

MAJOR GEOPOLITICAL DEVELOPMENTS THAT COULD IMPACT ON OIL SUPPLIES FROM THE ARAB GULF REGION

By

Dr Mamdouh G Salameh
International Oil Economist & Consultant to the World Bank on Oil & Energy
World Bank, Washington DC / Oil Market Consultancy Service, UK
Phone: +44 1428 644137, E-mail: mgsalameh@btconnect.com

Abstract

Four major geopolitical developments have the potential to impact on the flow of oil supplies from the Arab Gulf region: Iran's nuclear programme, the US shale oil revolution, the natural gas discoveries in the eastern Mediterranean and the steep-rising domestic oil consumption among the Arab Gulf States and a lack of a meaningful diversification of their economies. Whilst Iran's nuclear programme with the inherent risk of war in the Gulf could have direct and serious impact on the flow of oil from the region and the price of oil, its adverse impact would be short-lived. On the other hand, both the US shale oil revolution and the eastern Mediterranean gas discoveries would virtually have no impact. However, the real threat to oil supplies from the Gulf region in the long term actually comes from the steeply-rising domestic oil consumption among the Gulf States and a lack of meaningful diversification of their economies. This means they will have to cut their domestic oil consumption drastically or replace oil with nuclear power and solar energy for electricity-generation and water desalination. Failing to do either would result in their relegation to minor crude oil exporters by 2025 or ceasing to remain oil exporters by 2032 altogether.

Key Words: Iran, Geopolitics, Shale oil, Eastern Mediterranean, Arab Gulf

Introduction

Four major geopolitical developments have the potential to impact on the flow of oil supplies from the Arab Gulf region: Iran's nuclear programme, the US shale oil revolution, the natural gas discoveries in the eastern Mediterranean and the steep-rising domestic oil consumption among the Arab Gulf States and a lack of a meaningful diversification of their economies.

Whilst Iran's nuclear programme with the inherent risk of war in the Gulf could have direct and serious impact on the flow of oil from the region and the price of oil, its adverse impact would be short-lived. On the other hand, both the US shale oil revolution and the eastern Mediterranean gas discoveries would virtually have no impact.

US shale oil production would hardly make a dent in the global oil supplies let alone impacting on the flow of oil supplies from the Arab Gulf region.

As for the east Mediterranean gas discoveries, other than making the littoral countries like Lebanon, Cyprus and Israel self-sufficient in natural gas and enabling them to earn some revenue from gas exports and also posing some competition to Qatar's dominant position as the world's number one exporter of liquefied natural gas (LNG) and to Russia's very important gas exports to Europe, they would have no impact on oil supplies from the Gulf. They might lead, however, to conflict between Lebanon and Israel over the demarcation of the maritime boundaries between the two countries and between the Greek Cypriots and the Turkish Cypriots over the sharing of the natural gas riches.

However, the real threat to oil supplies from the Gulf region in the long term actually comes from the steeply-rising domestic oil consumption among the Gulf States and a lack of meaningful diversification of their economies. This means they will have to cut their domestic oil consumption drastically or replace oil with nuclear power and solar energy for electricity-generation and water

desalination. Failing to do either would result in their relegation to minor crude oil exporters by 2025 or ceasing to remain oil exporters by 2032 altogether.

Iran's Nuclear Programme

Oil is at the heart of Iran's nuclear programme. Iran needs nuclear energy to replace the crude oil and natural gas currently being used to generate electricity, thus allowing more oil and gas to be exported. Without nuclear power, Iran could cease to remain a major crude oil exporter and could be relegated to the ranks of small exporters as early as 2015 with catastrophic implications for its economy and also the price of oil.

Iran would doubtless not be averse to possessing nuclear weapons. There is an element of security and also logic involved with Iran's quest for nuclear weapons. Their logic is that if Israel, India, Pakistan and North Korea can defy the world and get away with them, why not Iran. Neither sanctions nor threat of war against Iran would force it to relinquish its nuclear programme and its pursuit of nuclear weapons.

If attacked, Iran could plunge the world in the biggest oil crisis in its history. Iran is determined to pursue its nuclear programme and will face down the United States, the European Union, Israel and the world community and probably get away with acquiring nuclear weapons. The US and its allies can do nothing militarily, economically or with sanctions.

I strongly believe that the US and its allies including Israel will eventually end up acquiescing to a nuclear Iran and, who knows, they might end up forming an unholy alliance made up of the US, Israel and Iran to siphon off the oil and energy resources of the Arab gulf countries, something reminiscent of the US invasion of Iraq.

In the furore about Iran's nuclear programme, one important fact is being overlooked – Iran's oil resources may not be sufficient to supply its rapidly growing population without major cuts in oil exports. Iran's proven oil reserves have been greatly overstated to the extent that it may actually need nuclear power to fuel its economy and also to remain an oil exporter in coming years.

The US government has argued strongly that a country so apparently well-endowed with oil and natural gas as Iran cannot have any legitimate need to develop nuclear energy.

However, when the Shah started Iran's nuclear energy programme in 1974 with encouragement from the Nixon administration, nuclear power could not be justified then economically as Iran's population was less than half its present 75 million, oil production was 6 million barrels a day (mbd), almost double the present production of 3.20 mbd and energy consumption was less than a quarter of consumption today, and unlike now, Iran's oil reservoirs were not in decline.

The question is: since the United States strongly encouraged the Shah to build nuclear power plants in 1974, why is it objecting now to Iran pursuing a nuclear programme? The answer is that in 1974 the Shah of Iran was a great friend of Israel while in the opening decades of the twenty-first century, Iran is no longer friendly with Israel.

1-Struggling to Maintain Oil Production

From a peak production of 6 mbd and crude oil exports of 5.7 mbd in 1974, Iran in 2013 was struggling even to produce 3.20 mbd with net exports in down to 1.21 mbd. And if the current trend continues, Iran's projected consumption of 2.07 mbd by 2015 would leave it with only 1.13 mbd for export (see Table 1).

In 2013 Iran exported an estimated 1.21 mbd compared to 1.5 mbd in 2012. Iran's net oil export revenues of \$57 bn in 2012 were significantly lower than the \$95 billion total generated in 2011.

Table 1
Consumption, Exports & Sustainable Capacity, (2009-2030)
(mbd)

	2009	2010	2011	2012	2013	2015	2020	2030
Production capacity	3.60	3.60	3.60	3.60	3.50	3.50	3.25	3.00
Production	3.56	3.54	3.58	3.47	3.20	3.20	3.15	3.00
Consumption	2.00	1.94	1.88	1.97	1.99	2.07	2.23	2.71
Net exports	1.56	1.60	1.70	1.50	1.21	1.13	0.92	0.29

Sources: IEA's World Energy Outlook 2012 / BP Statistical Review of World Energy, June 2013/
OPEC Annual Statistical Bulletin 2012 / Platts, 10 June, 2013 Survey of OPEC / EIA
International Energy Statistics Database & Short-term Energy outlook.

2- Iran's Proven Oil Reserves

Iran claims to have proven reserves of 157 billion barrels (bb). However, a number of international experts have disputed this figure (see Table 2).

Table 2
Iran's Remaining Proven Oil Reserves 2012
(bb)

Oil & Gas Journal	BP Statistical Review 2013	Samsan Bakhtiari	Mamdouh Salameh	Ali Saidi
157.0	157.0	36.0	30.0	37.0

Sources: Oil & Gas Journal / BP Statistical Review of World Energy, June 2013/ Iranian experts' research on Iran's oil reserves / Author's calculations.

Whilst the Oil & Gas Journal (O&GJ) and BP Statistical Review of World Energy have accepted at face value Iran's word that it has 157 bb of proven oil reserves, two leading Iranian oil experts, Dr Samsan Bakhtiari and Dr Ali Saidi, who until a few years ago worked for the National Iranian Oil Company (NIOC), estimated Iran's oil reserves at 36 bb - 37 bb.

However, my estimate of Iran's proven reserves is only 30 bb based on production, discoveries and consumption since oil was discovered in the country.

3- Iran's Oil Production Peak

Iran is one of nine top oil producers in the world whose oil production peaked. USA peaked in 1971, Canada in 1973, Iran in 1974, Indonesia 1977, Russia in 1987, UK in 1999, Norway in 2001, Mexico in 2002 and Saudi Arabia in 2005 (see Table 3).

Table 3
The Peak & Depletion of Conventional Crude Oil

Country	Date of Peak Discovery	Date of Peak Production	% Discovered	% Depleted	Ultimate Production (bb)
Canada	1950s	1973	95	76	25
Iran	1960s	1974	94	76	130
Indonesia	1950s	1977	93	65	31
Mexico	1950s	2002	94	55	55
Norway	1970s	2001	93	48	33
Russia	1940s	1987	94	61	200
Saudi Arabia	1950s	2005	96	60	210
UK	1970s	1999	94	63	32
USA	1930s	1971	98	88	195
The World	1962	2006	94	56	2100

Sources: Association for the Study of Peak Oil's (ASPO) website www.peakoil.net / IEA / Petroleum Review / OPEC.

4- Nuclear Power to the Rescue

Given the problems in its oilfields, nuclear power may have an important role in restricting the consumption of hydrocarbons in Iran and allowing more oil and gas to be exported.

In 2012, Iran used the equivalent of 610,000 b/d of oil and natural gas to generate electricity (see Table 4). At current oil prices it amounted to \$25 bn per year. By 2015, Iran will need to use some 770,000 b/d of oil and gas for electricity generation valued at an estimated \$31 bn.

Table 4
Iran's Current & Projected Electricity Generation, 2012-2030

Volume	2012	2015	2020	2025	2030
Billion kWh	355	447	657	965	1418
Mtoe	30.27	38.11	56.00	82.28	120.91
mbd	0.61	0.77	1.12	1.65	2.43

Sources: IEA World Energy Outlook 2012 / BP Statistical Review of World Energy, June 2013 / US Energy Information Administration (EIA) Iran's Energy Data: www.eia.doe.gov/cabs/background.html /

Generating nuclear electricity will enable Iran to replace at least 93% of the oil and gas used in electricity generation in 2020, thus adding some 1.00 mbd to its oil and gas exports and earning an extra \$46 bn. Based on these figures, Iran's quest for nuclear energy seems justifiable.

5- The Geopolitics of Iran's Nuclear Issue

There are three major reasons why Iran needs nuclear power: Oil, water and security.

Iran has to develop nuclear power because it is running out of oil according to the Iranian oil expert, Dr Samsan Bakhtiari. He made that reality crystal clear to Iran's leaders a few years ago when he told the former Iranian president Ahmadinejad that Iran's proven oil reserves are closer to 36 bb instead of the official figures of 157 bb.

The second reason is water. With a population of 75 million and heading towards 100 million by 2025, Iran's water needs have grown enormously. That is where nuclear power comes in. Water desalination is an extremely energy-intensive operation, but nuclear plants can be used for the dual purpose of generating electricity and producing desalinated water.

There is a third strategic reason. Iran looks with envy at the great oil resources of its Arab neighbours across the Gulf and hope that one day in the near future it can get its hands on them or at least derive some share from the revenue of such a great wealth. A nuclear Iran desperate for oil could grab some of its Gulf neighbours oil and gas assets such as Iraq's Majnoon oilfield straddling the Iraqi/Iranian border (with estimated proven reserves of 20 bb) or the Saudi Safaniya offshore oilfield (the biggest offshore field in the world) or Qatar's offshore gasfields (the third biggest in the world).

It could also hold its Gulf neighbours to ransom by threatening to block their oil exports through the Strait of Hormuz unless it shares in this wealth. The United States would not, for sure, come to the defence of its Arab allies against a nuclear Iran.

Iran is a hegemonic power by nature. Under the Nixon administration it got the support and co-operation of the United States to establish itself as the policeman of the Gulf. A nuclear Iran aspires to assume that role again independently from the United States. That is where a clash of national interests between the United States and Iran may arise.

6- How Effective Are Sanctions?

The only sanctions which might hurt Iran are those that ban its crude oil exports. But agreeing on such sanctions is virtually impossible. The international political and economic repercussions will be so huge that it is not worth pondering about.

Even if by the very unlikely chance such sanctions have been agreed upon by the Security Council, Iran's retaliation would be immediate and destructive. They could easily mine the Strait of Hormuz in the face of 17 mbd (20% of oil traded worldwide) exported by the Arab Gulf oil producers and about 2 trillion cubic feet (tcf) of natural gas per year exported by Qatar. This could plunge the world in the biggest oil crisis in its history and push the price of oil to \$150-\$200 a barrel thus sending the global economy into recession.

And in a blatant act of defiance, Iran may even attempt to sabotage the Saudi oil installations in Ras Tannura, the biggest in the world. That is why sanctions against Iran will not work.

Still, Iranian oil exports saw dramatic declines in 2012 compared with the previous year as tightening of sanctions by the United States and the European Union brought Iranian oil exports to a near standstill in the summer of 2012. This was particularly the result of the EU ban on all Iranian petroleum imports as well as the imposition of insurance and reinsurance bans by European P&I Clubs effective on July 1, 2012. European insurers underwrite the majority of insurance policies for the global tanker fleet, covering about 95 percent of tankers. The insurance ban particularly affected Iranian oil exports as lack of adequate insurance impeded the sales of Iranian crude to all of its customers, including those in Asia. Iranian exports dropped to less than 1.0 mbd in July 2012 as Japanese, Chinese, Korean, and Indian buyers scrambled to find insurance alternatives. However, by August and September 2012, Iranian exports recovered somewhat as Japan, South Korea and India began to issue sovereign guarantees for vessels carrying Iranian crude oil and condensate. China and India also began to accept Iranian Kish P&I Club guarantee on the vessels that shipped oil to their refineries.

The nuclear deal reached on 24 November, 2013 between Iran and the United States, France, UK, Russia, China and Germany (Known as P5 +1) got an overwhelming global vote of approval because it capped Iran's nuclear programme, averted prospects of war and showed light at the end of the sanctions tunnel.

However, a very limited basket of sanctions are suspended under the deal, but other existing sanctions continue to be vigorously enforced. Iran is still off limits for most oil and banking transactions.

Immediately after the deal was done, Israel condemned it as a "historic mistake". Israel's red line of preventing an Iranian nuclear capability is impossible, not to mention meaningless. Iran achieved a nuclear capability in 2007 when it started enriching uranium. That knowledge can't be erased. The issue is one of time: how long it would take Iran to produce nuclear weapons. The Geneva deal stops the clock and even turns it back a bit.

Critics of the deal have pointed out that allowing Iran to keep some enrichment – even if the deal does not specifically acknowledge a right to it – makes it harder to curtail the expansion of this sensitive technology.

The Saudis say that if Iran is allowed to keep an enrichment capability that will over the medium- to long-term make them a *de facto* nuclear power, then Saudi Arabia, in keeping with its new emerging strategic doctrine, will have no choice but to go nuclear as well.

7- War Against Iran?

Like sanctions war will not work either. Such a war could only be waged by the United States or Israel or both jointly. However, the United States and Israel can't win such a war without using nuclear weapons to destroy Iran, something unthinkable.

The United States has neither the appetite nor the forces for another war in the Middle East particularly after its debacle in Iraq. US generals are scared witless of Israel dragging them into war with Iran, a war they know they can never win short of destroying Iran with nuclear weapons as they did with Japan in the Second World War.

The US military doctrine has always been that the US will only go to war with overwhelming power and the certainty that it will win the war. A recent case in point is the invasion of Iraq.

But being forced into a war with Iran is a completely different matter. Iran's retaliation against the United States in case of war will be in the form of plunging the world in the biggest oil crisis it has ever witnessed. Such a crisis could cost the Arab Gulf oil producers \$1.55 bn-\$2.06 bn daily in lost oil export revenues and the global economy between \$3.56 bn and \$8.01 bn daily in oil price differences alone. It will also reduce global economic growth by 1% -2%.

8- Circumventing the Strait of Hormuz?

The former US president Jimmy Carter set the current American policy on the Strait of Hormuz in January 1980 in what became known as the Carter Doctrine. According to that doctrine, "any attempt by any outside force to gain control of the Persian Gulf region will be regarded as an assault on the vital interests of the United States of America, and such an assault will be repelled by any means necessary, including military force." At the time, the Soviets had invaded Afghanistan and the president was concerned.

Thirty-four years after the enunciation of the Carter Doctrine, Hormuz is still a vital oil choke point. Its navigable portion is only six miles, with two shipping channels, each two miles wide, separated by a buffer zone. About 20% of the world's oil production flows through it, more than travels through any other choke point (only the Malacca Strait comes close). Even a 50% reduction of this flow

could cause a dramatic increase in oil prices worldwide. Closure of the Strait might triple current prices. That would be a body blow to the world economy, trigger gigantic trade imbalances, boost the power of oil exporters and set off a scramble for energy resources worldwide, with traumatic consequences for the United States and its allies. Even if the US imported no oil shipped through the Strait of Hormuz, it would suffer economic harm from the rise in global oil prices to \$200 or even \$300 a barrel.

Most potential options to circumvent the Strait of Hormuz are currently not operational. Only Iraq, Saudi Arabia and UAE presently have pipelines able to ship crude oil outside the Gulf, and only the latter two countries currently have additional pipeline capacity to circumvent the Strait of Hormuz.

Total operable pipeline capacity that could bypass the Strait of Hormuz in 2013 stood at 6.7 mbd of which 2.8 mbd is not utilized. This means that some 10.3 mbd can't find their way into the global oil market if Iran does block the Strait of Hormuz (see Table 5). This would create a huge deficit in the global supply-demand balance and impact adversely on the price of oil and also the global economy.

Table 5
Operable Crude Oil Pipelines that Could Bypass the
Strait of Hormuz, 2014

Pipeline	Kirkuk-Ceyhan (Iraq/Turkey)	Saudi Petroline (Saudi)	Habshan-Fujairah (UAE)	Total
Capacity	0.4	4.8	1.5	6.7
Throughput	0.4	2.0	1.5	3.9
Unused Capacity*	0.0	2.8	0.0	2.8

Source: US Energy Information Administration (EIA).

*Unused capacity is defined as pipeline capacity that is not currently utilized and can be readily available.

Saudi Arabia has export terminals outside the Gulf at the port of Yanbu on the Red Sea, capable of loading 4.5 mbd of crude oil – over half of the country's current exports estimated to be 7.5 mbd.

Iraq also possesses a functioning oil pipeline, the Iraqi-Turkish oil pipeline (ITP), which is linked to the Turkish port of Ceyhan on the Mediterranean. The ITP can be used to export oil but damage to the pipeline prevents most of Iraqi oil, produced in the south, from being transported via this route. The ITP has a total capacity of 1.6 mbd. However, its current throughput is only 400,000 barrels a day (b/d) because of attacks by the Kurdish rebels on it.

UAE's newly opened pipeline from the Abu Dhabi oilfields to the port of Fujairah on the Arabian Sea has a capacity of 1.5 mbd which could be raised further in the future (see Map 1). It can carry almost two-thirds of UAE's total oil output, thereby helping to secure the country's access to the world markets.

The Arab Gulf states could upgrade the capacity of their existing pipelines using drag-reducing agents. It would cost an estimated \$600 million to upgrade the Saudi Petroline and the Iraqi Pipeline in Saudi Arabia. Doing so would allow them to transport a combined 11 mbd of crude oil to ports on the Red Sea. This is more than double the amount carried by the Petroline at its stated maximum capacity of 4.8 mbd, and almost three times the quantity which it transports at its current capacity. It represents nearly two-thirds of the oil shipped through the Strait of Hormuz every day. Given the relatively low cost of these upgrades, drag-reducing technology is a viable way for the Gulf States to secure their export capacity.

Regional politics presents significant obstacles to building new pipelines. Although the Gulf States have long discussed tighter economic and security integration under the auspices of the Gulf Cooperation Council (GCC), Saudi Arabia has stymied progress on this front over concerns that its smaller neighbours would gain equal political weight. The Saudis have also postponed a GCC pipeline designed to transport oil from all six Gulf States to locations beyond the Strait of Hormuz. Instead, each Gulf state is seeking to develop its own alternatives independently.

Map 1
The Strategic Habshan-Fujairah Oil Pipeline, UAE



For the smaller, isolated emirates of Kuwait and Qatar (the largest LNG exporter in the world), political obstacles to alternative export capacity are particularly problematic. Qatar has long been in discussions with Turkey about building a natural-gas pipeline that links its South Pars gas field to Turkey. Any northbound pipeline would, however, inevitably pass through Iraq and, possibly, Syria – both of which are hotspots for conflict.

US Shale Oil Revolution

Much has been written about the United States shale oil revolution. Some sources like the International Energy Agency (IEA) went as far as to predict that the United States will overtake Saudi Arabia and Russia to become the world's biggest oil producer by 2020 and oil self-sufficient by 2030. Others called it a game-changer with a new emerging balance of power in the global oil market.

Yet some others were in such a state of euphoria about the success of American shale oil production to say that this may deny OPEC the power to set global oil prices and that the world oil industry won't be the same in the wake of shale.

However, it begs the questions: what is the potential contribution of shale oil to the future global oil supply? Will the high development costs, and environmental impacts and challenges affect this potential? And will it be possible to replicate the US success story globally?

US shale oil production is projected to increase from about 1mbd in 2012 to 2 mbd in 2020, possibly reaching 3 mbd by 2025 before starting to decline. However, this increase would hardly offset the normal annual depletion rate of 3%-5% in US conventional oil production, estimated at 1.2 mbd–2.0 mbd, during the same period. So the global oil market would hardly benefit from US shale production.

The drilling and completion costs for a horizontal shale oil well currently range from \$4 to \$10 million. This relatively high cost arises from the steep first year decline rate of 70% - 90% for new wells. Nevertheless, a break-even oil price of \$72-\$80/barrel suggests that most shale oil plays are profitable at current oil price levels.

1-US Shale Oil Reserves

There are large uncertainties about the size of US shale oil resources with estimates ranging between 700 bb to 2.0 trillion barrels (tr).

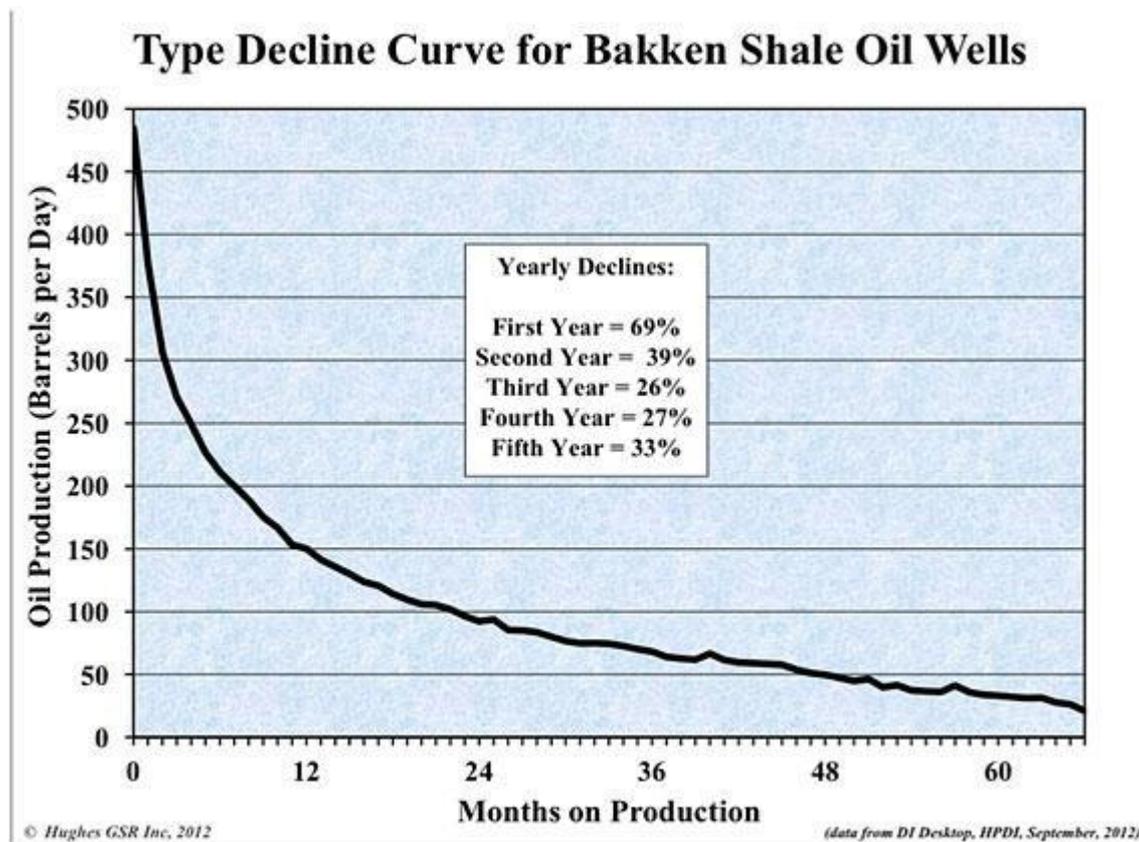
Even if the in-place volumes are large, reserves will not be as high due to very low recovery factors, presently in the range of 1% to 10%. It is one thing having huge resources of shale oil in-place and quite another turning them into a sizeable production capacity.

According to the US Energy Information Administration's (EIA's) 2012 Energy Outlook, the unproved technically recoverable shale and tight oil resources in the US were estimated in 2010 at 33 bb.

2- Shale Oil Potential

The new wells are expensive to develop (on the order of \$10 million each) and they deplete rapidly (see Figure 1).

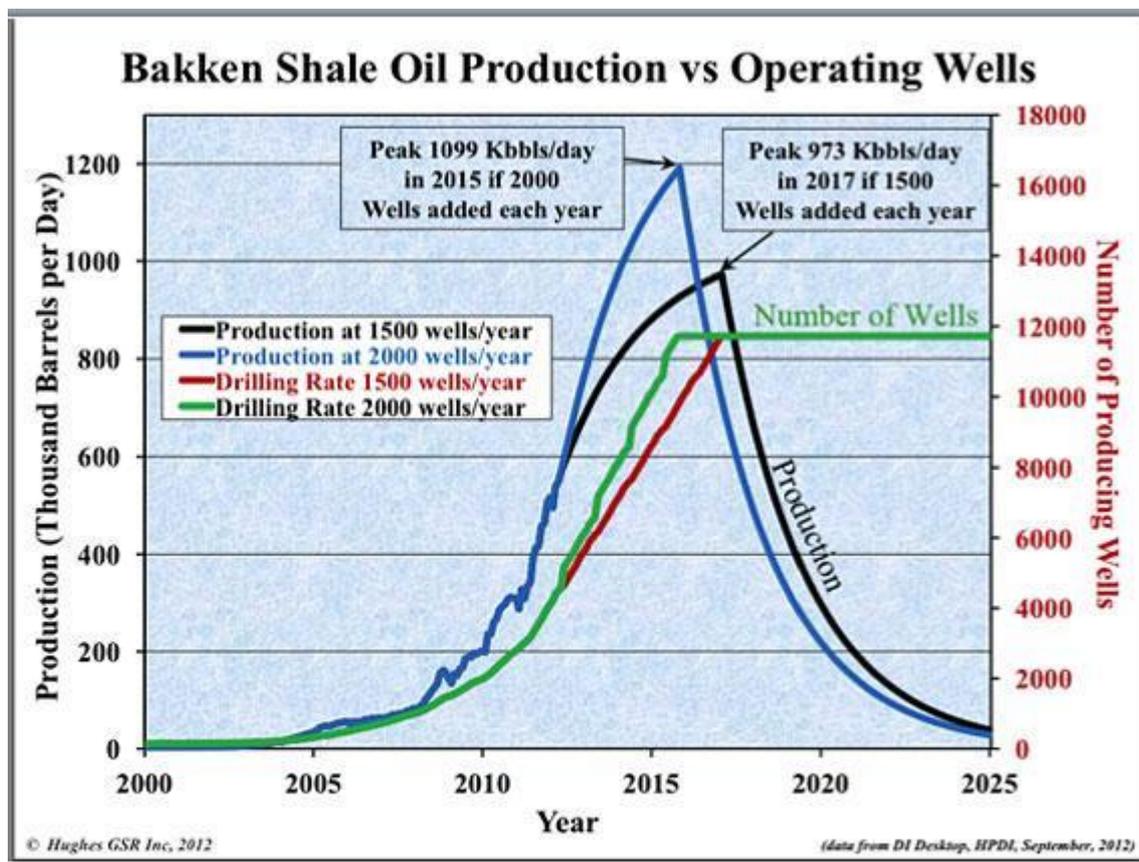
Figure 1



With shale/tight oil, one has to keep drilling just to keep production in the same place. If one tries to increase production by drilling wells faster, one just ends up running out of oil sooner (see Figure 2).

It has also been reported that of the five major regions producing shale gas in the US, only one – the Marcellus shale – has not peaked. If true, this is a very serious matter that deserves careful attention. The Marcellus Shale ‘belt’ stretches from Northern Virginia to the extremes of Pennsylvania, but gaining full access to these resources would involve massive drilling activities in heavily populated areas, and this is generally discouraged. Another problem is that there is no evidence that drilling in the Marcellus Shale would bring about results that are different from those obtained elsewhere.

Figure 2



3- US Oil Production

US oil production including shale oil has risen from 6.41 mbd in 2012 to 7.90 mbd in 2014 (see Table 6).

Table 6
US Current & Projected Oil Production, Consumption
& Imports, 2012-2035
(mbd)

	2012	2013	2014	2015	2016	2019	2020	2025	2030	2035
Production	6.41	7.30	7.90	7.90	7.80	7.50	7.40	6.93	6.49	6.10
Consumption	18.46	18.90	18.92	18.95	18.97	19.04	19.06	19.19	19.32	19.47
Net Imports	12.05	11.60	11.02	11.05	11.17	11.54	11.66	12.26	12.83	13.37
As a % of Consumption	65%	61%	58%	58%	59%	61%	61%	64%	66%	69%

Sources: OPEC World Oil Outlook 2112 / BP Statistical Review of World Energy, June 2013 / EIA

After about 2019, production begins declining gradually to 6.1 mbd by 2035 as producers develop sweet spots first and then move to less productive or less profitable drilling areas.

Oil imports are projected to decline from 65% of consumption in 2012 to 58% by 2014 before they resume their rise reaching 69% by 2035. The fall of imports since 2009 reflected two things: a decline in domestic demand in the wake of the 2008-09 global financial crisis and increasing shale oil production.

This means that there is neither a chance for the United States ever to become self-sufficient in oil nor to overtake either Saudi Arabia or Russia in oil production (see Table 7).

Table 7
IEA Projection of US, Saudi Arabia & Russia's Oil Production, 2015-2035
(mbd)

	2015	2020	2035
United States	10.00	11.10	9.20
Saudi Arabia	10.90	10.60	12.30
Russia	10.00	10.00	9.00

Source: IEA's Annual Energy Outlook 2012.

Another claim that does not stand up to scrutiny is that US shale oil production has the potential to deny OPEC the power to set global oil prices and could also shift the balance of power in global energy markets. That is not going to happen since the world will become increasingly dependent on OPEC after 2020. In addition to significant increases from Iraq, OPEC's share of world oil production will rise to 48% from 42% now.

4- US Shale Oil Contribution to Global Oil Supplies

In 2012 US shale oil production contributed 1% to global oil supplies and this is projected to rise to 2% by 2020 possibly reaching 3% by 2025 before starting its decline (see Table 8). Such a level of production will hardly make a dent in global oil supplies.

Table 8
World Oil Demand & Supply, 2012-2035
(mbd)

	2012	2014	2015	2016	2020	2025	2030	2035
World Oil Demand	89.77	90.70	91.60	92.50	96.30	100.70	104.60	108.50
World Oil Supply	86.15	86.93	87.71	88.50	91.36	94.61	97.48	99.94
Non-OPEC	48.35	49.90	50.94	51.63	52.16	51.11	50.58	50.09
OPEC	36.80	35.90	35.50	35.60	37.20	40.50	43.90	47.10
US Shale oil	1.00	1.13	1.27	1.27	2.00	3.00	3.00	2.75
Demand / Supply								
Deficit *	- 3.62	- 3.77	- 3.89	- 4.00	- 4.94	- 6.09	- 7.12	- 8.56
Shale oil as % of								
Global Supply	1%	1%	1%	1%	2%	3%	3%	3%

Source: OPEC: World Oil Outlook 2012 / IEA, World Energy Outlook 2012 / BP Statistical Review of World Energy, June 2013 / EIA, Energy Outlook 2012 / EIA Early Overview of Annual

Energy Outlook 2013 (AEO2013) / Author's Estimates.

*The demand/supply deficit is accounted for by stock changes, consumption of non-petroleum additives and substitute fuels. Otherwise it will be reflected in higher oil prices.

5- Impact of US Shale Oil Production on OPEC

US shale oil production will not affect OPEC at all according to OPEC's secretary general Mr Abdalla Salem El-Badri. He said that shale / tight oil suffers from high decline rates and high production costs which he estimated at \$90 per barrel making it fully dependent on high oil prices. "If prices drop to \$60-\$70/b, tight oil will be out of the market altogether, he added. Mr El-Badri estimated that by 2018, the decline rate means production could start dropping fast.

Mr E-Badri described US energy independence a myth. There is nothing called independence in the oil industry, he said.

Natural Gas Discoveries in Eastern Mediterranean

For decades, it seemed that most countries of the Levant, east of the Mediterranean Sea, had little or no share of the Middle East's abundant energy resources. But in the past few years, there have been huge offshore discoveries of natural gas and possibly oil that look set to open up new economic possibilities and redefine strategic relationships.

The confirmed and potential gas discoveries by Cyprus, Lebanon and Israel in the eastern Mediterranean are estimated at 59 tcf with possibly more to come.

However, a 2010 US Geological Survey (USGS) report estimated that there could be 122 tcf of gas and 1.7billion barrels (bb) of oil off the coasts of Lebanon, Israel, the Gaza Strip, Cyprus and Syria (see Figure 3).

Figure 3



1-A Game Changer for the Littoral Countries

For Lebanon, the potential benefits of a domestic supply of gas are immediately clear. If proven, the gas reserves will tremendously reduce Lebanon's energy import bill and also change the whole structure of the country's economy. With \$61 bn in the red, Lebanon has one of the highest rates of public debt to gross domestic product (GDP) in the world.

The gas discoveries have changed Israel's energy calculus. The country could now meet all of its energy needs and could also export gas to Europe or the Asia-Pacific region – a significant strategic shift.

For Cyprus, the estimated reserves of up to 8 tcf would more than cover Cyprus's entire energy needs for many years to come. They could also provide a lifeline to Cyprus' economy which is on the verge of bankruptcy.

2- The Geopolitical Impact

These gas discoveries are not only changing the energy calculus in the eastern Mediterranean but also creating some new geopolitical developments. Israeli and Cypriot gas exports could compete with Russian gas supplies to Europe. The Russians, recognizing the ramifications of competition, are already looking into the possibility of Russian energy giant Gazprom playing a major role in their development.

Then there is Turkey. Turkey has long sought to establish itself as an energy hub through which oil and gas supplies from the Middle East, Russia and the Caspian are transported to Europe, thus improving its EU membership prospects by offering energy security to Europe. So from a commercial and political point of view, Turkey is worried about the advent of an alternative source of gas and a new transport route to Europe, possibly through Greece. They're trying to prevent major companies from entering the Cyprus energy field by threatening to ban them from any business activities with Turkey.

Exports of gas and LNG from the eastern Mediterranean could also compete with Qatar's LNG exports amounting to 131 bcm a year. To pre-empt any competition from Israel & Cyprus or a security threat from a possible closure of the Strait of Hormuz, Qatar has proposed building a gas pipeline connecting its gas fields to Turkey so as to supply Europe through a Turkish hook-up with the proposed Nabucco pipeline.

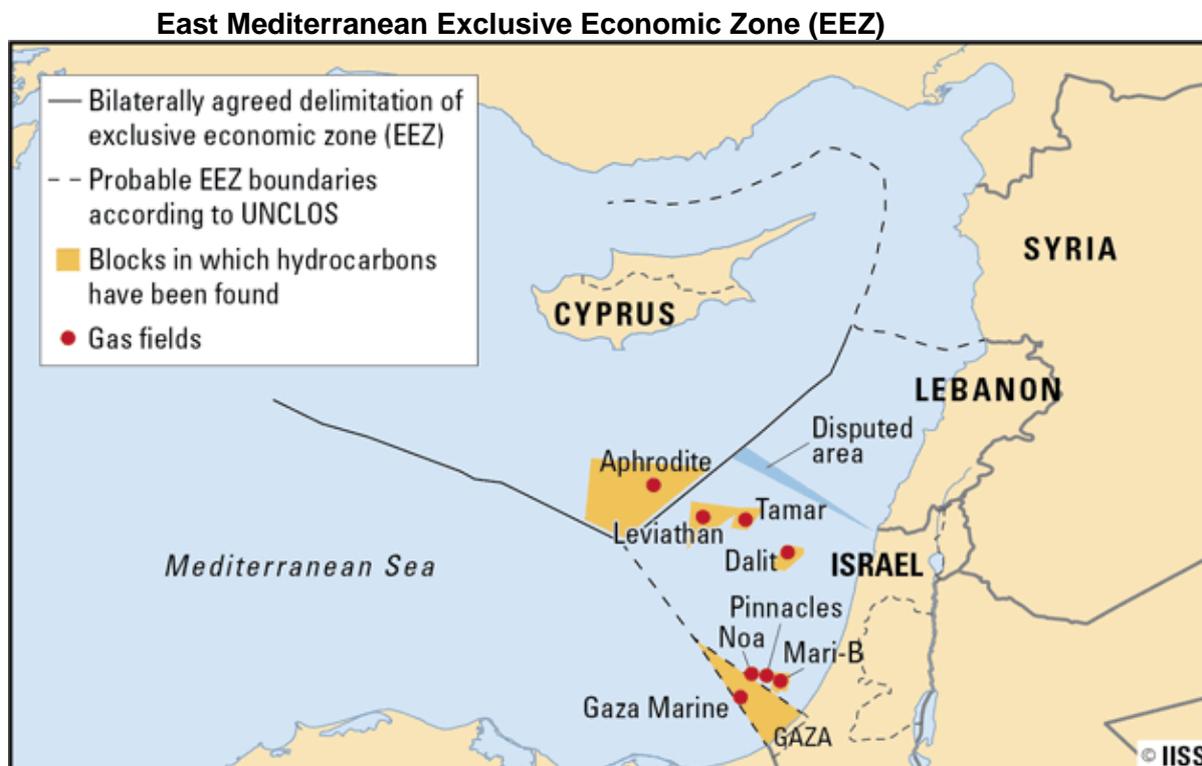
3- A Regional Conflict?

While the gas discoveries in the east Mediterranean don't pose any threat to oil supplies from the Arab Gulf, they are stirring the pot of regional turmoil and provoking various reactions from the other players in the area. The recent hydrocarbon finds are thus catalyzing long-running security issues, rather than creating new ones. One such conflict is between Lebanon and Israel over the demarcation of their maritime boundaries. Another is between the Greek Cypriots and the Turkish Cypriots over the sharing of the natural gas riches.

The dispute between Lebanon and Israel is mostly a demarcation issue. When Israeli troops withdrew from Lebanon in 2000, the UN-sanctioned blue line became the de facto land border between the two countries. Israel unilaterally extended a line of buoys out into the sea to approximate a maritime border. But Lebanese officials say the angle Israel took from the shore gives it more territorial water than it deserves (see Figure 4). Lebanon says that up to one-third of the Israeli Leviathan gas field could be inside its maritime borders. If that is the case, the two countries will eventually have to agree on a demarcation line by negotiation. However, these potential conflicts about gas are largely containable, owing either to an asymmetry of military power between Israel and Lebanon or to membership of NATO or the European Union, which should encourage negotiations rather than confrontation.

But there could be a need for a UN-sponsored regional conference with the main task of facilitating negotiations, say, between Lebanon and Israel as well as between the Turkish Cypriots and Greek Cypriots. Such international negotiations and arbitration appear necessary to avoid future military conflict. In the final analysis, the huge gas riches could either exacerbate an already very tense and dangerous situation in the area or could lead to a reduction of tension and mutual benefits to all.

Figure 4



The Real Threat to Gulf Oil Supplies

With proven oil reserves of 645 bb, or 39%, of the world's proven reserves and a combined GDP exceeding \$1.55 trillion at current prices, the Arab Gulf countries could be a formidable economic bloc. However, their achilles heel is their continued dependence on the oil export revenues to the tune of 85%-90%.

By 2035, the Arab Gulf Oil Producers could be earning between \$ 1.57 tr-\$1.83 tr in nominal terms or \$912.5 bn - \$1.06 tr in 2011 US dollar. This would provide them with great financial and economic clout, also a huge geopolitical leverage in world politics but it could also make them very vulnerable to any decline in the price of oil.

The greatest threat to oil supplies from the Gulf actually comes from the steep-rising domestic oil consumption for power generation and water desalination and a lack of diversification. A precursor of this consumption is the subsidies which in 2011, jumped by almost 30% to \$523 billion, due mainly to increases in the Middle East and North Africa.

This means that they will have to cut their domestic oil consumption drastically or replace oil by nuclear power and solar energy. Failing to do either would result in their relegation to minor crude oil exporters or, for some, ceasing to remain oil exporters altogether by 2032 (see Table 9).

Another major challenge is the acceleration of a shift to alternative sources of energy resulting in the loss of the bulk of their oil revenues and possibly the collapse of their economies. To forestall such

an eventuality, the Gulf countries not only have to accelerate the diversification of their sources of income but also become smarter in their investment.

Table 9
Combined Current & Projected Production, Consumption & Export
of Crude Oil Exports in the Arabian Gulf Countries, 2010-2035
(mbd)

Year	Production	Consumption	Net Exports / Imports
2010	16.65	4.59	12.06
2011	18.70	4.77	13.93
2012	18.92	5.35	13.57
2013	19.07	5.99	13.08
2015	19.51	6.38	13.13
2020	20.90	9.64	11.26
2025	19.83	13.19	6.64
2030	18.55	17.06	1.49
2031	18.44	17.91	0.53
2032	18.33	18.81	- 0.48
2035	17.79	21.78	- 3.99

Sources: US Energy Information Administration (EIA), Oil Outlook 2012 / OPEC Annual Statistical Bulletin 2012 / BP Statistical Review of World Energy, June 2013 / Author's projections.

The diversification I am talking about is not industrialization because the Gulf countries could never be able to compete with the top industrial nations in the world. Nor does it mean investing in hotels, casinos and real estate. It means investing in food production projects in the Sudan for instance and also in thriving and futuristic industries around the world.

The world is already heading towards a future food shortage on a global scale. Food prices could in the future rival, if not, exceed those of crude oil. Why not then invest in the Sudan which has the land and the water resources not only to become the food basket of the Gulf countries but also a great source of food export revenues for them.

Another form of diversification is intensive investment in renewable energy, particularly solar power, nuclear energy and water desalination technology. Solar power along with nuclear energy could provide all the electricity needs of the Gulf countries and could also power an extensive network of water desalination plants along the Gulf countries' coasts extending from the Arabian Gulf to the Arabian Sea and the Red Sea, not only for drinking but also for irrigation. Moreover solar electricity could in the future be exported to Europe earning a very sizeable income for the Gulf countries.

The Gulf countries should also invest in a state-of-the-art educational system that would provide them with all the expertise they need to help the process of diversification and also to cut unemployment among the young, which at 24.9% is nearly double the global rate of 12.8%, according to the International Labour Organization (ILO).

Finally, the gulf countries could invest a certain percentage of their portfolios in targeted and successful industries such as information technology (IT) and communications, aerospace, car-manufacturing and electronic companies to name but a few.

Conclusions

Iran's nuclear programme poses a direct threat to the flow of oil supplies from the Arab Gulf region because of the inherent risk of war in the Gulf and the possible mining or blocking of the Strait of Hormuz. However, its adverse impact would be short-lived.

US shale oil production would hardly make a dent in the global oil supplies and would virtually have no effect on the flow of oil from the Gulf.

Natural gas discoveries in the east Mediterranean would have no effect whatsoever on oil supplies from the Gulf though they might impact on Russian gas exports to the European Union and on Qatar's LNG exports. However, they could lead to conflict with Lebanon over the demarcation of the maritime borders between the two countries and also between the Greek and Turkish Cypriots regarding the sharing of revenues from gas exports in the future.

The real threat, however, to oil supplies from the Gulf region in the long term actually comes from the steeply-rising domestic oil consumption among the oil-producing countries of the Gulf and a lack of meaningful diversification of their economies.

* Dr Mamdouh G. Salameh is an international oil economist, a consultant to the World Bank in Washington DC on oil & energy and a technical expert of the United Nations Industrial Development Organization (UNIDO) in Vienna. Dr Salameh is Director of the Oil Market Consultancy Service in the UK and a member of both the International Institute for Strategic Studies (IISS) in London and the Royal Institute of International Affairs (RIIA). He is also a member of the Energy Institute in London.

References

- An interview with Mr Chris Pelaghisa, Chairman of the European Rim Policy & Investment Council (ERPIC) in Cyprus Published 15/3/2012 ©bitterlemons-international.org. Edition 11 Volume 10.
- Abdel-Kader, Nizar. "**Potential Conflict**" Published 15/3/2012 ©bitterlemons-international.org. Edition 11 Volume 10.
- Author's calculations based on data from the US Information Administration (EIA), OPEC Revenues Fact Sheet & the IMF.
- Blas, Javier. OPEC Unlikely to Disrupt US Shale Boom. Financial Times, December 12, 2012. Bloomberg report accessed through <http://www.crainscleveland.com/article/20121211/BLOGS03/121219978>
- BP Statistical Review of World Energy, June 2013.
- The Balance of Power 2010 (International Institute for Strategic Studies, London, p. 245).
- Brito, Dagobert L. "**Revisiting Alternatives to the Strait of Hormuz**", James A. Baker III Institute for Public Policy, 26 January 2012, p.6, Table 1, <http://bakerinstitute.org/files/1453>.
- Brodet, David. "**A Significant Strategic Development for Israel**" Published 15/3/2012 ©bitterlemons-international.org. Edition 11 Volume 10.
- Campbell, Colin, ASPO Newsletter # 62, February 2006.
- Carter, Jimmy. "**State of the Union Address 1980**", 23 January 1980, Jimmy Carter Library & Museum, <http://www.jimmycarterlibrary.gov/documents/speeches/su80jec.phtml>.
- Crooks, Ed. Financial Times, 14 December, 2012.
- Financial Times, 16 December 2009, p. 6.
- Fitzpatrick, Mark. "**Overwhelming Global Vote for the Iran Nuclear Deal**", Survival, vol.56 n. 1, February-March 2014, pp. 71-75.
- Fleet Street Publications, London 21 December 2009, pp.1-3.
www.fleetstreetinvest.co.uk/nuclear-energy-/iran-needs-nuclear-running.
- I based my calculations of the combined GDP of the GCC countries on data provided by the World Bank.
- I calculated the combined crude oil export revenues of the GCC countries on the basis of IEA's projected oil prices in 2035 in nominal terms and also in US 2011 dollar and also on the crude oil production of the GCC countries as given in the 2013 BP Statistical Review of World Energy.
- Hamilton, James. "**How Shale and Tight Oil Have Changed the Look of US Oil Production**", accessed on 17 December, 2012 at: <http://oilprice.com/Market-Intelligence-Report.php>.
- IEA), Annual Energy Outlook 2012.
- IEA, Annual Energy Outlook 2013 Early Overview (AEO2013), released on 5 December, 2012, p.8
- IISS Strategic Comments, Volume 2013, Edition No:15, 15 May 2013.
- Knell, Yolande. "**Gas Finds in East Mediterranean May Change Strategic Balance**" (a BBC News report on 13 May, 2013).
- Maiden, Malcolm. "**World's Oil Industry Won't be the Same in the Wake of Shale**", accessed on 16 December 2012 at: <http://www.theage.com.au/action/printArticle?id=3873625>.
- Mina, James & Serwer, Daniel. "**Circumventing Hormuz**" Survival, vol.56 no.1, February-March 2014, pp.121-138.
- Maugeri, Leonardo. "**Oil: The Next Revolution**". Paper published by Belfer Centre for Science & International Affairs at Harvard Kennedy School, June 2012, pp. 4563.
- McDonald, Paul. "**Oil Production Outlook Means Iran May Need Nuclear Energy**", Petroleum Review, April 2006, p. 21.
- Morse, Ed. "**Move Over OPEC – Here We Come**". Wall Street Journal, March 20, 2012.
- Mouawad, Jad. "**An Excess of Problems for Iranian Energy**", Herald Tribune Business, 12 February, 2007.
- The Nabucco is a proposed gas pipeline intended to bring gas supplies from the Caspian via Turkey to Austria and Europe thus reducing dependency on Russia gas supplies and breaking Russia's gas pipeline monopoly to Europe.
- "**Natural Gas: 'A Game Changer' with Myriad Challenges for Israel**" Accessed on: kw.wharton.upenn.edu/Israel/natural-gas, on 16/6/2013.
- OPEC World Outlook 2012, pp. 121-122.
-

Rubin, Jeff. **"When Shale Oil Won't Save You at the Pumps"**. The Globe & Mail, Toronto, Canada, November 22, 2012.

Rubin, Michael. **"Do Iran Energy Needs Justify Its Nuclear Program?"** The Enterprise Blog: www. Blog.american.com accessed on 21 December 2009.

Salameh, Mamdouh G. **"Iran May Need Nuclear Power to Improve Its Oil Outlook"** (a paper presented at the 27th North American Conference, 16-19 September, 2007, Houston, USA).

Salameh, Mamdouh G. **"Peak Oil & the Impending Oil Crunch"**. Lecture given at Masdar Institute for Science & Technology, 15 February, 2011, Abu Dhabi, UAE.

Salameh, Mamdouh G. **"The Changing Oil Fundamentals: Impact on the Global Oil Market & Energy Security"**. Paper given at the ECSSR 17th Annual Conference, November 1-2, 2011, Abu Dhabi, UAE, p.7.

Salameh, Mamdouh G. **"The Jury Is Still Out"** Published 15/3/2012 © bitterlemons-international.org. Edition11 Volume 10.

Stonaker, Mary E. **"Subsidies & Sanctions: Iran Gets High Marks in IMF Review"**. Accessed at: www.english.alarabiya.net/articles/2011/06/27/155086.html

That is what OPEC Secretary General, Mr Abdullah Al-Badri told a press conference held during the OPEC Oil Ministers conference in December, 2012 and reported by Associated Press (AP) on 13 December, 2012.

This is calculated on the basis of 3-5 percent annual depletion rate of US conventional oil production between 2012 & 2020 and estimated at 1.2 mbd-2.0 mbd. Thus, a 1-mbd increase in shale oil production during the same period would partially offset the decline in conventional oil but leave a deficit of 200,000 b/d -1 mbd.

US Department of Energy (DOE): Independent Statistics & Analysis 2010.
