	43								
F-15c/d/i/s			195						83
F-16		21		78			23	20	225
F-18					39				
F-35									14
Su-20/22	10								
Su-24	29								
Su-25	10	19							
Mig-21/U									
Mig-25									
Mig-29	36								
Mirage F-1E	10								
Mirage 2000				59		12			
Tornado IDS			67						
Tornado ADV									
Typhoon-2			71				12		

Source: adapted from the IISS, *Military Balance*, 2019.

# Range of GCC Air Power



GCC Airforces  
Interdiction  
Mission Radius



(Source: Abdullah Toukan)

# DIA Assessment of Iranian Air Forces

Iran's air and air defense capabilities are split primarily across three services: the Islamic Republic of Iran Air Force (IRIAF) and the Islamic Republic of Iran Air Defense Force (IRIADF), both under the Artesh, and the IRGCASF. The Khatemolaniah Air Defense Headquarters (KADHQ) is the national-level command responsible for coordinating between the IRIADF and IRGCASF.

## ***Islamic Republic of Iran Air Force***

Before the 1979 Islamic Revolution, the shah invested heavily in equipping the Imperial Iranian Air Force with modern combat air capabilities, viewing the service as a symbol of Iran's strength and security. After decades of international sanctions following the revolution and combat losses during the Iran-Iraq War, many of the U.S. aircraft Iran acquired during the 1960s and 1970s still constitute the most-capable platforms in the IRIAF today. Iran later acquired some Soviet-made aircraft during the early 1990s.

The IRIAF has proven adept at maintaining these outdated aircraft to sustain routine flight operations. Despite some domestic efforts to upgrade older airframes, Iran's combat aircraft remain significantly inferior to those of its regional adversaries equipped with modern Western systems. Nevertheless, the IRIAF maintains a basic capability to achieve its assigned missions.

The IRIAF has approximately 37,000 personnel and operates the majority of Iran's combat aircraft. The IRIAF operates multiple combat, transport, and tanker squadrons across 11 major fighter bases. The commander of the IRIAF is Brigadier General Aziz Nasirzadeh.

The IRIAF operates a wide range of aircraft sourced from the United States, Russia, and China, including the U.S. F-14 Tomcat, F-4 Phantom II, and F-5 Tiger II; the Russian MiG-29 Fulcrum and Su-24 Fencer; and the Chinese F-7 Airguard. Iran is the only country in the world still operating F-14s. IRIAF missions include air intercept, ground-attack, and close air support, and some aircraft are capable of mid-air refueling. The IRIAF's F-4s serve as Iran's primary attack aircraft, but it has increasingly incorporated use of its Su-24 fighter-bombers. Although less capable in an attack role, Iran's F-5s and F-7s have also served as multirole platforms.

The IRIAF usually conducts one major national-level air power exercise each year, called DEVOTEES OF THE VELAYAT SKIES. The event traditionally entails a ground-attack competition among multiple fighter bases and features fighter intercept, air-to-air engagement, electronic warfare (EW), and intelligence, surveillance, and reconnaissance (ISR) training.

Once the UN arms embargo ends, the IRIAF is likely to purchase advanced fourth-generation fighters, most likely from Russia. Tehran and Moscow have already discussed the sale of Su-30s to Iran.

## ***Islamic Revolutionary Guard Corps Aerospace Force***

The IRGCASF was founded in 1985 when Supreme Leader Khomeini established the IRGC's three distinct ground, air, and naval services. Previously named the IRGC Air Force, Iran renamed the service in 2009 to reflect its broader mission. Dating back to the Iran-Iraq War, rivalries between the IRGCASF and IRIAF have historically hindered cooperation between the two air services. The IRGCASF also operates Iran's ballistic missile force, the Al-Ghadir Missile Command.

The IRGCASF is a relatively small force of around 15,000 personnel. It provides close air support and lift capabilities with military aircraft and helicopters as well as commercially owned aircraft under the IRGCASF's control. Although the IRGC's manned aviation component historically focused on airlift and logistic support, its mission evolved to include a squadron of its own combat aircraft after Iran began incorporating Iraqi aircraft evacuated to Iran in 1991 during the First Gulf War. The commander of the IRGCASF is Brigadier General Amir Ali Hajizadeh.

The aviation arm of the IRGCASF maintains a fleet that includes Su-22 Fitters, EMB-312 Tucanos, Y-12s, Dassault Falcon 20s, MFI-17s, IL-76s, and An-74s. In 2014, Iran supplied Iraq with most of the Su-25 Frogfoots that the IRGCASF had maintained since Iraq transferred them to Iran in 1991. Iran still maintains a small number of Su-25 aircraft.

# Iranian Combat Airbases and Major Combat Aircraft



Platform	Delivered to Iran (Origin)	Role
F-4D/E Phantom II	1968-1978 (USA)	Multirole Fighter
F-5E/F Tiger II (and later Iranian variants)	1973-1976 (USA)	Multirole Fighter
F-14A/AM Tomcat	1976-1978 (USA)	Fighter
Su-22 Fitter	1991 (Iraq)	Fighter-Bomber
Su-24MK Fencer	1990 (Russia); 1991 (Iraq)	Fighter-Bomber
MiG-29 Fulcrum A	1990 (Russia); 1991 (Iraq)	Multirole Fighter
Mirage F1	1991 (Iraq)	Multirole Fighter
F-7N Airguard	1987-1996 (China)	Multirole Fighter

## Iran: Reliance on Aging/Worn/Mediocre Systems - Air

### Aircraft

**FTR** 184+: 20 F-5B *Freedom Fighter*; 55+ F-5E/F *Tiger II* 24 F-7M *Airguard*; 43 F-14 *Tomcat*; 36 MiG-29A/U/UB *Fulcrum*; up to 6 *Azarakhsh* (reported)

**FGA** 89: 64 F-4D/E *Phantom II*; 10 *Mirage F-1E*; up to 6 *Saegheh* (reported); up to Su-22M4 *Fitter K*; 3+ Su-22UM-3K *Fitter G*

**ATK** 39: 29 Su-24MK *Fencer D*; 7 Su-25K *Frogfoot* (status unknown); 3 Su-25UBK *Frogfoot* (status unknown)

**ASW** 3 P-3F *Orion*

**ISR**: 6+ RF-4E *Phantom II*\*

**TKR/TPT** 3: ε1 B-707; ε2 B-747

**TPT** 117: **Heavy** 12 Il-76 *Candid*; **Medium** ε19 C-130E/H *Hercules*; **Light** 75: 11 An-74TK-200; 5 An-140 (Iran-140 *Faraz*) (45 projected); 10 F-27 *Friendship*; 1 L-1329 *Jetstar*; 10 PC-6B *Turbo Porter*; 8 TB-21 *Trinidad*; 4 TB-200 *Tobago*; 3 *Turbo Commander* 680; 14 Y-7; 9 Y-12; **PAX** 11: 2 B-707; 1 B-747; 4 B-747F; 1 *Falcon 20*; 3 *Falcon 50*

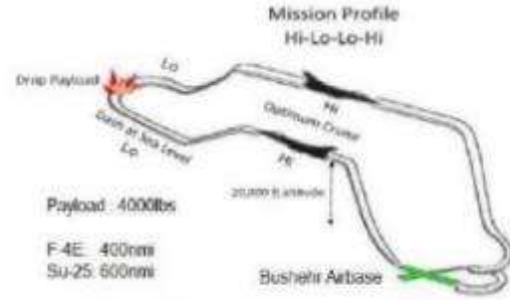
**TRG** 141: 25 Beech F33A/C *Bonanza*; 15 EMB-312 *Tucano*; 14 JJ-7\*; 25 MFI-17 *Mushshak*; 12 *Parastu*; 15 PC-6; 35 PC-7 *Turbo Trainer*;

### Helicopters

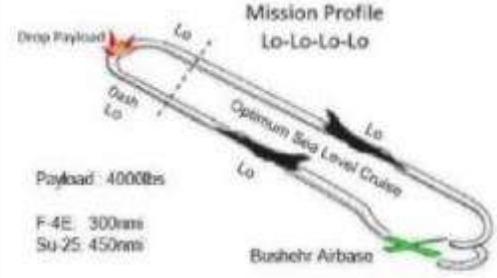
**MRH** 2 Bell 412

**TPT** 34+: **Heavy** 2+ CH-47 *Chinook*; **Medium** 30 Bell 214C (AB-214C); **Light** 2+: 2 Bell 206A *Jet Ranger* (AB-206A); some *Shabaviz 2-75* (indigenous versions in production); some *Shabaviz 2061*

# Range of Iran's Air Power



Iran Airforce  
Interdiction  
Mission Radius

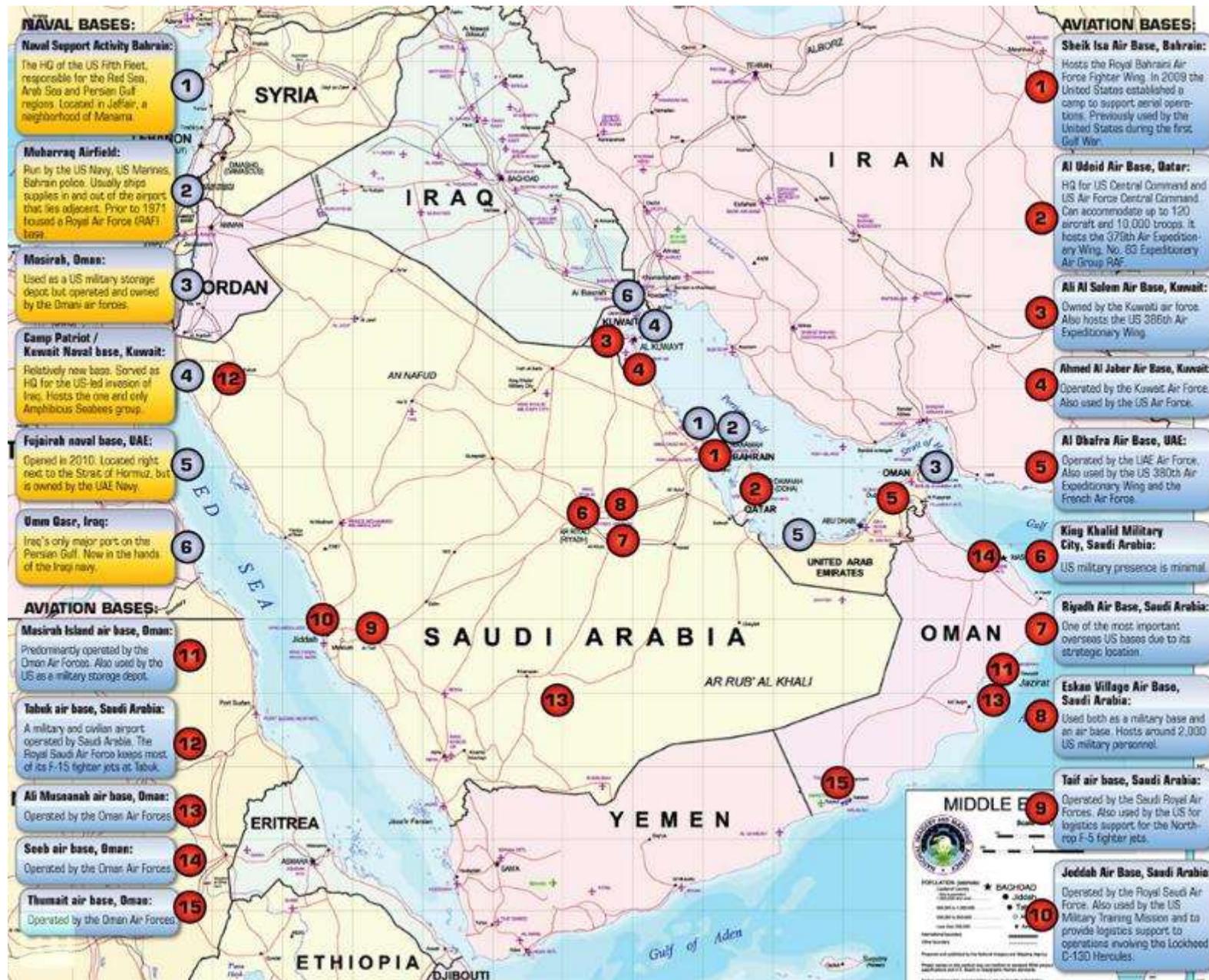


(Source: Abdullah Toukan)

# Iran's Strategic Depth



# Iranian (Pars) View of Gulf Air Threat



Source:  
[https://www.google.com/search?q=Map+of+Gulf+military+air+bases&client=firefox-b-1-d&sxsrf=ACYBGNQwGHEtOnNgkx1UX5Ln0EdWj9Lka:1572350225610&tbm=isch&source=iu&ictx=1&fir=W10KinVt9z\\_ShM%253A%252C7F8LtoIfVUYxsM%252C\\_&vet=1&usg=AI4\\_kSc5e6JohF4zPaBgtwRw3FaVkJcIlg&sa=X&ved=2ahUKewi-wqOfTcHIAhUKx1kKHe4nAFUQ9QEWa3oECAQQDA#imgrc=BWZd-cwKB9ySSM&imgdii=nRKQ6\\_858r1BcM](https://www.google.com/search?q=Map+of+Gulf+military+air+bases&client=firefox-b-1-d&sxsrf=ACYBGNQwGHEtOnNgkx1UX5Ln0EdWj9Lka:1572350225610&tbm=isch&source=iu&ictx=1&fir=W10KinVt9z_ShM%253A%252C7F8LtoIfVUYxsM%252C_&vet=1&usg=AI4_kSc5e6JohF4zPaBgtwRw3FaVkJcIlg&sa=X&ved=2ahUKewi-wqOfTcHIAhUKx1kKHe4nAFUQ9QEWa3oECAQQDA#imgrc=BWZd-cwKB9ySSM&imgdii=nRKQ6_858r1BcM)

# Major Iranian UAVs

UAVs are Iran’s most rapidly advancing air capability. Iran uses these versatile platforms for a variety of missions, including ISR and air-to-ground strikes. The IRGCASF is the primary operator of Iran’s growing fleet of UAVs, although most Iranian military services employ them.

Iran regularly conducts ISR flights along its border and littoral, including the Persian Gulf and Strait of Hormuz.

The IRGCASF has also deployed various armed and unarmed UAVs to Syria and Iraq for ISR and strike missions to support counter-ISIS operations and the Syrian regime.

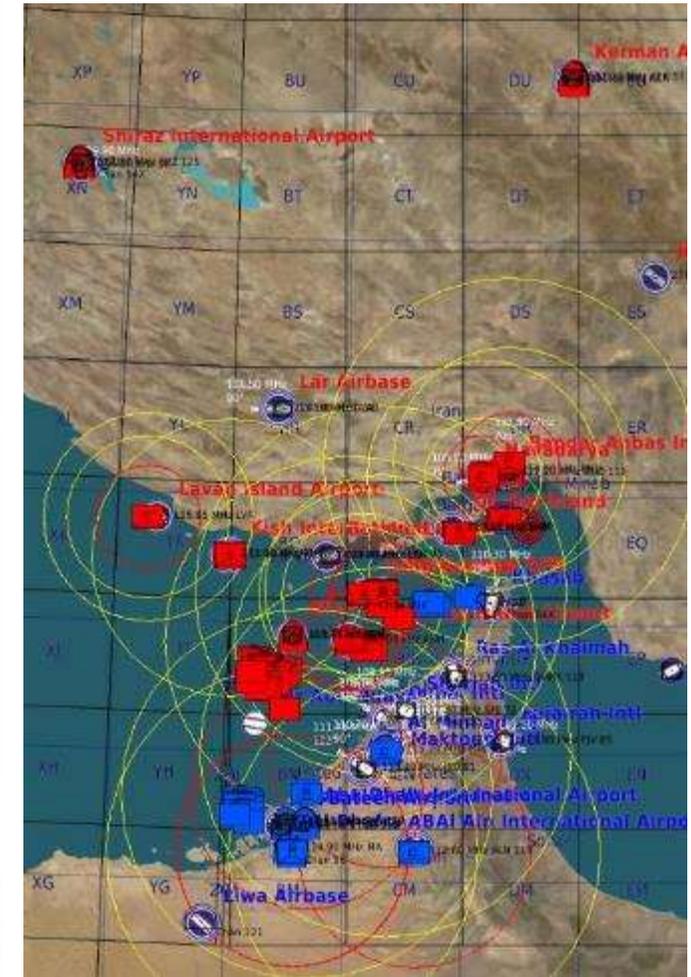
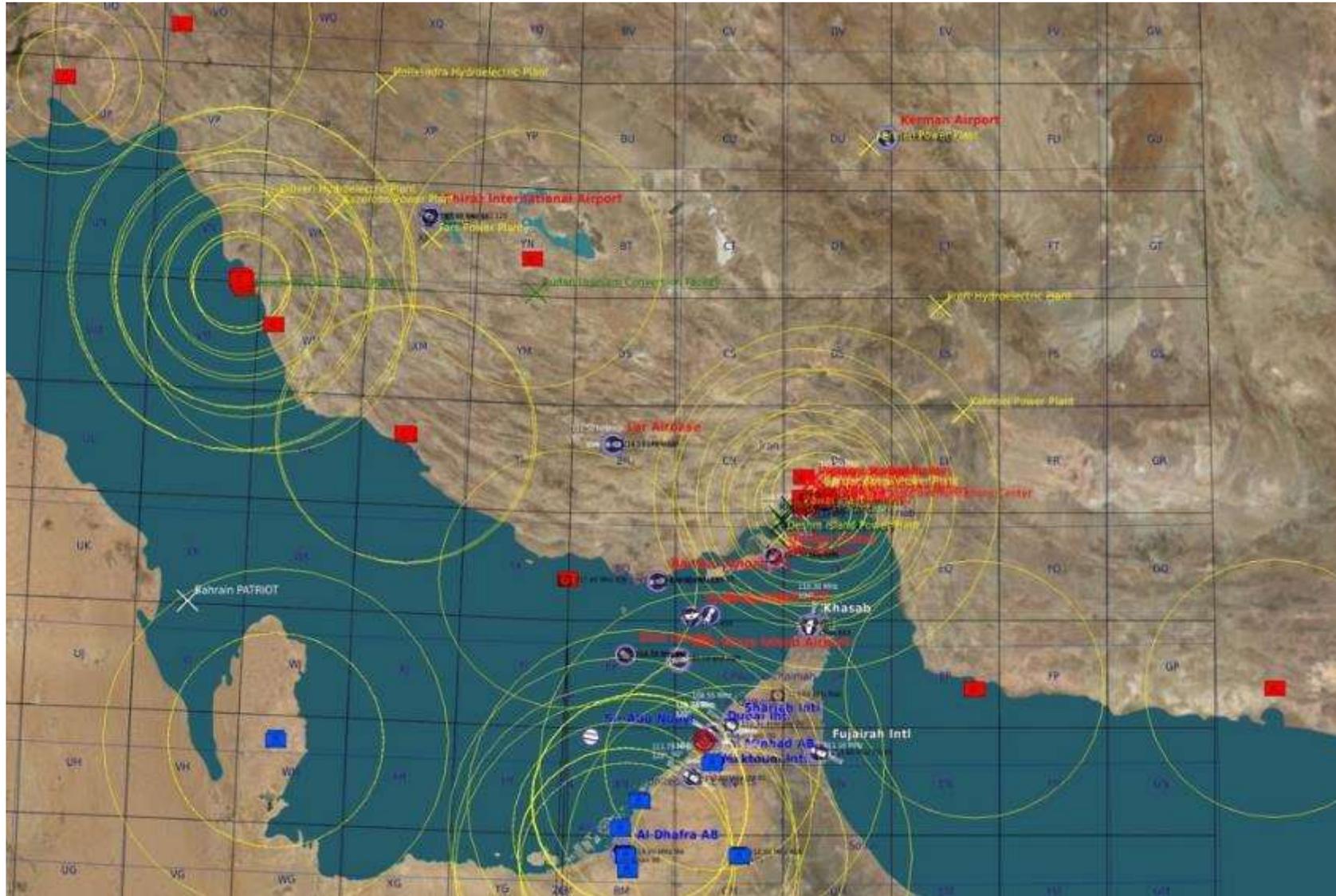
In 2018, Iran for the first time employed UAVs to conduct long-range, cross-border strike operations, using armed UAVs in concert with ballistic missiles as part of a retaliatory attack against ISIS in eastern Syria.

Iran has also provided UAV platforms and technology to Hizballah and the Huthis to challenge its regional rivals.

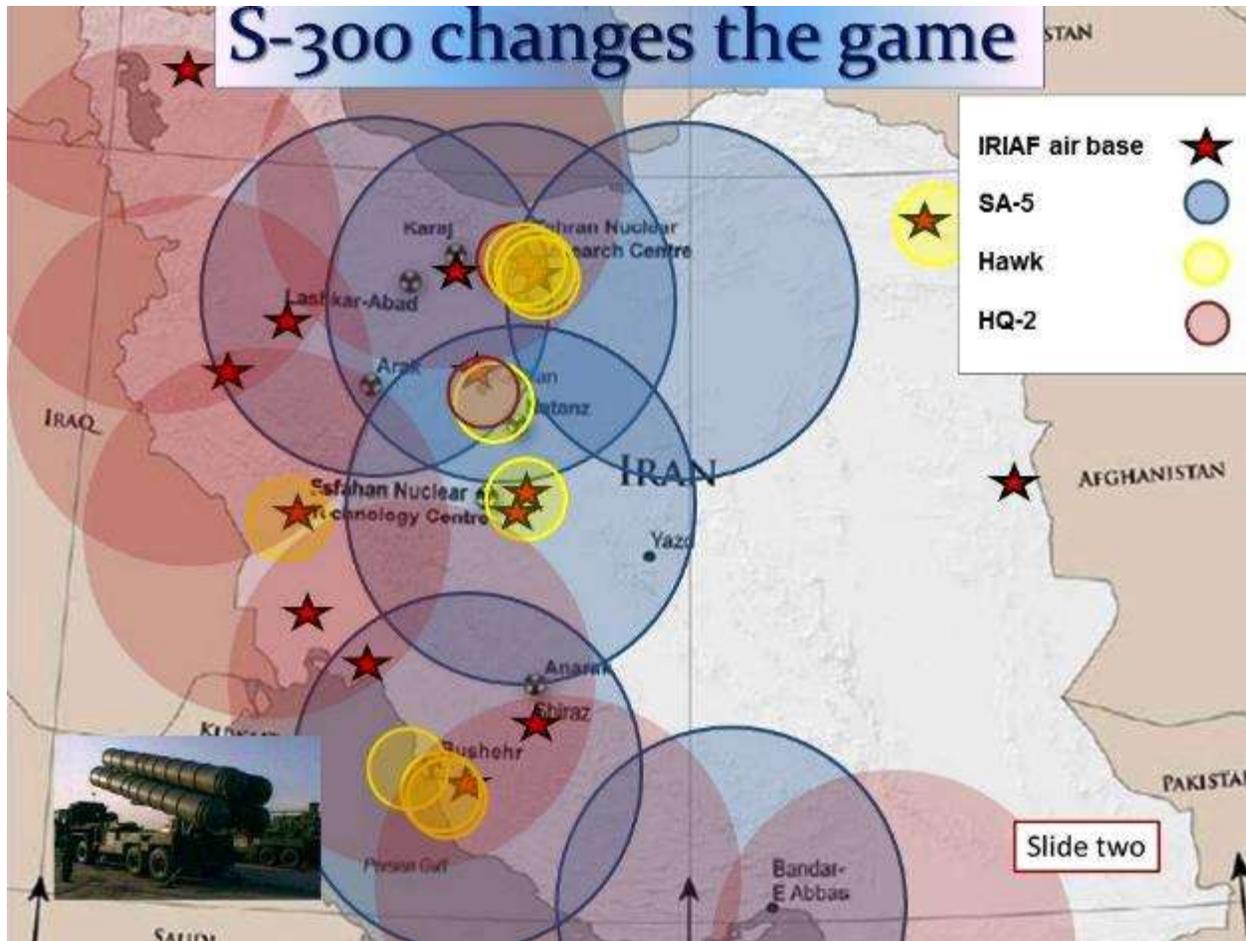
Source: DIA, *Iran Military Power, Ensuring Regime Survival and Securing Regional Dominance*, DIA, November 2019, pp. 67-68.

Platform Family	System	Role
Ababil	Ababil-2	Multirole
	Ababil-3	ISR
	Qasef-1	Multirole
Shahed	Shahed-129	Multirole, including ISR and air-to-ground strike <sup>365,366</sup>
	Shahed-123	ISR
Mohajer	Mohajer-2	ISR
	Sadegh	Multirole
	Mohajer-4	ISR
	Mohajer-6	Multirole, including ISR and air-to-ground strike <sup>367</sup>
Toufan	Toufan 1	One-way attack
Fotros	Fotros	Multirole, including ISR and air-to-ground strike <sup>368,369</sup>
Karrar	Karrar	Multirole
Hemaseh	Hemaseh	Multirole
IRN-170	IRN-170 variants	Multirole

# Gulf SAM Defenses (Pre S-300)



# Iranian Major Bases and SAM Defenses



# Iran's Changing Long-Range Land-Based Air Defense Systems and Surface to Air Missiles

Iran originally established the Artesh's air defense force in 2008 as the KADHQ and renamed it the IRIADF in 2019. In 2008, air defense personnel were separated from the IRIAF to form an independent service within the Artesh, consistent with Tehran's goal to expand defense missions in response to a perceived increase in air threats. The IRIADF maintains and operates most of the country's air defense systems and has approximately 15,000 personnel.

As the KADHQ, the force was previously responsible for overseeing Iran's air defenses at the national level and coordinating with the IRGCASF. In May 2019, Tehran elevated the KADHQ to a higher echelon command and rebranded the remaining Artesh air defense service as the IRIADF, separating the national C2 responsibilities from the force.

The supreme leader appointed Artesh Commander Major General Abdolrahim Musavi to also serve as commander of the KADHQ, raising it to the Artesh HQ level. Former KADHQ Commander Brigadier General Alireza Sabahifard was retained as the IRIADF commander.

...The IRGCASF also maintains its own air defense assets and mission—conducted in parallel, but coordinated with the IRIADF and KADHQ. The IRGC has been involved in the domestic development and production of many recent Iranian SAM systems—such as the Raad series, Sayyad series, Tabas, and Third of Khordad—which reportedly have multi-target capabilities and ranges up to 120 kilometers.

In June 2019, the IRGCASF used a Third of Khordad SAM system to shoot down a U.S. RQ-4 UAV in international airspace over the Strait of Hormuz. This followed an Iranian attempt to shoot down a U.S. MQ-9 UAV in international airspace over the Gulf of Oman a week earlier.

...The IRIADF operates Iran's most capable air defense system, the SA-20c, which Russia sold to Iran in 2016. This system is highly mobile and designed to defend against aircraft, ballistic missiles, and cruise missiles. Iran is most likely to use the SA-20c to protect its most critical infrastructure, such as its nuclear sites and Tehran. Most of Iran's other SAMs are a mix of U.S., Russian, and Chinese legacy systems, including the long-range SA-5, medium-range I-HAWK and CSA-1, and short-range SA-15 and Rapier.

In addition to procurements from abroad, Iran has invested heavily in domestically developing and producing SAMs, radars, and C2 systems. Iran is developing the long-range Bavar-373 SAM system, which it claims is more advanced than the Russian S-300. Iran has also undertaken a number of projects to domestically improve its legacy SAMs, including the Mersad, a medium-range air defense system that improves the tracking and engagement range of the U.S.-made I-HAWK SAM.<sup>387</sup> Iran has also worked extensively to upgrade its legacy C2 systems to a modern, software-based system.

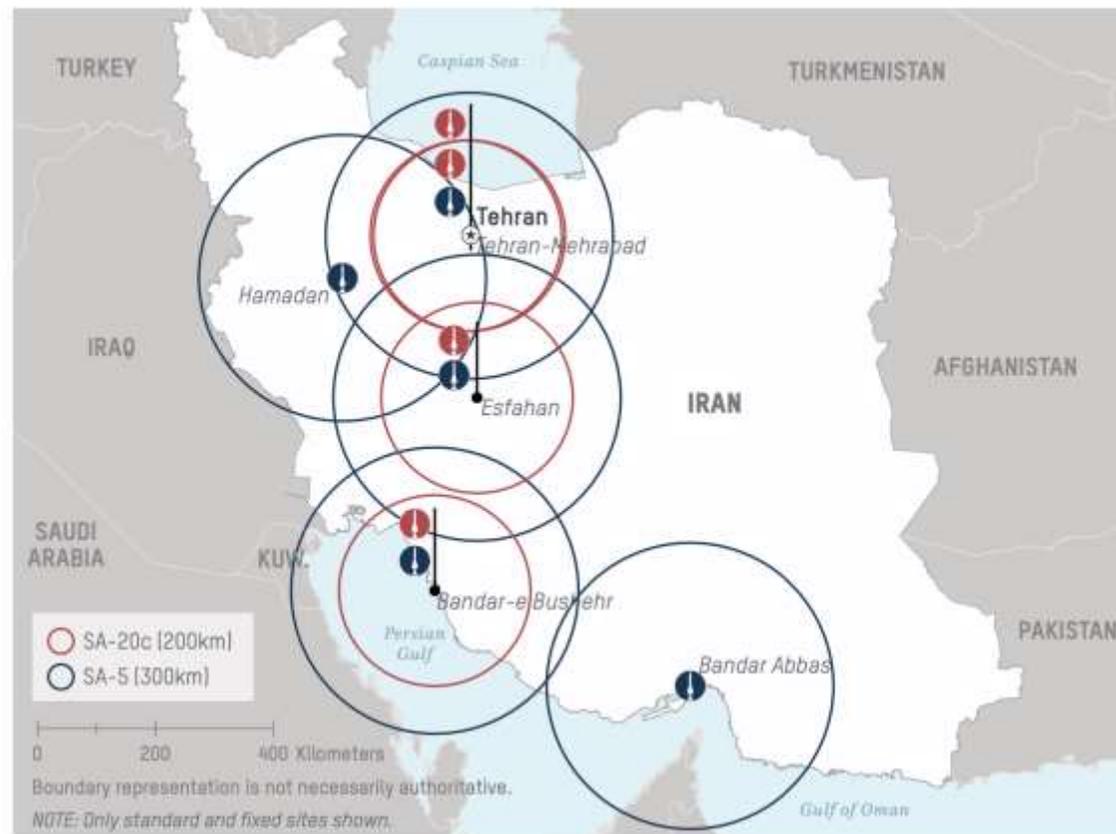
...Iran's typical annual national-level air defense exercise is called DEFENDERS OF THE VELAYAT SKIES. The event usually involves testing and live fires of variety of SAMs, radars, and ISR and EW equipment, along with a small contingent of aircraft, to exercise a large-scale defense of Iranian airspace

# Iranian Long-Range Land-Based Air Defense Systems and Surface to Air Missiles

## Khatemolambia Air Defense Headquarters

The KADHQ maintains responsibility for overseeing and coordinating Iran's national-level air defenses across both the IRIADF and IRGCASF. It controls the country's air defense C2, air surveillance radars, SAM systems, and network of visual observation posts. KADHQ C2 is centralized during peacetime at the national Air Defense Operations Center and can be decentralized during crisis or conflict, transferring decisionmaking authority down to a network of fixed and mobile regional sector operations centers (SOCs). SOCs manage air defense operations within their areas of responsibility and coordinate with adjacent sectors.<sup>380,381,382</sup>

Type	Systems
Long-Range	SA-20c Gargolye (S-300 PMU2), SA-5 Gammon (S-200), Bavar-373, Sayyad-3
Medium-Range	I-HAWK/Mersad, CSA-1, Third of Khordad, Raad, Talash, Sayyad-1, Sayyad-2
Short-Range	SA-15 Gauntlet (Tor M1), Rapier



Source: DIA, *Iran Military Power, Ensuring Regime Survival and Securing Regional Dominance*, DIA, November 2019, pp. 68.

# THAAD vs. Patriot

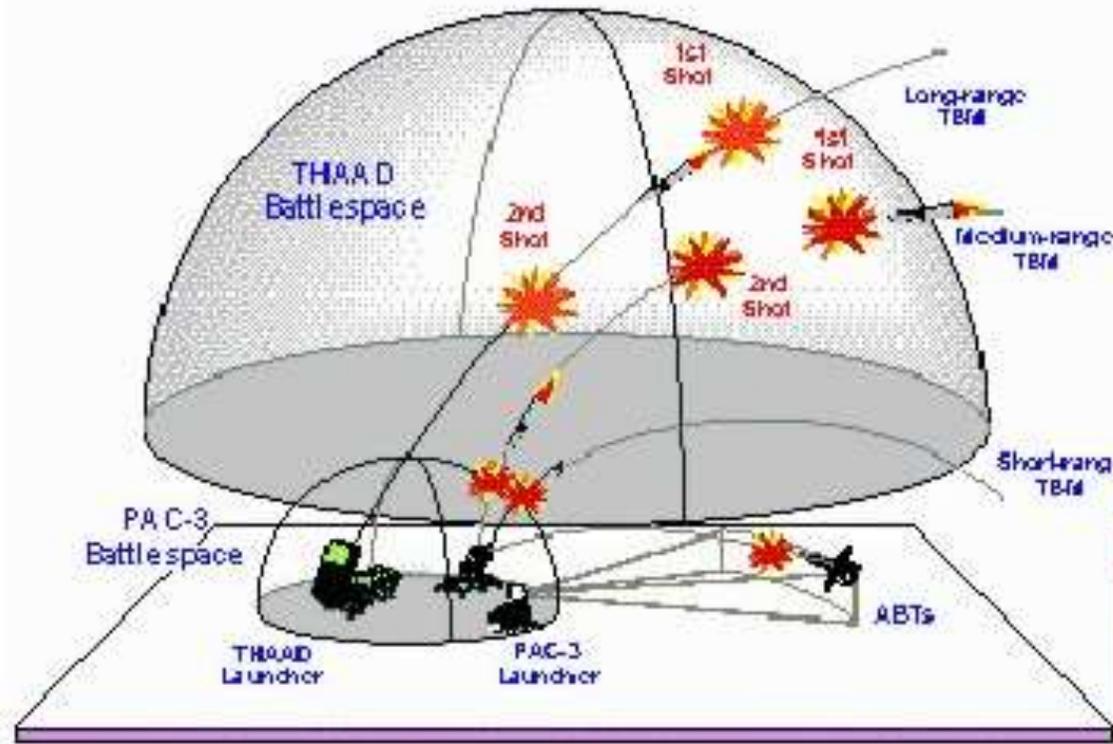
THAAD and Patriot Pac-3 are complementary to each other. Patriot pac-3 intercepts aircraft/UAVs, and cruise missiles and a ballistic missile in it's terminal stage of flight (in atmosphere), while Thaad intercepts a missile while it is in Stratosphere.

So, if Thaad fails in intercepting a missile Pac-3 might do that.

UAE is acquiring Patriot pac-3, Patriot pac-2, Thaad and Pantzir-s1 which makes it's airspace fully protected.



## THAAD MISSION / SYSTEM DESCRIPTION



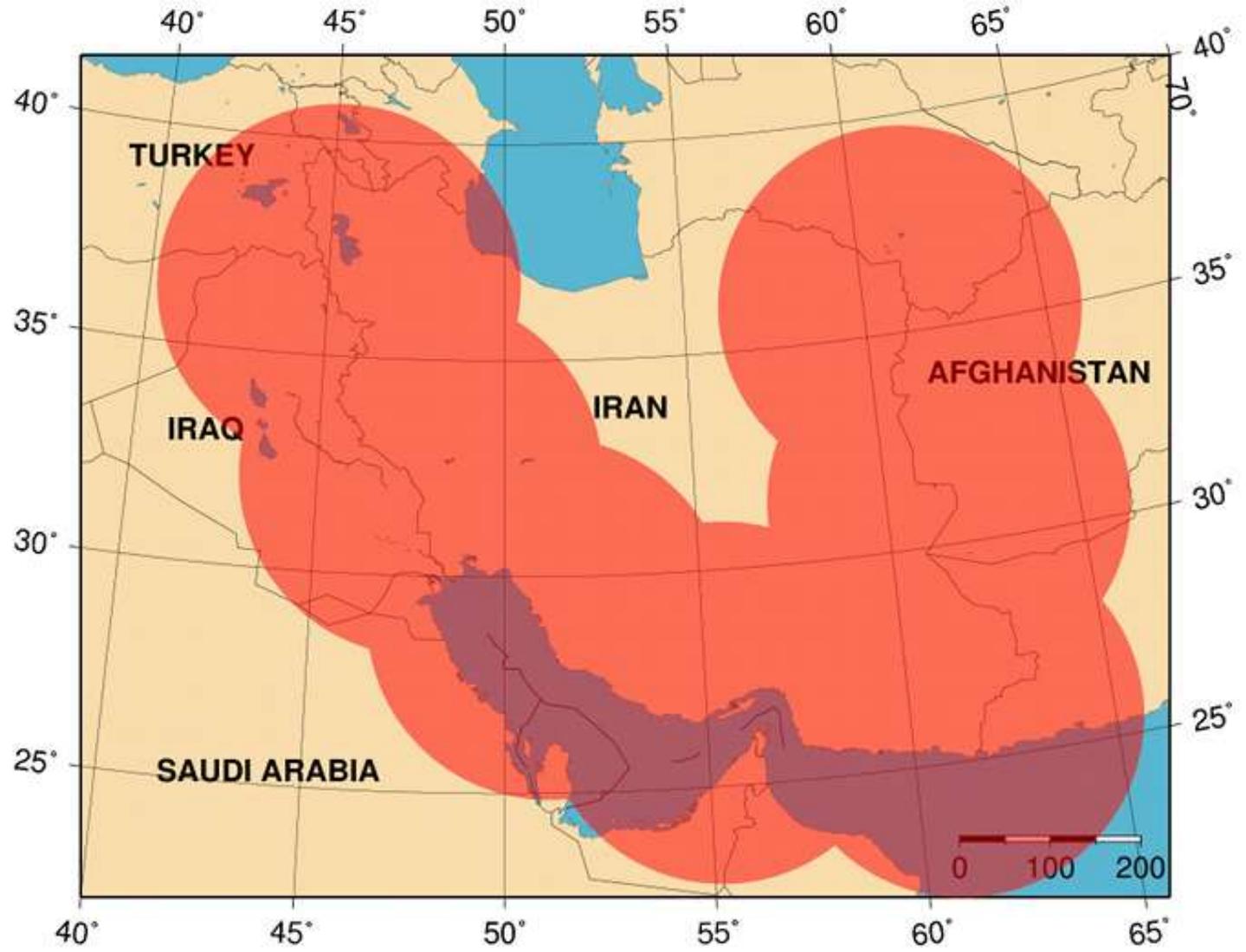
- Upper Tier Of Two-tiered TBM Defense
- Exo And Endo Intercepts Using Hit-To-Kill
- Utilizes THAAD X-band Radar
- Interoperable With Other Army And Joint Systems
- Air Transportable

Legend	
THAAD	Theater High Altitude Area Defense
PAC-3	PATRIOT Advanced Capability 3
ABT	Air Breathing Threat
TBM	Theater Ballistic Missile

**THAAD Provides Effective Defense Against TBM Threats**

# Iran with S400

## AIRSPACE AT RISK – IMPACT OF S-400/SA-21 DEPLOYMENT



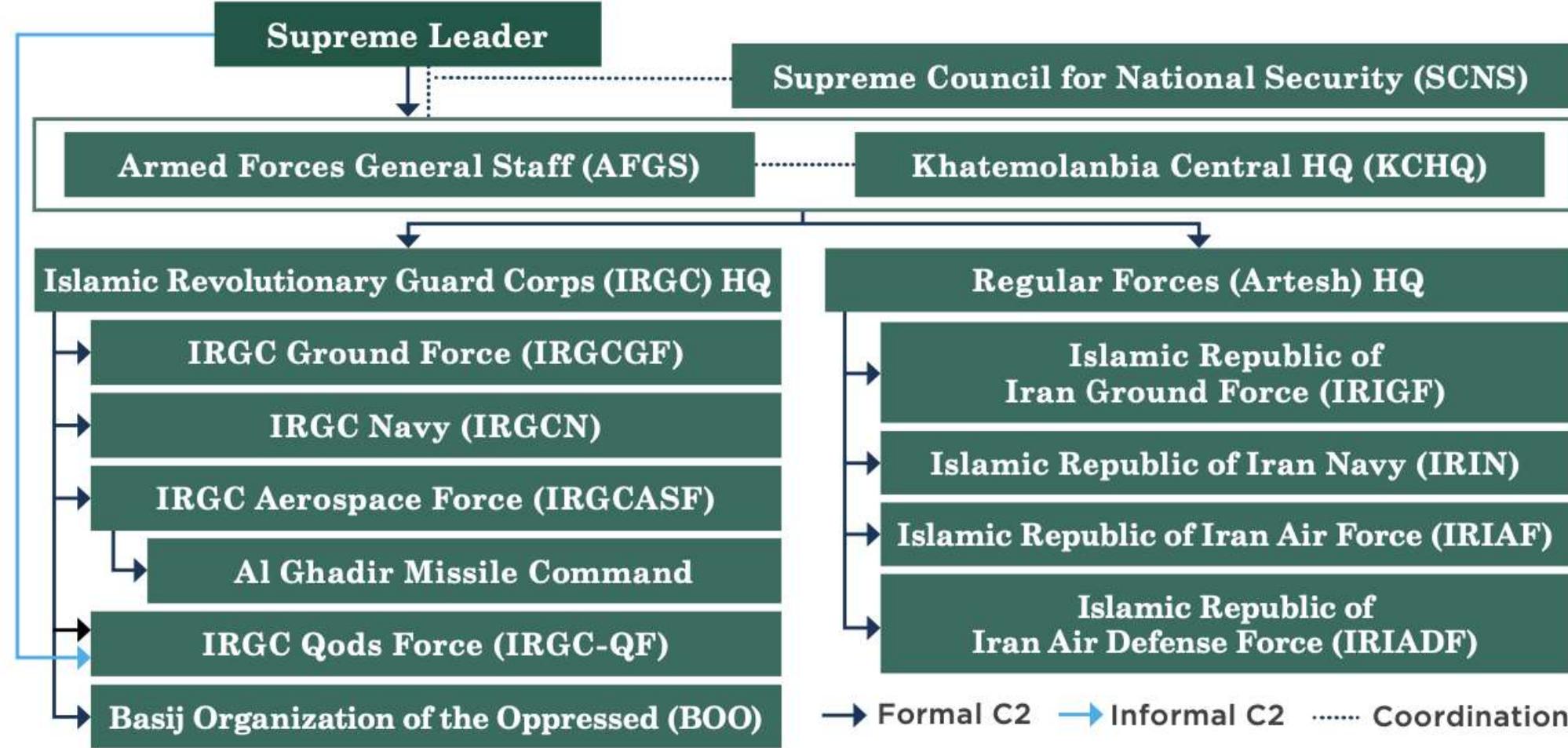
Source: Israel Behind the News

# **DIA Assessment of Iranian Military Modernization**

# DIA Estimate of Iranian Military Command and Control

## National Military Command and Control

1805-17889



Source: DIA, *Iran Military Power, Ensuring Regime Survival and Securing Regional Dominance*, DIA, November 2019, p. 27.

# Iran's Military Modernization

Iran will continue to use a combination of conventional and unconventional capabilities to achieve its objectives at home and abroad, as Tehran's core national security objectives are unlikely to change for the foreseeable future. Seeking to strengthen its regional position, Tehran is attempting to bolster its ties in the international community and build the capacity of its partners in the Middle East, while advancing its military capabilities at home for defense and deterrence. Recognizing its inability to defeat an advanced Western military, such as the United States, Iran in the near term probably will continue to emphasize its three core capabilities: ballistic missiles capable of striking targets throughout the region, littoral naval forces capable of threatening navigation in the Persian Gulf and Strait of Hormuz, and support for partners and proxies capable of unconventional operations abroad.

Although the IRGC-QF and its network of proxies will remain central to Iran's military power, Tehran will improve its conventional forces and seek new capabilities. Iran's latest 5-year development plan continues priority for missiles, naval forces, and air defenses, but it also adds new emphasis on combat air power and EW capabilities. Iran probably will continue to focus on domestic development of increasingly capable missiles, naval platforms and weapons, and air defenses, while it attempts to upgrade some of its deteriorating

air and ground capabilities primarily through foreign purchases. Under UNSCR 2231, Iran is prohibited from procuring most types of conventional weapon systems from abroad. However, these restrictions are set to expire by October 2020, providing Tehran with the opportunity to acquire some advanced capabilities that have been beyond its reach for decades.

- **Missile Force.** Iran will deploy an increasing number of more accurate and lethal theater ballistic missiles, improve its existing missile inventory, and field new LACMs. It will also pursue technical capabilities that could enable it to produce an ICBM.
- **Naval Forces.** Iran's naval forces will field increasingly capable platforms and weapons, including improved naval mines, faster and more lethal surface platforms, more-advanced ASCMs, larger and more-sophisticated submarines, and new ASBMs.
- **Air and Air Defense Forces.** Iran will modernize its IADS with new air surveillance radars, SAMs, and command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) systems. Once the UN arms embargo ends, Tehran can purchase advanced fourth-generation fighter aircraft. Iran will also develop and field more-capable UAVs, including armed platforms.
- **Ground Forces.** The ground forces will continue structural changes, including the creation of new rapid-response brigades, which could enable them to become more agile and effective in countering threats. Iran also will be able to buy modern main battle tanks after the UN embargo ends.

Despite these goals, ongoing financial constraints and sanctions will challenge Iran's military modernization efforts. Tehran will be unable to meet all of its acquisition priorities and requirements in this environment. The complex security situation of the Middle East—with the continued presence of U.S. forces, the superior force projection capabilities of Israel, and the growing military means of Saudi Arabia and the Gulf states—will further complicate Iran's efforts to build its conventional force.

As Iran's perception of the threats it faces evolves during the coming years, the military will be forced to contend with new roles and missions. Iran's current modernization plans emphasize a broader range of conventional capabilities than in the past. Iranian leaders have repeatedly noted that Iran must improve its capabilities against a wider range of conventional and unconventional threats, such as terrorism and insurgencies, and be more proactive in defending Iranian territory and interests abroad. Since the supreme leader's mandate in 2016 for Iran to improve both its defensive and offensive capabilities, military officials have stressed the need to invest in new capabilities and missions, such as combat air power and maintaining forward presence, areas it has traditionally neglected. Beyond Iran's unprecedented deployment of conventional forces to Iraq and Syria, officials have taken steps—including changes in force structure, training, and tactics—toward revising its military doctrine.

As its capabilities improve and its approach to the region evolves during the next decade, Iran's military could consider undertaking broader missions, such as multilateral peace-keeping missions, expeditionary operations elsewhere in the region, or permanent basing in allied countries. Nevertheless, Iran's conventional forces today remain primarily oriented for defensive missions and continue to rely on asymmetric tactics. More substantial and sustained institutional reforms and investments in new equipment will be required for Iran to develop a more balanced military capable of both defensive and expeditionary operations.

## Evolving Military Training

Some recent Iranian exercises have begun to demonstrate changes in Iranian military doctrine. In December 2018, Iran conducted its first major amphibious assault exercise in many years, NOBLE PROPHET 12. The IRGCCF commander described the exercise as Iran's first demonstration of offensive aspects of its defensive doctrine, noting that an ability to conduct offensive operations is a key element of Iran's deterrence. In January 2019, the IRIGF also employed offensive tactics during its EQTEDAR 97 exercise. Officials noted the event displayed Iran's resolve to proactively attack its enemies instead of waiting to respond.

# DIA Summary of Evolution of the Iranian Military

Year	Event
1921	Artesh established
1923	Imperial Iranian Ground Force (IIGF) established
1924	Imperial Iranian Air Force (IIAF) established
1932	Imperial Iranian Navy (IIN) established
1979	IRGC established; Imperial Iranian Armed Forces become Islamic Republic of Iran Ground Force (IRIGF), Air Force (IRIAF), and Navy (IRIN)
1980	Basij formally established
1981	Basij incorporated into the IRGC
1985	IRGC split into Ground Force (IRGCGF), Air Force (IRGCAF), and Navy (IRGCN)
1990	IRGC Qods Force (IRGC-QF) established
2007	Basij comes under IRGC command
2008	Khatemolaniah Air Defense Headquarters (KADHQ) established from IRIAF
2009	IRGCAF renamed IRGC Aerospace Force (IRGCASF); some Basij units integrated with IRGCGF
2019	KADHQ elevated to Artesh HQ; Artesh air defense force renamed Islamic Republic of Iran Air Defense Force (IRIADF)

# DIA Assessment of Iranian Military Modernization Goals

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Capability	Stated Goals
Missile	Increase the accuracy, lethality, and production of ballistic and cruise missiles
Air Defense	Develop longer-range SAMs and improve short- and medium-range systems
Air	Develop advanced offensive and defensive air power
Navy	Attain regional and deterrent sea power
Ground	Strengthen ground combat and rapid-reaction capability
EW/C4ISR	Improve EW and C4ISR posture, including space-based capabilities
Cyberspace	Increase cyberspace presence and hold adversary infrastructure at risk

# **DIA Assessment of Iran's Unconventional and Special Forces, and Intelligence Services**

# Iran's Expeditionary Capability

## Expeditionary Operations

Iran has limited expeditionary warfare and force projection capabilities. It has shown itself capable of sending small groups of conventional forces—including ground forces, military air-lift, and UAV operators—into permissive allied countries to support larger operations. Since the outbreak of the Syrian civil war in 2011, Iran has become increasingly involved in regional conflicts, with varying levels of military intervention in Iraq, Syria, and Yemen. The IRGC-QF remains the lead for these operations, but Iran has adapted its approach to external operations by incorporating conventional Iranian forces in addition to large numbers of Shia foreign fighters. Iran's military has also revised professional military education to emphasize lessons learned from operations in Syria and Iraq, where it also has gained its first experience conducting combined operations with allied military forces.

In Syria, Iran has worked to defeat ISIS and defend the Assad regime against insurgent groups, with Iranian and Iranian-affiliated forces serving as critical force multipliers for the regime. In the spring of 2016, Tehran deployed a small number of ground forces from the Artesh to Syria—the first such deployment outside Iran since the Iran-Iraq War.

As early as 2014, Iran deployed military advisers and some conventional ground forces to Iraq to combat ISIS and prevent the state's fragmentation, although Iran maintains a larger conventional military presence in Syria. The IRGC-QF has strong ties to many Iraqi Shia groups that have participated in operations to retake Iraqi territory from ISIS.

In Yemen, Iran provides military support to the Huthis against the Saudi-led coalition, enabling Tehran to indirectly pressure Riyadh without entering into a direct military conflict. Huthi missile launches against targets in Saudi Arabia and attacks on Saudi-led coalition ships demonstrate Iran's provision of increasingly lethal capabilities to the Huthis. Tehran's provision of explosive boat technology and Iranian-made missiles, including the extended-range Qiam SRBM, provides the Huthis with systems exceeding the capabilities of the pre-conflict Yemeni inventory.

Iran does not participate meaningfully in international peacekeeping operations, contributing only a few personnel to the African Union-United Nations Hybrid Operation in Darfur (UNAMID). However, Tehran has expressed interest in expanding its military support to international peacekeeping missions, potentially as a way to increase legitimacy, participate in multilateral initiatives, and develop expeditionary-like capabilities through operations other than war.

Iran can also conduct limited out-of-area naval operations as far as China, South Africa, and the Mediterranean Sea. The Islamic Republic of Iran Navy (IRIN) maintains regular rotations of deployed naval groups (DNGs) for counter-piracy, presence, and naval diplomacy missions in the Arabian Sea, Gulf of Aden, and sometimes the Indian Ocean. Often plagued with maintenance issues, the DNGs are largely symbolic, showcasing Iran's projection of force beyond its territorial waters.

# Iran's Irregular, Unconventional Forces - I

Iran's unconventional warfare capability serves as a means of power projection and as part of its A2/AD strategy. Iran could use its strong ties to militant and terrorist groups in the region— such as Hezbollah, Iraqi Shia militias, and the Huthis—to target critical adversary military and civilian facilities. Proxy attacks against adversary military bases in the region could complicate operations in theater.<sup>196</sup>

## Unconventional Operations

Iran has consistently demonstrated a preference for using partners, proxies, and covert campaigns to intervene in regional affairs because of limitations in its conventional military capabilities and a desire to maintain plausible deniability, thereby attempting to minimize the risk of escalation with its adversaries.<sup>197</sup>

Iran's reliance on unconventional operations— which is enabled by its relationships with a wide range of primarily Middle Eastern militias, militant groups, and terrorist organizations—is central to its foreign policy and defense strategy. The IRGC-QF is Tehran's primary tool for conducting unconventional operations and providing support to partners and proxies. The commander of the IRGC-QF, Major General Soleimani, has a close relationship with Khamenei, often communicating with and taking orders from him directly.

Through the IRGC-QF, Iran provides its partners, proxies, and affiliates with varying levels of financial assistance, training, and materiel support. Iran uses these groups to further its national security objectives while obfuscating Iranian involvement in foreign conflicts. Tehran also relies on them as a means to carry out retaliatory attacks on its adversaries. Most of these groups share similar religious and ideological values with Iran, particularly devotion to Shia Islam and, in some cases, adherence to *velayat-e faqih*. However, Iran has also established relationships with more diverse groups based on shared enemies, common threats, and mutually beneficial goals.

The strength of Iran's relationship with these groups varies widely. Iran's strongest and most successful regional partnership is with Hezbollah, dating back to 1982. The relationship today involves Iranian sponsorship, cooperation, and shared sectarian and political interests, especially against Israel and the United States. However, Hezbollah retains its decision making in internal Lebanese affairs.<sup>198,199,200</sup>

In recent years, the conflicts in Syria, Iraq, and Yemen have placed new demands on the IRGC-QF to manage Iranian involvement in multiple combat zones, including some support from Iranian conventional forces. In Syria, Iran maintains a strong relationship with the Assad regime, which it views as a critical ally and conduit to Hezbollah. In Iraq, the IRGC-QF has strong influence with Iranian-aligned Shia groups operating within the Popular Mobilization Forces (PMF), many of whom have cooperated with Baghdad to defeat ISIS. <sup>2</sup> In Yemen, Iran has supported the Huthi rebels with financial assistance, weapons, military training, and operational advice.

Iran also uses the IRGC-QF to provide varying levels of support to Shia groups in Bahrain, some Palestinian militant groups, and the Taliban in Afghanistan. As active combat operations have drawn down in Syria and Iraq, Tehran could choose to increase support to historical unconventional lines of effort in the region or pursue new opportunities.

## Islamic Revolutionary Guard Corps Qods Force

Iran depends on a variety of unconventional and proxy forces to bolster its conventional military. The IRGC-QF (*Qods* meaning "Jerusalem") is Iran's primary means for conducting unconventional operations abroad, with connections of varying degrees to state and nonstate actors globally. It was founded in 1990 in the aftermath of the Iran-Iraq War as the IRGC unit responsible for covert operations and unconventional warfare operations abroad. Before the IRGC-QF's creation, a variety of government organizations, including the IRGC's Office of Liberation Movements, handled Iran's support to Islamic militant, terrorist, and resistance groups. Since its establishment, the IRGC-QF has become an increasingly professional unit trusted by the supreme leader to conduct operations outside Iran, provide support to Islamic militants, and collect intelligence against Iran's enemies. IRGC-QF personnel number roughly 5,000, though some estimates are higher.

Tehran uses the IRGC-QF to provide financial, training, and materiel support—including facilitating terrorist attacks—mainly to regional Shia militant groups ideologically aligned with Iran. These partner and proxy groups provide Iran with a degree of plausible deniability, and their demonstrated capabilities and willingness to attack Iran's enemies serve as an additional deterrent.

Major General Qasem Soleimani commands the IRGC-QF and has a close relationship with Supreme Leader Ali Khamenei, often communicating with and taking orders from him directly. Soleimani oversees all IRGC-QF external operations, including support for active combat missions and clandestine activities. In recent years, he has traveled frequently to Iraq and Syria to support Iran's involvement in battlefield operations against ISIS and Syrian opposition groups, and has become one of Iran's most visible—and popular—military leaders.

# Iran's Irregular and Unconventional Forces - II

The IRGC-QF receives official funding from Iran's defense budget, but it augments its operating budget through a network of IRGC-QF-affiliated companies worldwide. The IRGC-QF and some affiliated companies have come under international sanctions because of their involvement in terrorist activities and weapons proliferation.

## ***Partners, Proxies, and Affiliates***

The IRGC-QF maintains a wide and varied network of nonstate partners, proxies, and affiliates primarily in the Middle East. Iran provides a range of financial, political, training, and material support to these groups. Iran's provision of military hardware has included small arms,

ammunition, explosives, improvised explosive devices (IEDs), explosively formed penetrators (EFPs), vehicles, antitank guided missiles (ATGMs), man-portable air defense systems (MANPADS), artillery, rockets, UAVs, and some more-advanced systems, such as ASCMs and ballistic missiles, despite UN resolutions prohibiting Iranian arms exports.

Tehran's partners, proxies, and affiliates include Hizballah, Iraqi Shia militias, the Huthis, some Palestinian groups, the Taliban, and Bahraini militants. The level and type of support Iran provides to these groups depends on the nature of the relationship and the objectives Iran seeks to achieve. Stronger partners, such as Hizballah, are highly capable, reliable, and receptive to Tehran. Other groups, such as the Afghan Taliban, are less receptive to Iranian guidance but still help further Iran's regional objectives because they combat common enemies.

## ***Hizballah***

Hizballah is Iran's most important and longest-standing nonstate partner and a core member of Tehran's "Axis of Resistance." Shared goals, ongoing personal relationships, and enduring ideological, cultural, and religious ties have contributed to the strength of the partnership. The IRGC-QF has collaborated closely with Hizballah to grow Iran's influence and capacity throughout the region and beyond, using the group to help train and equip other proxies. Iran has attempted to help temper international perceptions of Hizballah as a terrorist organization and increase Hizballah's legitimate political standing in Lebanon. In recent years, both groups have focused their cooperation on immediate needs in Syria and Iraq.

Hizballah, a highly adaptable and malleable organization, has evolved from its insular origins as a sectarian actor in Lebanon into a far more complex regional actor. Hizballah's role in Lebanon—in its formal political institutions, as a social provider for Shia society and as a self-proclaimed defender against Israeli aggression—primarily defines its reason for existence. However, the group has increasingly defined its other regional activities—including involvement in Syria, Iraq, and Yemen—as working in concert with its internal Lebanon-centric goals. This concept of Hizballah as a regional power directly contradicts Lebanon's policy of disassociation and has increased sectarian tensions at home.

Hizballah has steadily grown as a military power during the past several decades. Asymmetric attacks against Israel in the 1980s and 1990s, followed by a major conflict in 2006, initially confirmed Hizballah's self-imposed title as a "resistance" force against Israel. Since the 2006 Israel-Hizballah War, Hizballah has steadily increased its military arsenal, promising that any future conflict will be more devastating. Hizballah's concentration of power has allowed it to transform from a hybrid guerilla force into a nascent conventional military, with the capacity to deploy an expeditionary force in Syria in support of the Assad regime and Iran. Hizballah maintains a stockpile of approximately 120,000–150,000 rockets, a massive expansion in capability compared with the approximately 13,000 it had available during the 2006 conflict. Hizballah has an estimated 45,000 fighters, divided between as many as 21,000 full-time personnel and a 24,000-person reserve force.

## ***Iraqi Shia Militias***

One of Tehran's strongest levers of influence in Iraq is through the many Iran-backed Shia militias. Iran has provided financial backing for some of these groups for decades. The Badr Organization, Asaib Ahl al-Haq, and Kataib Hizballah have long served as reliable partners for Tehran, including conducting attacks on U.S. military personnel in Iraq from 2003 to 2011 using Iranian-provided munitions. Following ISIS's wide-spread territorial gains in Iraq in mid-2014 and the subsequent formation of the Popular Mobilization Forces (PMF), Iran sent IRGC advisers, weapons, and other military support for the PMF and Iraqi counter-ISIS operations.

Since 2011, the IRGC-QF has also deployed these Shia militants outside Iraq in support of Iranian interests. Since at least 2013, Iraqi Shia militias have greatly expanded their strength, influence, and combat capabilities, owing largely to Iranian support and their experience fighting in Iraq and Syria. Shia militias under the Popular Mobilization Committee (PMC) played a leading role in counter-ISIS operations in Iraq, and the majority of these groups have had elements fighting in Syria at Iran's behest as part of Syrian pro-regime forces. During the counter-ISIS campaign, Shia militias staffed more than 50 PMF brigades under the PMC. There are an estimated 75,000–145,000 mainly Shia fighters active in more than 35 Iraqi militias.

# Iran's Irregular and Unconventional Forces - III

To support its operations in Syria, Iran has employed a variety of Shia foreign fighters from the region, including the Fatemiyun, Zeinabiyun, and Heidariyun, who are fighters of Afghan, Pakistan, and Iraqi origin, respectively. The Fatemiyun and Zeinabiyun are recruited primarily from refugee populations in Iran, while the Heidariyun generally come from established Iraqi Shia militias. These groups have served as a proxy force to fight alongside proregime forces in Syria under the direction of the IRGC-QF and Hizballah. Before being sent into combat, these foreign fighters receive basic training in military skills from Iran or Hizballah. Training usually lasts only 20–45 days, although some fighters reportedly receive additional specialized training, such as sniper courses. Tehran is likely to continue using these fighters in Syria, and it is unclear if there are plans to deploy them to other locations.

## **Huthis**

Iran probably sees supporting the Huthi rebels in Yemen as a low-cost, high-reward opportunity to indirectly confront Saudi Arabia, embarrass Riyadh militarily, and establish an ally on the Arabian Peninsula. Iran provides a wide range of support—including advisers, training, and lethal aid—to the Huthis to support their operations against the Saudi-led coalition in the Yemen conflict. Tehran claims Riyadh is the aggressor and the cause of the humanitarian crisis in Yemen and has refuted accusations that it is supporting the Huthis with missiles and other advanced military equipment.

Estimates of Huthi fighters range from 10,000 to 30,000 personnel consisting of core believers, tribal supporters, and familial alliances. The Huthis seek to rule the northern Yemen region or, at a minimum, retain a dominant role in northern Yemen and substantial political and military influence in any future government. Huthi leaders seek to use negotiations, international pressure, military operations, and ballistic missile and maritime attacks to pressure the Saudi-led coalition into accepting settlement terms favorable to the Huthis. The Huthis depend on Iran for military equipment and support, including ballistic missiles, UAVs, and explosive boat technology. Tehran is using covert means to support this effort while publicly denying its military involvement in Yemen. Although the Huthis have always maintained a sense of identity as Shia Zaydis and Yemenis, they probably are receptive to further strengthening ties with Iran.

Huthi forces hold and defend territory in northern Yemen, disrupt Saudi-led coalition movement and supply efforts, and conduct retaliatory and offensive strikes against the coalition. Huthi fighters are armed with small arms, artillery, and tanks from preconflict Yemeni stockpiles. Iranian-supported Huthi missile forces have conducted multiple ballistic missile attacks against Saudi Arabia—with targets including the capital, Riyadh, and a Saudi oil refinery—using Iranian SRBMs. Huthi maritime forces have ASCMs, naval mines, manned and unmanned explosive boats, and other small boats used for small-arms attacks. The Huthis possess most of the surface-to-air missiles (SAMs) from Yemen's prewar stockpiles and have modified air-to-air missiles (AAMs) for use as SAMs. In 2018, Saudi-led coalition forces also seized advanced Iranian SAMs enroute to the Huthis during countersmuggling operations. The Huthis have also used Iranian UAVs to attack Saudi-led coalition Patriot batteries.

## **Palestinian Militant Groups**

Iran provides support—including training, funding, and military equipment—to HAMAS and other Palestinian groups because of their strategic location and shared hostility toward Israel. Tehran seeks to increase international support in favor of a Palestinian state and desires to be seen as a stronger champion of Palestinians than its Arab rivals, such as Saudi Arabia. However, these primarily Sunni groups are not always receptive to Iranian guidance. During the past year, some Palestinian militant groups, particularly HAMAS, have improved ties to Iran. Relations had deteriorated after 2011, as most Palestinian militant groups refused to support the Assad regime in the Syrian civil war.

HAMAS, the Palestine Islamic Jihad (PIJ), and the Popular Front for the Liberation of Palestine—General Command (PFLP-GC) share some common capabilities to conduct both limited conventional military operations, such as cross-border ATGM attacks and rocket salvos, and terrorist attacks, such as kidnappings and suicide bombings. HAMAS is the best-armed Palestinian militant group with around 25,000 active members in its military wing. PIJ has around 8,000 militants, and PFLP-GC numbers around 800 militants. These groups use a variety of small and heavy arms, including antiarmor weapons and small- to mid-range rockets.

## **Taliban**

Iran's relationship with the Taliban has evolved over the years. Following the Taliban's rise to power in the 1990s, Iran refused to recognize the group as a legitimate government. In 1998, Iran nearly went to war with Afghanistan after the Taliban captured and killed nine Iranian diplomats. However, relations began to thaw after the U.S. invasion of Afghanistan. Since at least 2007, Iran has provided calibrated support—including weapons, training, and funding—to the Taliban to counter U.S. and Western influence in Afghanistan, combat ISIS-Khorasan, and increase Tehran's influence in any post-reconciliation government. Iran balances this support as part of its dual-track strategy for engaging both local groups and the Afghan government in Kabul to achieve its broader security goals. Tehran does not seek to return the Taliban to power but aims to maintain influence with the group as a hedge in the event that the Taliban gains a role in a future Afghan government.

# Iran's External Military Relations

## External Defense Relations

Tehran maintains defense and security ties to both state and nonstate actors to project power and support Shia groups and Shia-led governments in the Middle East. Iran relies on its regional partnerships to help counter perceived threats from Sunni extremist groups, adversarial states, and Western military presence in the region. Iran refers to its efforts to build a regional network to counter Israeli and Western influence as the “Axis of Resistance,” which includes Iran, Syria, Hizballah, Iraqi Shia militias, the Huthis, and some Palestinian militants. Beyond these closer allies, Tehran seeks to cultivate relations with other countries; Iran is also a member of the Nonaligned Movement and has observer status with the Shanghai Cooperation Organization.

Particularly in recent years, Tehran has committed extensive resources and deployed military personnel to support key partners facing internal conflicts. Since at least 2012, Iran has escalated its involvement in the Syrian civil war to include providing arms, training, advisers, and select combat personnel to support the Syrian regime. Since at least 2014, Iran has also provided direct military assistance—including IRGC advisers, training, and materiel support—to Iraqi Shia militias to help combat ISIS, which Tehran views as a critical national security threat, and to strengthen its influence in Iraq.

Iran maintains strong defense ties to Hizballah in Lebanon—its most significant and oldest nonstate partner and a core member of Tehran’s “Axis of Resistance”—and provides support to some Palestinian groups in an attempt to pressure Israel. Iran also provides advanced weapons support to the Huthis in Yemen and calibrated support to Shia militants in Bahrain and the Taliban in Afghanistan. The IRGC-QF, the IRGC’s external operations element, is Iran’s primary conduit of support and guidance to these nonstate partners and proxies.

Tehran maintains particularly close military-to-military ties with Syria and Iraq and has signed basic military cooperation agreements with Afghanistan, Belarus, China, Oman, Russia, South Africa, Sudan, and Venezuela. Iran has also held discussions on defense and security issues with a wider range of countries, including Azerbaijan, Bolivia, Djibouti, India, Italy, Kazakhstan,

Lebanon, Pakistan, Qatar, Tanzania, Turkey, and Turkmenistan. Djibouti and Sudan have since severed diplomatic ties with Iran. Tehran has also purchased military equipment from Russia, China, North Korea, Belarus, and Ukraine.

Military cooperation between Russia and Iran has grown significantly in recent years, despite Tehran’s uncertainty about Moscow’s long-term regional objectives.<sup>107</sup> Iran and Russia have cooperated to support Assad’s regime in Syria since at least 2015. Iran has briefly allowed Russian combat aircraft to use its Hamadan Airbase as a stopover to launch strikes in Syria, marking the first time Tehran has permitted a foreign military to use its territory since the Islamic Revolution. Iran also seeks to procure Russian military hardware. In 2016, it completed its high-profile purchase of the Russian SA-20c air defense system, which provided Iran with its first capability to defend against a modern air force.

The Iranian military is also increasing its defense diplomacy efforts, particularly through near-continuous naval deployments beyond its immediate neighbors. Since 2009, Iran has sent small naval groups to “show the flag” through a series of port calls overseas and counterpiracy operations in the Gulf of Aden. Intended to enhance its soft power, Iran’s use of naval diplomacy has demonstrated its capability to conduct out-of-area operations increasingly farther from Iranian shores, extending from the Mediterranean Sea and Bab al-Mandab Strait in the west to the Indian Ocean and Strait of Malacca in the east.

In 2011, the IRIN made its first transit through the Suez Canal since the Islamic Revolution, followed by its first ever port visits to China in 2013 and South Africa in 2016. Sometimes in conjunction with these port calls, Iran has conducted basic joint naval exercises—such as search and rescue drills—with China, Djibouti, India, Italy, Oman, Pakistan, and Russia. Iran is also a member of the Indian Ocean Naval Symposium (IONS), a 35-member regional Search and Rescue Exercise in Bangladesh in naval cooperation forum. Tehran participated 2017 and hosted the sixth biannual in the IONS’s inaugural International Maritime conference in April 2018 in Tehran.

# Iran's Special Forces

## **Special Operations Forces**

The Artesh and IRGC both maintain ground-based special operations forces (SOF) and maritime special operations forces (MAR-SOF) of varying levels of capability. Within the Artesh, IRIGF SOF include commando, airborne, and special forces brigades, and the IRIN operates a Special Boat Service (SBS) unit. Within the IRGC, IRGCGF SOF include commando and special forces brigades in addition to an elite special unit; the IRGCN also operates a MARSOF unit.

### ***Islamic Republic of Iran Ground Force SOF***

The IRIGF has three types of SOF units—airborne, commando, and special forces. These include several commando brigades, the 55th Airborne Brigade, the 35th Special Forces Brigade, and the 65th Airborne Special Forces Brigade. Of these units, the 65th, also known as the *NOHED* (Persian abbreviation for “airborne special forces”) brigade, is the most elite. The 55th and 65th are jump-qualified, and commando brigades deploy via airmobile insertion.<sup>419</sup> Several commando brigades have recently transitioned into special forces and rapid reaction brigades, including the 35th and 25th.<sup>420,421</sup>

Iran's first SOF units formed in the late 1950s under the tutelage of U.S. advisers. During the Iran-Iraq War, SOF units expanded to meet operational requirements. IRIGF SOF would regularly conduct reconnaissance of enemy lines to identify weak points and launch night attacks to initiate major offensive operations. Iranian airborne brigades also conducted airmobile operations in advance of Iranian offensives to seize key objectives and overrun enemy forces in rear areas.

Based on their U.S. Army Special Forces lineage, IRIGF SOF share similar mission sets, probably including unconventional warfare, foreign internal defense, special reconnaissance, direct action, and hostage rescue. Some of these units also provide a quick-reaction force that can deploy rapidly anywhere inside Iran or potentially abroad. As of April 2016, Iran had deployed personnel from the 65th Airborne Special Forces Brigade to Syria, part of the IRIGF's first external deployment since the Iran-Iraq War.

### ***Islamic Republic of Iran Navy MARSOF***

The IRIN operates an SBS based on the British Royal Navy SBS, which provided training for IRIN special forces personnel before the Islamic Revolution. The IRIN SBS probably is trained in a variety of capabilities, including combat diving, parachuting, amphibious assault, airborne assault, underwater demolitions, special reconnaissance, and maritime visit, board, search, and seizure (VBSS) operations. IRIN SBS personnel are also capable of covert insertion from the IRIN's midget submarines.

### ***IRGC Ground Force SOF***

The IRGCGF maintains several SOF units—called *Saberin* (“patient ones”)—including the 110th Salman Farsi Commando Brigade, the 33rd Al Mahdi Airborne Special Forces Brigade, and the elite Saberin Special Forces Brigade (or Saberin Special Unit). Some regular IRG-CGF divisions and brigades at the provincial level also have dedicated Saberin detachments directly subordinate to them.

The IRGCGF is upgrading select SOF units, transforming commando units into special forces units. The 33rd Al Mahdi Brigade also transitioned from an airborne to a special forces brigade. With these changes, Iran is attempting to create a more agile and responsive force, particularly following the rise of ISIS and Iranian combat deployments to Syria.

IRGCGF Saberin units are highly trained in specialized capabilities, such as raiding, hostage rescue, and heliborne assault. Some Saberin worked with IRGCGF SOF during an exercise in April 2006. Personnel use ultralight aircraft and are capable of conducting operations in a wide range of terrain and environmental conditions, including mountains, deserts, and swamps. Saberin have also deployed to Syria to support Iranian combat operations.

### ***IRGC Navy MARSOF***

The IRGCN has a MARSOF component known as the Sepah Navy Special Force (SNSF). The unit is based on Forur Island, strategically located near the Strait of Hormuz. SNSF personnel train in combat diving, direct action, counterterrorism, special reconnaissance, underwater demolitions, amphibious assault, hostage rescue, and maritime VBSS operations. Among the unit's missions is to protect Iranian commercial vessels, and SNSF personnel have deployed to the Gulf of Aden to assist with Iranian counterpiracy operations.

# Iran's Intelligence Services

The Ministry of Intelligence and Security (MOIS) and the IRGC are the most robust intelligence services in Iran. The MOIS, as a government ministry, remains accountable to the president, while the IRGC remains accountable only to the supreme leader. This bifurcated intelligence structure is intended to ensure that no single organization becomes too powerful. However, tension between the IRGC and MOIS has been a constant fixture of their relationship because their duties overlap and their responsibilities are poorly delineated.

## ***Ministry of Intelligence and Security***

The MOIS was founded in 1984 to collect intelligence and lead Iran's domestic security and counterterrorism missions. Minister of Intelligence Mahmud Alavi leads the service, which has about 30,000 officers and support staff. The MOIS is the only Iranian intelligence and security service that reports to both the president and the supreme leader.

According to Iranian law, the MOIS's functions are to:

- Collect, analyze, produce, and categorize internal and external intelligence.
- Uncover acts of conspiracy, subversion, espionage, sabotage, and sedition against the independence, security, and territorial integrity of Iran.
- Protect the intelligence, news, documents, records, facilities, and personnel of the ministry.
- Train and assist organizations and institutions in protecting their significant records, documents, and objects.

Domestic activities are a priority for the MOIS, unless the Supreme Council for National Security (SCNS) or the supreme leader deem it necessary for the ministry to become involved directly with Iran's interests abroad. MOIS intelligence officers conduct the majority of their operations in the Middle East, Central Asia, Europe, and the United States. MOIS collection and influence operations beyond Iran's borders are typically embassy- and consulate-based under official, commercial, academic, or nongovernmental organization cover. The ministry liaises with other foreign intelligence agencies, as well as organizations such as Hizballah that protect and promote Iran's foreign agenda. During the 1980s and 1990s, the MOIS was linked to an assassination campaign that killed dozens of Iranian dissidents, many of them in Europe. More recently, it has been implicated in the murder of two dissidents in the Netherlands and a foiled plot last year against a People's Mujahedeen of Iran (MEK) rally in Paris. The MOIS changed its organizational structure in 2017 by elevating its Bureau for Foreign Intelligence, providing the organization with a direct line of accounting in Iran's annual budget separate from the rest of the MOIS.

## ***IRGC Intelligence Organization***

The IRGC Intelligence Organization (IRGC-IO)—Iran's foremost military intelligence service, capable of all-source collection, analysis, and investigations—exercises primary dominance over internal Iranian military intelligence responsibilities. Hossein Taeb has led the organization since its inception in October 2009. Taeb reports directly to the supreme leader, although he must also coordinate with the IRGC commander. Regime critics claim the IRGC-IO includes more conservative and violent elements than the MOIS, its parallel intelligence and security organization. However, despite evidence of rivalries between the MOIS and IRGC-IO, both services share the common goal of preserving Iran's clerical regime.

## ***IRGC Counterintelligence Organization***

The IRGC Counterintelligence Organization (IRGC-CIO) was created in 1983 and is charged with protecting IRGC personnel, operations, and facilities from espionage, information leaks, and other counterrevolutionary threats. Brigadier General Mohammad Kazemi is the commander of the IRGC-CIO.

## ***Artesh Intelligence***

The Artesh maintains a joint military intelligence capability in the form of a Directorate for Intelligence (or J2). It focuses on traditional tactical intelligence as well as intelligence and counterintelligence operations, security within the Artesh, and coordination with other intelligence bodies.

## ***Law Enforcement Force***

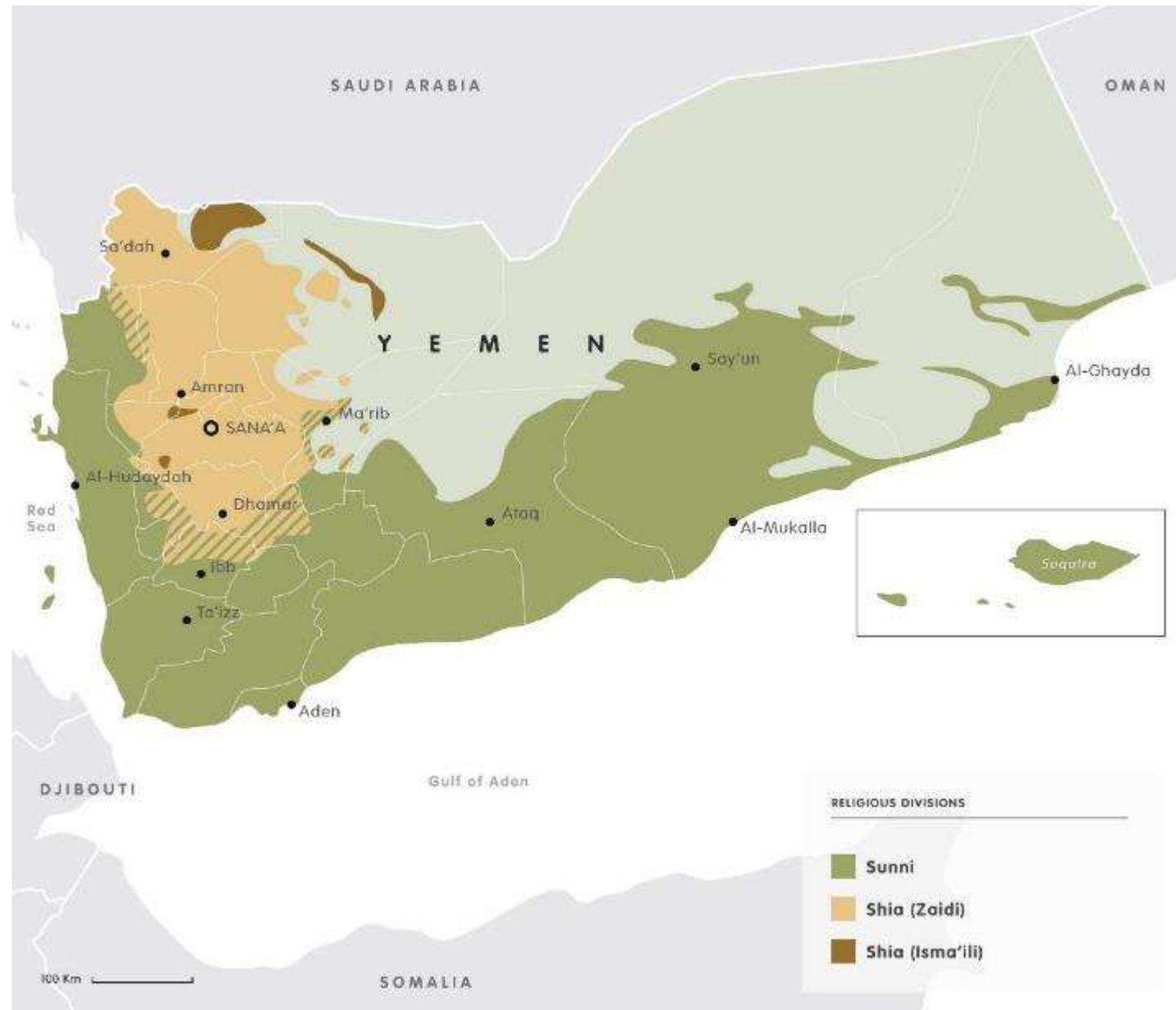
Iran's Ministry of Interior controls the Law Enforcement Force (LEF), created in 1991 to incorporate urban police, the rural gendarmerie, and various revolutionary committees. One of the LEF's three main branches is the Counterintelligence Organization, and it maintains an operational unit charged with intelligence gathering, the Intelligence and Public Security Police.

# The Yemen War

# Yemen and the Gate of Tears

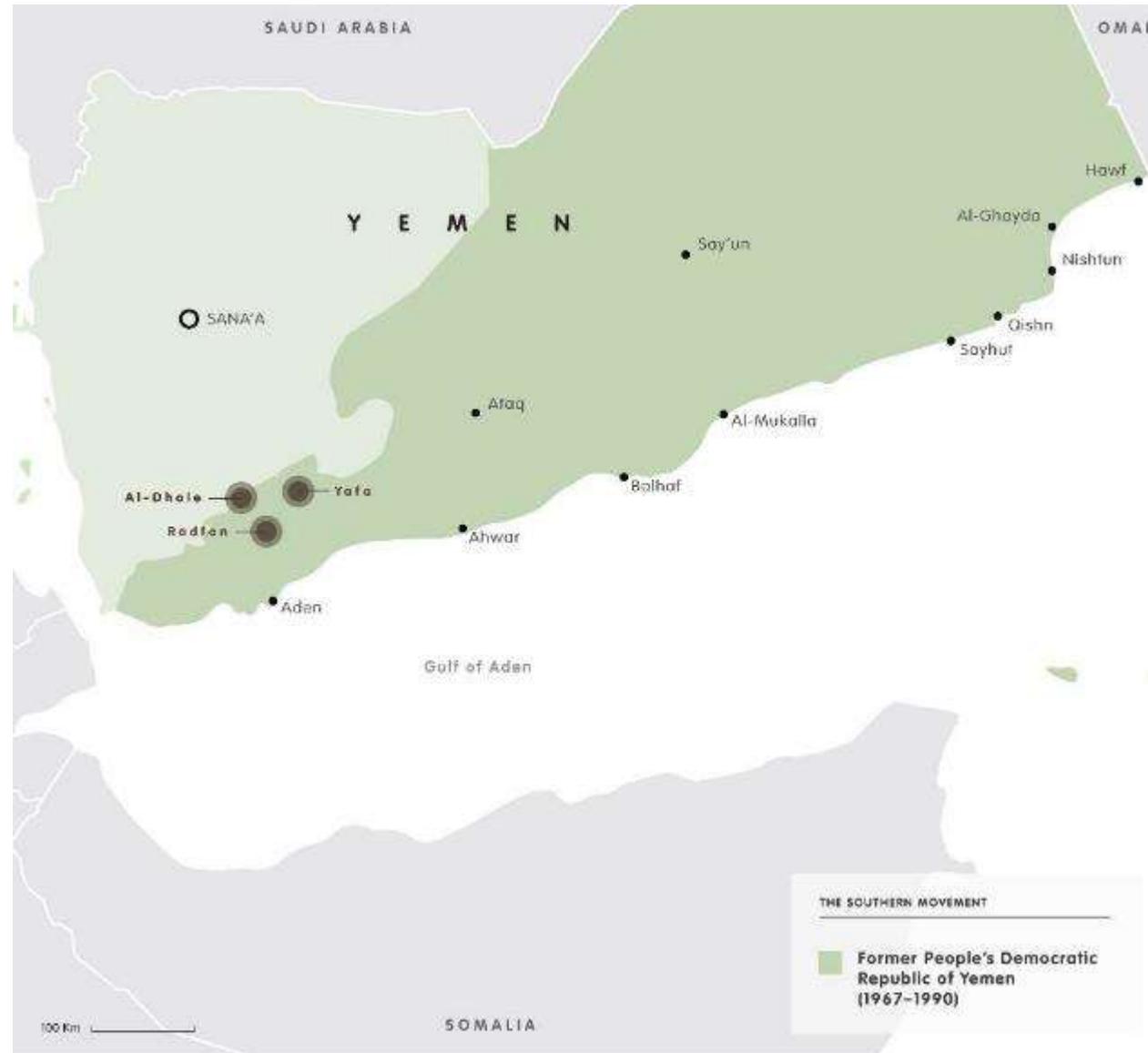


## Yemen: Sectarian Divisions



Source: CIA Factbook

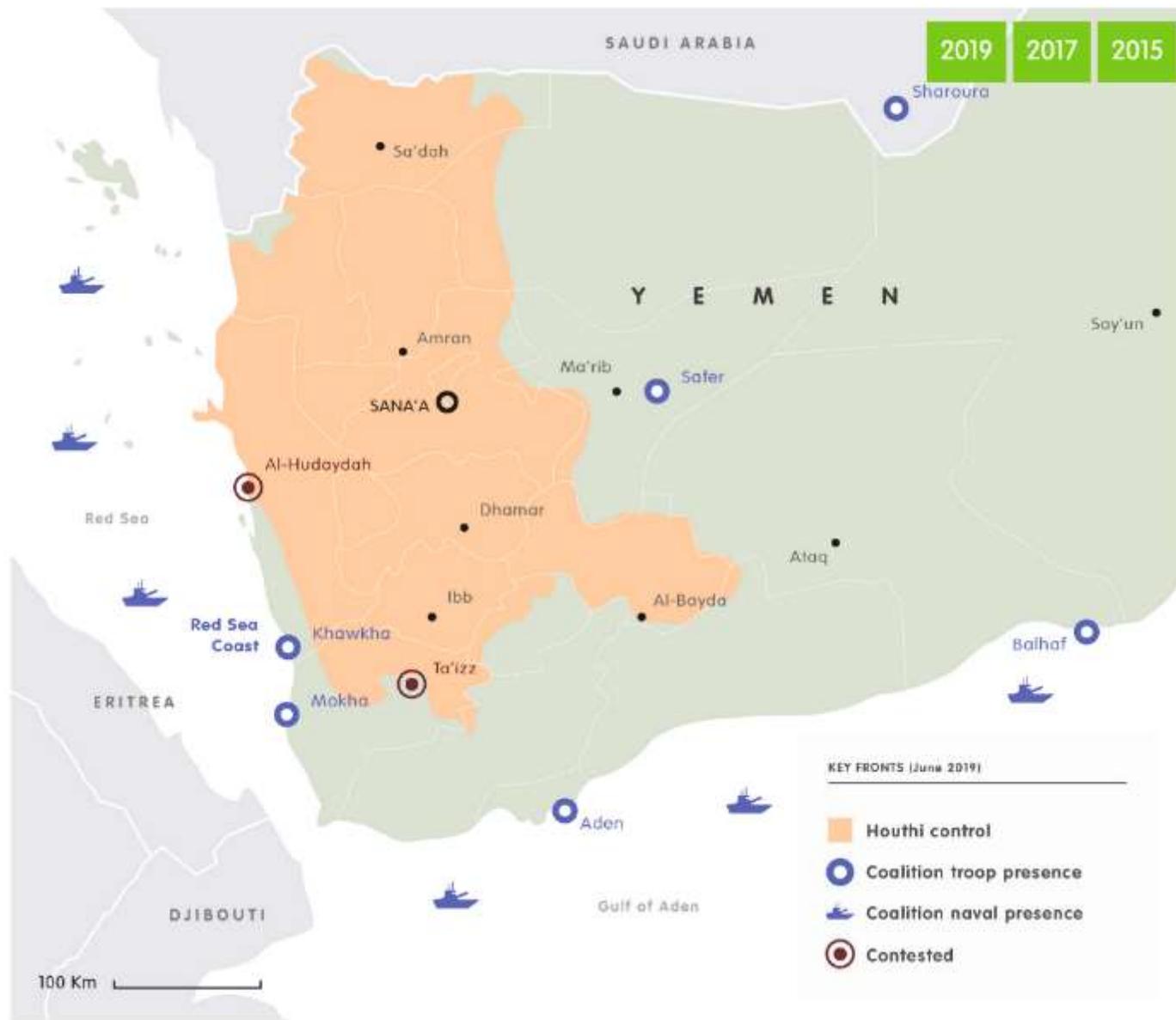
# Yemen: The Southern Movement



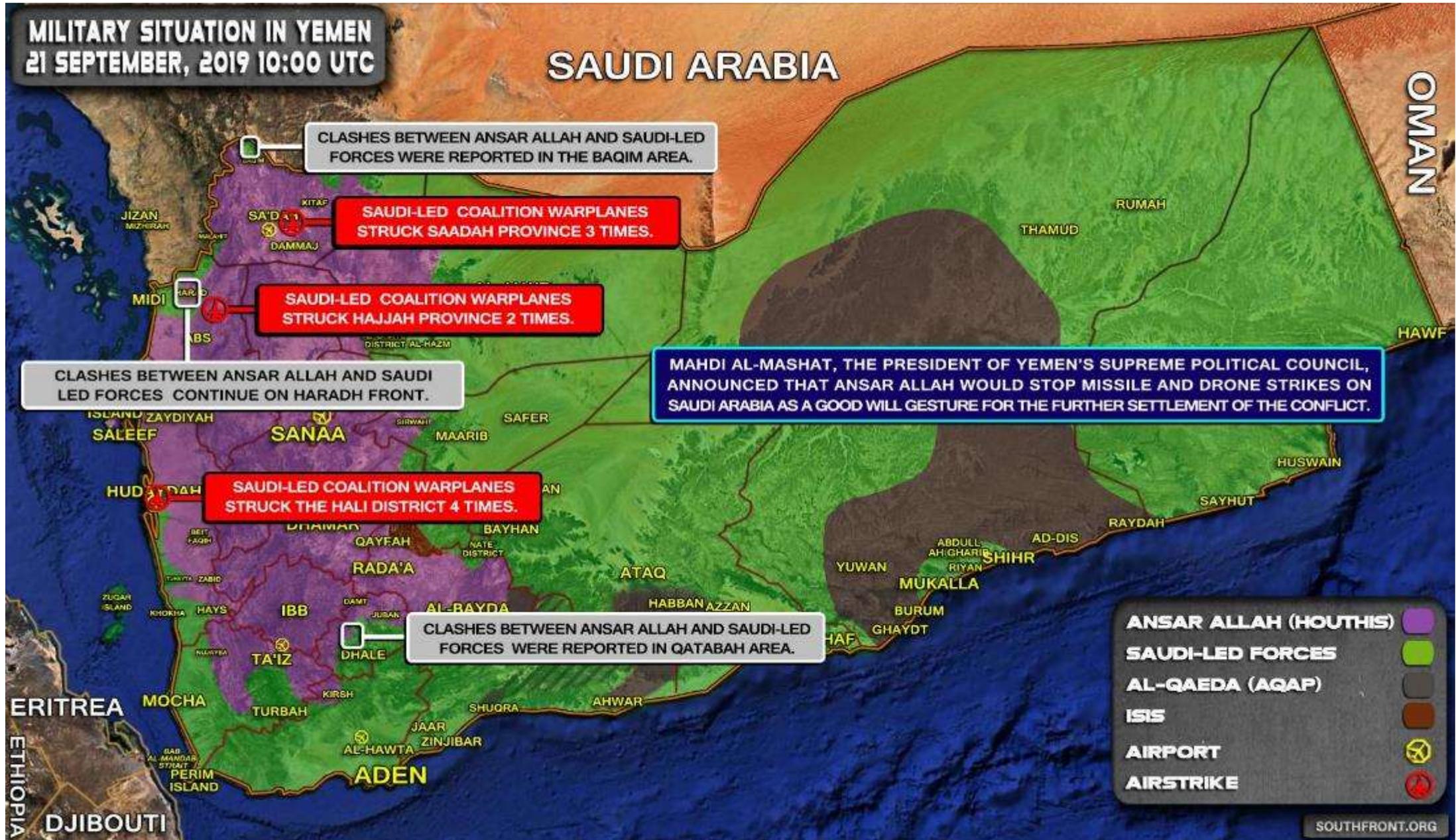
Source: ECFR.EU, Mapping the Yemen Conflict  
<https://www.ecfr.eu/mena/yemen>

# Yemen: Front in June 2019

Key fronts (June 2019)



Source: ECFR.EU, Mapping the Yemen Conflict  
<https://www.ecfr.eu/mena/yemen>



# ACLED: Yemen: as of October 2019

## The Conflict in 2019:

- ACLED records over 100,000 total reported fatalities from 2015 to the present?
  - Approximately 20,000 have been reported so far in 2019, making it the second most lethal year after 2018
- More than 40,000 conflict events have been reported since the start of 2015
  - Approximately 8,000 have occurred so far in 2019
  - The monthly number of conflict events has declined since March
    - This trend is primarily driven by a drop in explosions/remote violence events, such as shelling and airstrikes, while the number of battles has not decreased
- Deadly violence in 2019 is trending downward overall
  - April was the most lethal month so far this year, with over 2,500 reported fatalities, compared to approximately 1,700 in September
  - The third quarter of 2019 has seen the lowest number of reported fatalities since the end of 2017, largely due to a decline in battle intensity
- The number of coalition airstrikes declined over the past year, while Houthi attacks on Saudi Arabia increased until the group declared a unilateral ceasefire against targets inside Saudi territory in September
  - Saudi Arabia only partially accepted the ceasefire proposal, and has continued to conduct attacks in Yemen
  - In regions under Houthi control, ACLED has recorded an **uptick in infighting** between opposing Houthi factions

## Impact on Civilians:

- ACLED records nearly 4,900 direct civilian targeting events resulting in more than 12,000 reported civilian fatalities since 2015?
  - Approximately 1,100 civilian fatalities have been reported so far in 2019
  - The third quarter of 2019 registered the first month-to-month increase in reported civilian fatalities since the third quarter of 2018, rising 25% over the second quarter
- The Saudi-led coalition and its allies remain **responsible for** the highest number of reported civilian fatalities from direct targeting, with over 8,000 since 2015
  - Around 67% of all reported civilian fatalities during this period have been caused by coalition airstrikes
  - Though the number of coalition airstrikes is at an all-time low, civilian fatalities from air raids have risen for the first time since the end of 2017, more than doubling in the third quarter of 2019 compared to the previous quarter, primarily due to a strike on a prison facility in Dhamar that killed at least 130 detainees
- The Houthis and their allies are responsible for over 2,000 reported civilian fatalities from direct targeting since 2015

## Geographic Focus:

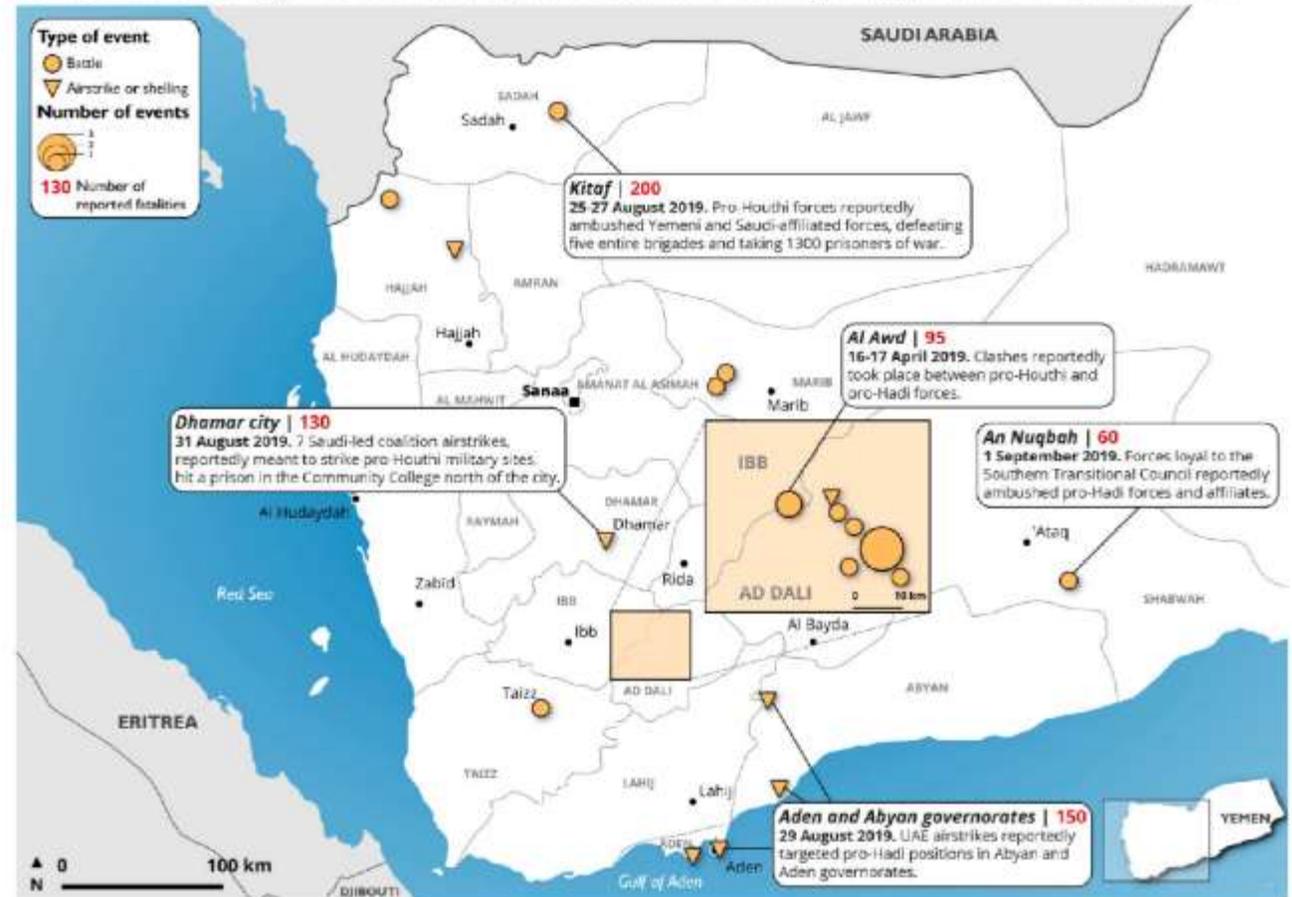
- Taiz consistently registers as the deadliest governorate in Yemen, largely due to a four-year siege laid by Houthi forces, although violence has declined in 2019
  - Over 19,000 reported fatalities have been recorded in total in the governorate since 2015 and more than 2,300 reported fatalities stem from direct civilian targeting
- Hodeidah and Al Jawf follow Taiz, with more than 10,000 total fatalities reported in each region since 2015
- Though deadly violence has decreased in Hodeidah and Taiz this year, other fronts in Ad Dali, Al Jawf, and Hajjah have registered heavy clashes: for these governorates, 2019 is the deadliest year since ACLED began tracking the conflict
  - Lethal fighting has particularly escalated in Ad Dali in 2019 due to clashes over the strategic town of Qaatabah and its outskirts: more than 60% of the 5,500 total fatalities reported in the governorate since 2015 have occurred this year
- Targeted anti-civilian violence in 2019 is concentrated in Ad Dali, Hodeidah, Hajjah, and Taiz: the governorates account for more than half of all reported fatalities from direct civilian targeting recorded so far this year
  - In Ad Dali, reported civilian fatalities have tripled compared to 2018

**31 October 2019:** The [Armed Conflict Location & Event Data Project \(ACLED\)](#) currently records more than 100,000 reported fatalities in Yemen since 2015, including over 12,000 civilians killed in direct attacks. These findings are consistent with [recent projections](#) drawing on ACLED data issued by the United Nations Development Programme (UNDP) and the Frederick S. Pardee Center for International Futures, which estimate that approximately 102,000 people will be killed in direct violence by the end of 2019.<sup>1</sup>

ACLED's Yemen data are collected in partnership with the [Yemen Data Project](#).

## Deadliest conflict events in Yemen

All events resulting in 30 or more reported fatalities from 1 January 2019 to 26 October 2019



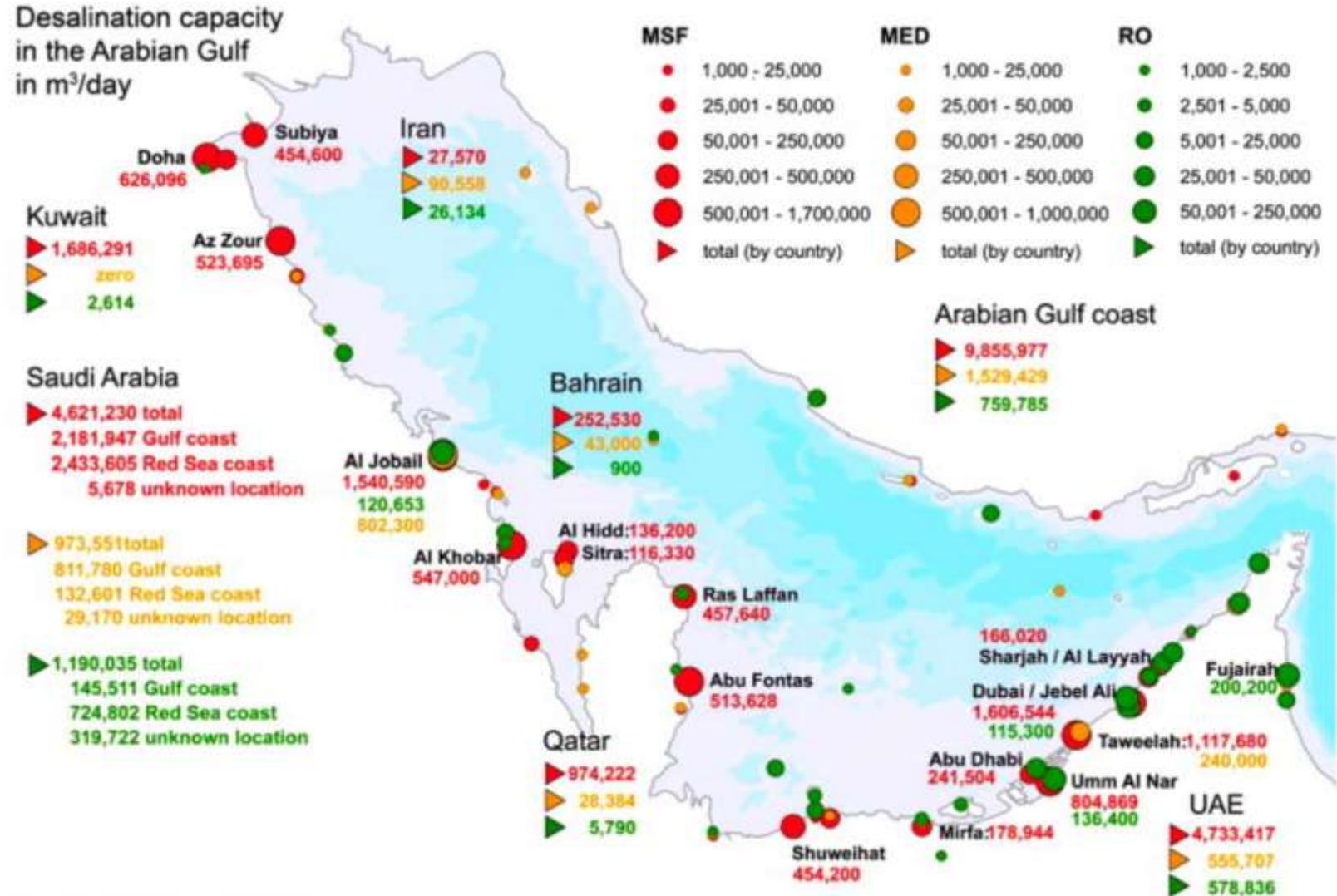
# **Petroleum and Infrastructure Targets**

# Gulf Desalination facilities

THAAD and Patriot Pac-3 are complementary to each other. Patriot pac-3 intercepts aircraft/UAVs, and cruise missiles and a ballistic missile in its terminal stage of flight (in atmosphere), while Thaad intercepts a missile while it is in Stratosphere.

So, if Thaad fails in intercepting a missile Pac-3 might do that.

UAE is acquiring Patriot pac-3, Patriot pac-2, Thaad and Pantzir-s1 which makes its airspace fully protected.



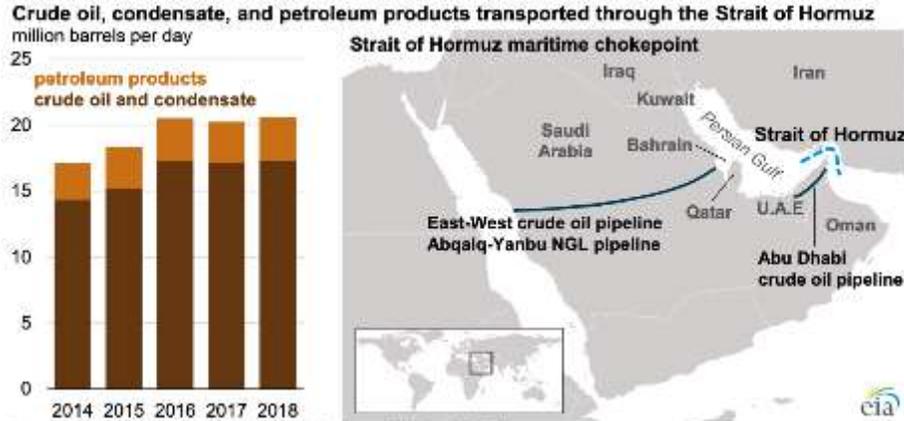
© S. Lattemann and T. Höpner 2009

# Broader Gulf Energy Infrastructure



Source: [https://www.google.com/search?q=map+of+arabian+peninsula+countries&client=firefox-b-1-d&sxsrf=ACYBGNT711xWCgfrEtO5Pamkps17xWDnFQ:1572349428627&tbm=isch&source=iu&ictx=1&fir=dJAdsiD9XE8UKM%253A%252CZu4KYmOJXzdRMM%252C\\_&vet=1&usg=AI4\\_kQJfYn\\_rw\\_fxWYXM2e8TyWCsRqQE&sa=X&ved=2ahUKewixuZ-JssHIAhXypVkkHWBYAOYQ9QEwA3oECAQQBg#imgrc=dJAdsiD9XE8UKM&imgdii=VsHcbY\\_yEWUVOM](https://www.google.com/search?q=map+of+arabian+peninsula+countries&client=firefox-b-1-d&sxsrf=ACYBGNT711xWCgfrEtO5Pamkps17xWDnFQ:1572349428627&tbm=isch&source=iu&ictx=1&fir=dJAdsiD9XE8UKM%253A%252CZu4KYmOJXzdRMM%252C_&vet=1&usg=AI4_kQJfYn_rw_fxWYXM2e8TyWCsRqQE&sa=X&ved=2ahUKewixuZ-JssHIAhXypVkkHWBYAOYQ9QEwA3oECAQQBg#imgrc=dJAdsiD9XE8UKM&imgdii=VsHcbY_yEWUVOM)

# The Strategic Importance of Gulf Exports and the Strait of Hormuz



The Strait of Hormuz, located between Oman and Iran, connects the Persian Gulf with the Gulf of Oman and the Arabian Sea. The Strait of Hormuz is the world's most important oil chokepoint because of the large volumes of oil that flow through the strait. In 2018, its daily oil flow averaged 21 million barrels per day (b/d), or the equivalent of about 21% of global petroleum liquids consumption.

Chokepoints are narrow channels along widely used global sea routes that are critical to global energy security. The inability of oil to transit a major chokepoint, even temporarily, can lead to substantial supply delays and higher shipping costs, resulting in higher world energy prices. Although most chokepoints can be circumvented by using other routes that add significantly to transit time, some chokepoints have no practical alternatives.

Volumes of crude oil, condensate, and petroleum products transiting the Strait of Hormuz have been fairly stable since 2016, when international sanctions on Iran were lifted and Iran's oil production and exports returned to pre-sanctions levels. Flows through the Strait of Hormuz in 2018 made up about one-third of total global seaborne traded oil. More than one-quarter of global liquefied natural gas trade also transited the Strait of Hormuz in 2018.

**Crude oil, condensate, and petroleum products transported through the Strait of Hormuz**  
million barrels per day

	2014	2015	2016	2017	2018
<b>Total oil flows through Strait of Hormuz</b>	17.2	18.4	20.6	20.3	20.7
Crude and condensate	14.4	15.2	17.3	17.2	17.3
Petroleum products	2.8	3.2	3.3	3.1	3.3
<b>World maritime oil trade</b>	56.4	58.9	61.2	62.5	N/A
<b>World total petroleum and other liquids consumption</b>	93.9	95.9	96.9	98.5	99.9
<b>LNG flows through Strait of Hormuz (Tcf per year)</b>	4.0	4.2	4.2	4.1	4.1

Source: U.S. Energy Information Administration, based on *Short-Term Energy Outlook* (June 2019), ClipperData, Saudi Aramco bond prospectus, Saudi Aramco annual reports, Saudi Ports Authority, International Group of Liquefied Natural Gas Importers, and U.N. Conference on Trade and Development.  
Note: LNG is liquefied natural gas; Tcf is trillion cubic feet.

There are limited options to bypass the Strait of Hormuz. Only Saudi Arabia and the United Arab Emirates have pipelines that can ship crude oil outside the Persian Gulf and have the additional pipeline capacity to circumvent the Strait of Hormuz. At the end of 2018, the total available crude oil pipeline capacity from the two countries combined was estimated at 6.5 million b/d. In that year, 2.7 million b/d of crude oil moved through the pipelines, leaving about 3.8 million b/d of unused capacity that could have bypassed the strait.

**Operating pipelines that bypass the Strait of Hormuz, 2018**

million barrels per day

Pipeline name	Country	Capacity	Throughput	Unused capacity
Petrolina (East-West Pipeline)	Saudi Arabia	5.0	2.1	2.9
Abu Dhabi Crude Oil Pipeline	United Arab Emirates	1.5	0.6	0.9
Abqaiq-Yanbu Natural Gas Liquids Pipeline	Saudi Arabia	0.3	0.3	0.0
<b>TOTAL</b>		<b>6.8</b>	<b>3.0</b>	<b>3.8</b>

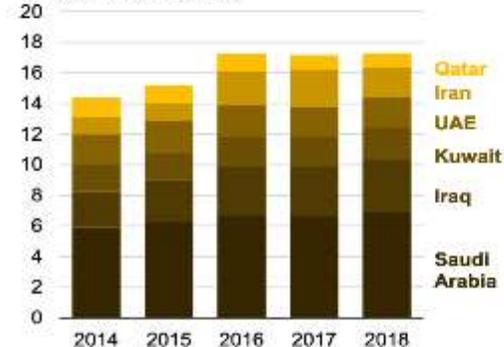
Source: U.S. Energy Information Administration, based on ClipperData, Saudi Aramco bond prospectus (April 2019)  
Note: Unused capacity is defined as pipeline capacity that is not currently used but can be readily available.

Based on tanker tracking data published by ClipperData, Saudi Arabia moves the most crude oil and condensate through the Strait of Hormuz, most of which is exported to other countries (less than 0.5 million b/d transited the strait in 2018 from Saudi ports in the Persian Gulf to Saudi ports in the Red Sea).

EIA estimates that 76% of the crude oil and condensate that moved through the Strait of Hormuz went to Asian markets in 2018. China, India, Japan, South Korea, and Singapore were the largest destinations for crude oil moving through the Strait of Hormuz to Asia, accounting for 65% of all Hormuz crude oil and condensate flows in 2018.

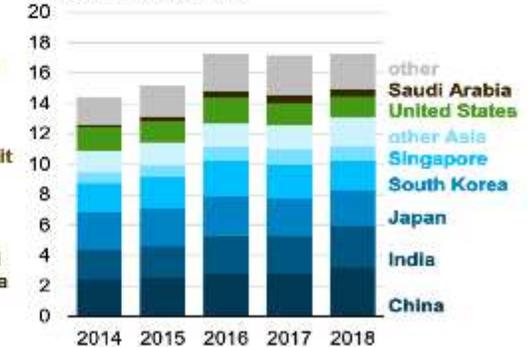
**Volume of crude oil and condensate transported through the Strait of Hormuz by origin**

million barrels per day



**by destination**

million barrels per day



Source: U.S. Energy Information Administration, based on tanker tracking data published by ClipperData, Inc.

In 2018, the United States imported about 1.4 million b/d of crude oil and condensate from Persian Gulf countries through the Strait of Hormuz, accounting for about 18% of total U.S. crude oil and condensate imports and 7% of total U.S. petroleum liquids consumption.

# The Strategic Importance of the Bab el-Mandeb



Source: U.S. Energy Information Administration

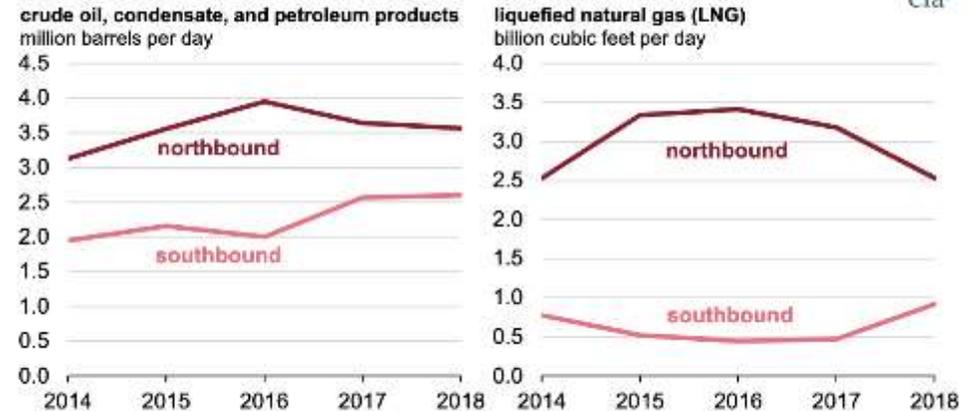
The Bab el-Mandeb Strait is a sea route chokepoint between the Horn of Africa and the Middle East, connecting the Red Sea to the Gulf of Aden and Arabian Sea. Most exports of petroleum and natural gas from the Persian Gulf that transit the [Suez Canal or the SUMED Pipeline](#) pass through both the Bab el-Mandeb and the [Strait of Hormuz](#).

**Chokepoints** are narrow channels along widely used global sea routes that are critical to global energy security. The Bab el-Mandeb Strait is 18 miles wide at its narrowest point, limiting tanker traffic to two 2-mile-wide channels for inbound and outbound shipments.

Closure of the Bab el-Mandeb Strait could keep tankers originating in the Persian Gulf from transiting the Suez Canal or reaching the SUMED Pipeline, forcing them to divert around the southern tip of Africa, which would increase transit time and shipping costs.

In 2018, an estimated 6.2 million barrels per day (b/d) of crude oil, condensate, and refined petroleum products flowed through the Bab el-Mandeb Strait toward Europe, the United States, and Asia, an increase from 5.1 million b/d in 2014. Total petroleum flows through the Bab el-Mandeb Strait accounted for about 9% of total seaborne-traded petroleum (crude oil and refined petroleum products) in 2017. About 3.6 million b/d moved north toward Europe; another 2.6 million b/d flowed in the opposite direction mainly to Asian markets such as Singapore, China, and India.

## Total petroleum and LNG flows through the Bab el-Mandeb Strait (2014-2018)



Source: U.S. Energy Information Administration, based on ClipperData, Inc; Suez Canal Authority; and International Group of LNG Importers (GIIGNL) using EIA conversion factors.

Note: [CSV data](#)

Before 2015, volumes of liquefied natural gas (LNG) passing through the Bab el-Mandeb Strait matched those passing through the Suez Canal because the Red Sea did not have any LNG infrastructure. In 2015, both Jordan and Egypt began importing small volumes of LNG into Red Sea ports, and these countries' imports of LNG peaked in 2016 at 1.4 billion cubic feet per day, 80% of which was delivered through the Bab el-Mandeb Strait.

More recently, as new natural gas fields in Egypt have come online, the need for Egypt to import LNG has decreased. Like flows to Egypt, total northbound flows of LNG via the Bab el-Mandeb have also decreased since 2016 as northbound flows to other destinations have remained fairly constant.

# The Strategic Importance of the SUMED Pipeline and Suez Canal - I

Suez Canal and SUMED Pipeline chokepoints



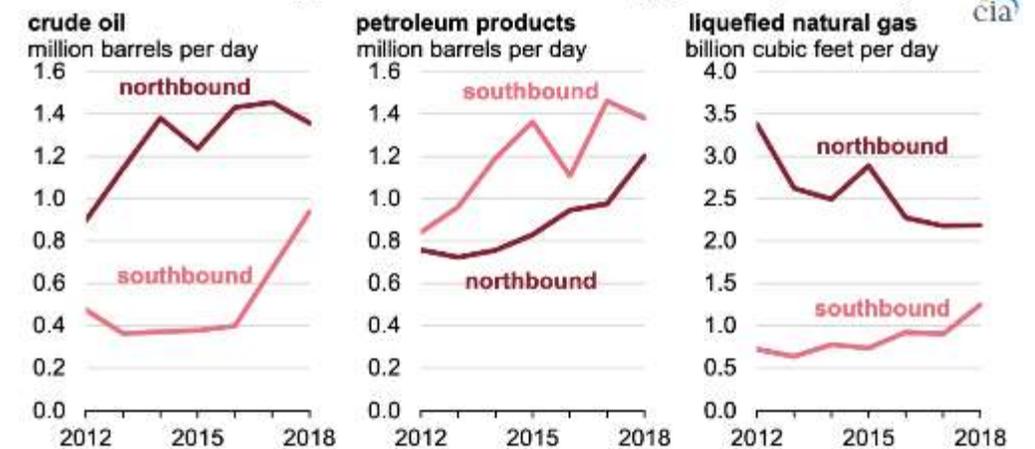
Source: U.S. Energy Information Administration

The Suez Canal and the SUMED Pipeline are strategic routes for Persian Gulf crude oil, petroleum products, and liquefied natural gas (LNG) shipments to Europe and North America. Located in Egypt, the Suez Canal connects the Red Sea with the Mediterranean Sea, and it is a critical chokepoint because of the large volumes of energy commodities that flow through it.

**Chokepoints** are narrow channels along widely used global sea routes that are critical to global energy security. Total oil flows through the Suez Canal and the SUMED pipeline accounted for about 9% of total seaborne traded petroleum (crude oil and refined petroleum products) in 2017, and LNG flows through the Suez Canal and the SUMED pipeline accounted for about 8% of global LNG trade.

Source: adapted from Candace Dunn, Natalie Kempkey, "The Suez Canal and SUMED Pipeline are critical chokepoints for oil and gas," *Energy Today*, July 23, 2019, <https://www.eia.gov/todayinenergy/detail.php?id=40152>

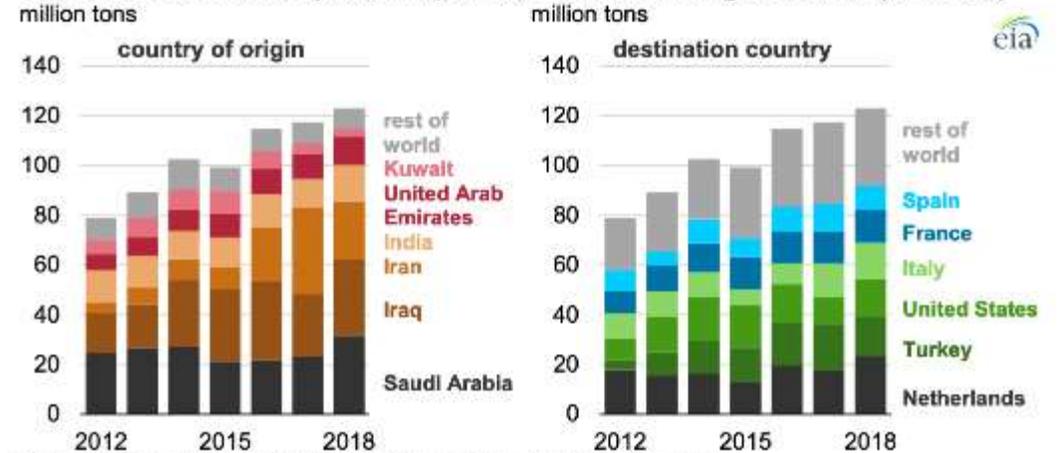
Suez Canal and SUMED pipeline flows of selected energy products (2012-2018)



Source: U.S. Energy Information Administration, based on Lloyd's List Intelligence, Clipper Data, and Suez Canal Authority (with EIA conversions)

Slightly more than half of total petroleum transiting the Suez Canal in 2018 was sent northbound to destinations in Europe and North America. Petroleum exports from Persian Gulf countries, such as Saudi Arabia, Iraq, and Iran, accounted for 85% of Suez Canal northbound traffic. Northbound flows of petroleum products have risen in recent years, particularly as more ultra-low sulfur diesel fuel has been shipped from Saudi Arabia to European countries.

Northbound crude oil and petroleum product volumes transiting Suez Canal (2012-2018)



Source: U.S. Energy Information Administration, based on Suez Canal Authority

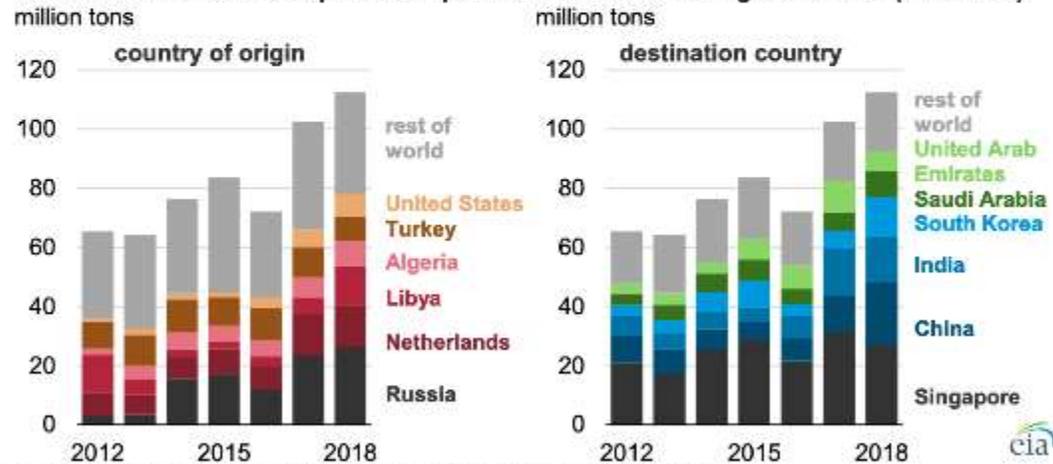
# The Strategic Importance of the SUMED Pipeline and Suez Canal - II

Northbound crude oil flows decreased in 2018 for several reasons:

- Higher U.S. crude oil exports displaced Persian Gulf crude oil that had been historically sent to Europe.
- Key Middle East producers, mainly Saudi Arabia and Iraq, have been increasing crude oil exports to China and other growing Asian oil markets using eastbound routes rather than the Suez Canal.
- Renewed U.S. oil sanctions on Iran, imposed in late 2018, contributed to a decrease in Iran's crude oil exports to Europe.

Southbound crude oil shipments, mainly to Asian markets such as Singapore, China, and India, have more than doubled in the past two years. Petroleum exports from Russia accounted for the largest share (24%) of Suez southbound petroleum traffic. Increases in Libya's crude oil production and exports in 2018 also contributed to a rise in southbound shipments. In the past two years, increased production and exports of U.S. crude oil and petroleum products—especially liquefied petroleum gas—have also increased southbound traffic through the canal.

## Southbound crude oil and petroleum product volumes transiting Suez Canal (2012-2018)



Source: U.S. Energy Information Administration, based on Suez Canal Authority

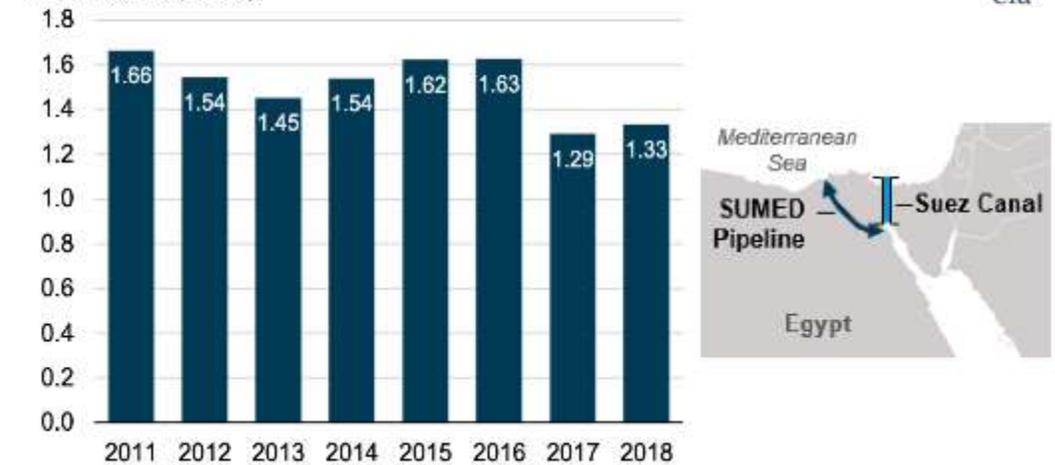
Overall LNG flows through the Suez Canal have declined in recent years. Nearly all (98%) of the northbound LNG transit is from Qatar and mainly destined for European markets. Although Qatar remains a key exporter of LNG through the canal, it has been diverting more cargoes to Asia in recent years.

Changes in LNG traffic through the Suez Canal also reflect the growth in U.S. shale gas production and LNG exports, falling LNG demand in some European countries, and competition for LNG in the global market, especially in Asia.

The 200-mile long SUMED Pipeline transports crude oil northbound through Egypt from the Red Sea to the Mediterranean Sea. Crude oil flows through two parallel pipelines that have a total maximum flow capacity of 2.8 million barrels per day. The SUMED Pipeline is the only alternative route to transport crude oil from the Red Sea to the Mediterranean Sea if ships cannot navigate through the Suez Canal. Crude oil flows through the SUMED Pipeline have declined since 2016 as a result of the shifting oil trade patterns and a widening of the Suez Canal.

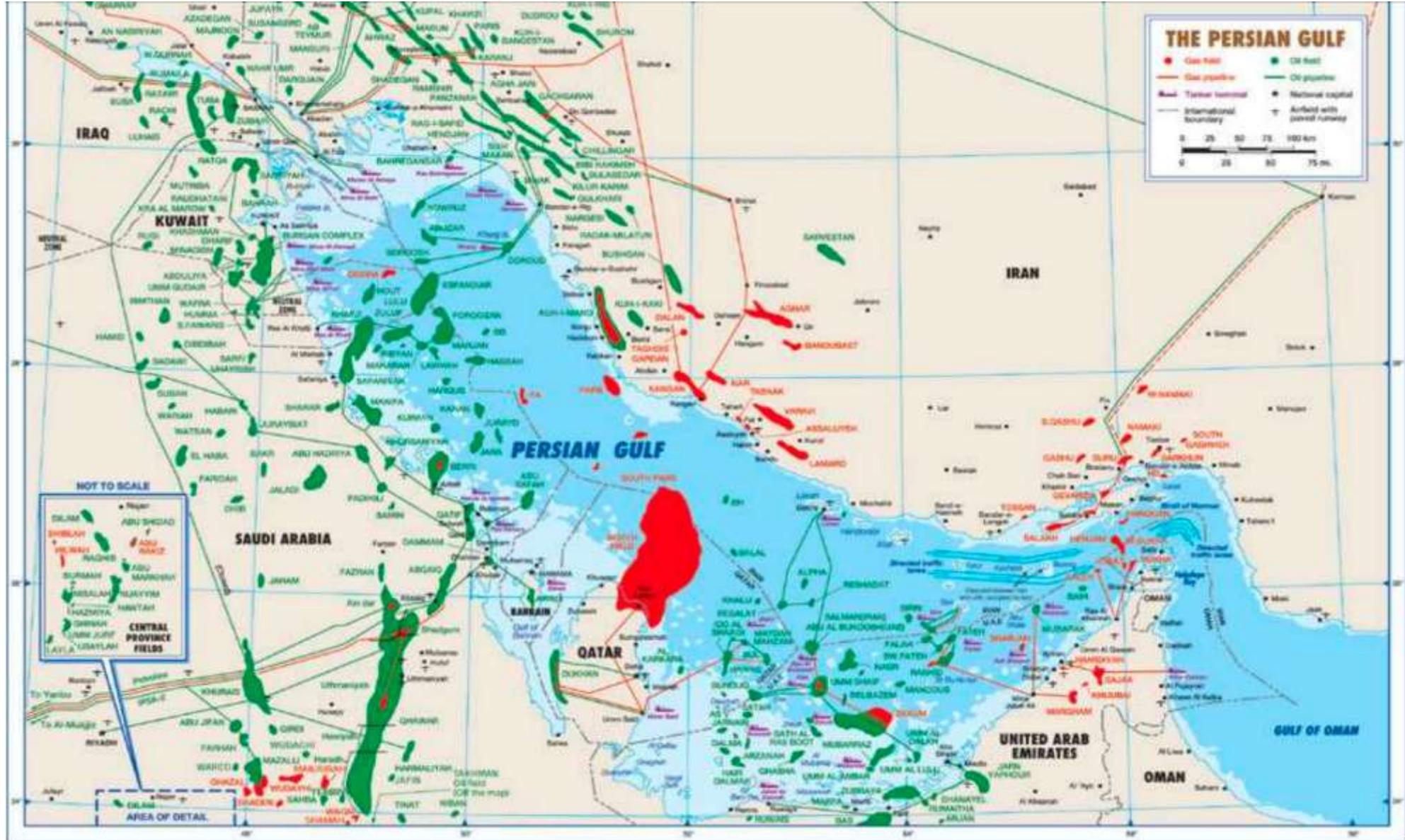
## SUMED pipeline crude oil flows (2011-2018)

million barrels per day



Source: U.S. Energy Information Administration, based on Lloyd's List Intelligence and Clipper Data

# Major Gulf-Wide Petroleum Targets

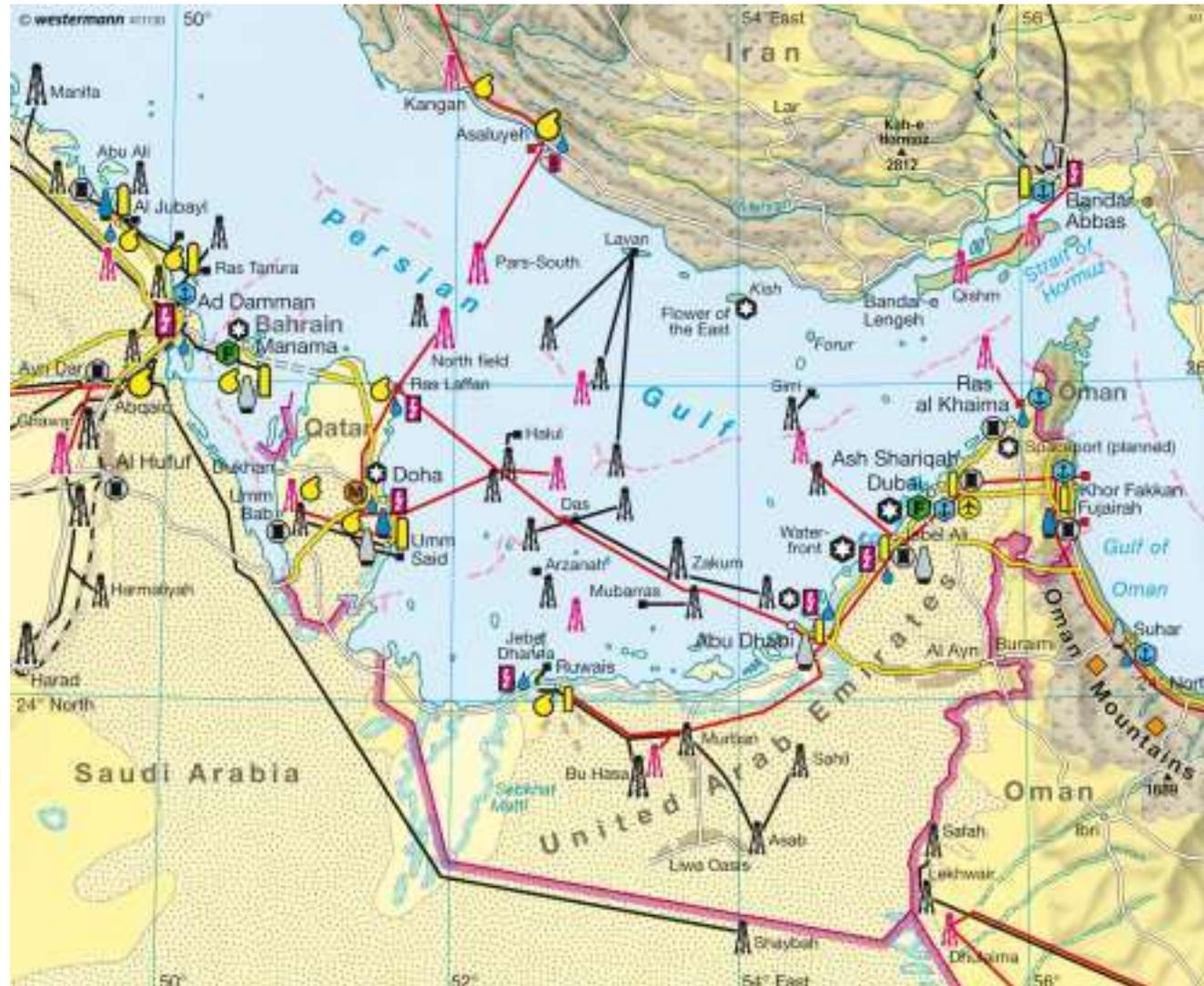


# Major Gulf-Wide Urban Targets



Source:  
<http://ontheworldmap.com/oceans-and-seas/persian-gulf/large-detailed-map-of-persian-gulf-with-cities-and-towns.html>

# Petroleum Targets Near strait of Hormuz



Source: [https://www.google.com/search?q=map+of+Persian+Gulf+waters&client=firefox-b-1-d&sxsrf=ACYBGNT3Bz3Uu1RaeljNzbJkUQKLzV6GVw:1572347568274&tbm=isch&source=iu&ictx=1&fir=0-nfGXNHw9FVZM%253A%252CFC7tYQ2qnrdrUM%252C\\_&vet=1&usg=AI4\\_-kSA50tRuvtbIFksgDc9uPoVX0WMCg&sa=X&ved=2ahUKewiOvpSSq8HIAhUDqlkKHcn3D\\_sQ9QEwBXoEACAYQDw#imgrc=O-nfGXNHw9FVZM](https://www.google.com/search?q=map+of+Persian+Gulf+waters&client=firefox-b-1-d&sxsrf=ACYBGNT3Bz3Uu1RaeljNzbJkUQKLzV6GVw:1572347568274&tbm=isch&source=iu&ictx=1&fir=0-nfGXNHw9FVZM%253A%252CFC7tYQ2qnrdrUM%252C_&vet=1&usg=AI4_-kSA50tRuvtbIFksgDc9uPoVX0WMCg&sa=X&ved=2ahUKewiOvpSSq8HIAhUDqlkKHcn3D_sQ9QEwBXoEACAYQDw#imgrc=O-nfGXNHw9FVZM)

# Major Iranian Petroleum Targets



Source:  
[https://www.google.com/search?q=map+of+Persian+Gulf+oil+facilities&client=firefox-b-1-d&sxsrf=ACYBGNRlqmEJarwlgK8IzAbMHOHcbh1wDQ:1572347309115&tbm=isch&source=iu&ictx=1&fir=4\\_00AptkIVoMwM%253A%252CylawVXsbilUcM%252C\\_&vet=1&usg=AI4\\_-kr-QK0qciHI8Xa4hVSUbyJG4I-4g&sa=X&ved=2ahUKEwjR5cqWqSHIAhWVuVkkHbo4AOUQ9QEwa3oECAYQDw#mrgc=4\\_00AptkIVoMwM:](https://www.google.com/search?q=map+of+Persian+Gulf+oil+facilities&client=firefox-b-1-d&sxsrf=ACYBGNRlqmEJarwlgK8IzAbMHOHcbh1wDQ:1572347309115&tbm=isch&source=iu&ictx=1&fir=4_00AptkIVoMwM%253A%252CylawVXsbilUcM%252C_&vet=1&usg=AI4_-kr-QK0qciHI8Xa4hVSUbyJG4I-4g&sa=X&ved=2ahUKEwjR5cqWqSHIAhWVuVkkHbo4AOUQ9QEwa3oECAYQDw#mrgc=4_00AptkIVoMwM:)

# Nationwide Saudi Petroleum Targets

Figure 6. Saudi Arabia major oil and natural gas infrastructure  
Saudi Arabia major oil and natural gas infrastructure



Source: EIA <https://www.eia.gov/beta/international/analysis.php?iso=SAU>

# Oil Tank Farm at Ras Tanura



# Nationwide UAE Petroleum Targets

