

# Country Report: Saudi Arabia

## Subject: Energy Sector

### (1) Saudi Arabia's Energy Sector in Context

The Kingdom of Saudi Arabia is known the world over for its great oil wealth but also for its religious conservatism coupled with absolute monarchy and perhaps rather peculiarly, its close relationship with the United States of America. The preservation of the absolute monarchy into the 21<sup>st</sup> century has much to do with orderly management of its petroleum resources – a remarkable feat when compared with some of its neighbors whose autocracies have yielded failed states, international pariahs and/or severe civil discontent.



Oil is at the center of the U.S.-Saudi relationship as American oil companies were the first to gain concessions to explore for oil in the country in 1933. Since then the U.S. has played a key role in developing Saudi Arabia's oil wealth in the early phases of industrialization but also in ensuring the security of Saudi oilfields in later years. This was most clearly evidenced in the need for U.S. security in the Gulf War of 1990-1991, but general security for the Kingdom's territorial integrity and tanker flows through the Persian Gulf continues to be vital (more on this in section 2.2).

In 1938 Standard Oil of California (Socal, today's Exxon) struck oil in Dammam near Dahrān (see Map 2, Dammam field) the headquarters of what is today Saudi Aramco, the Saudi national oil company. The Saudi subsidiary was renamed Arabian American Oil Company (Aramco) in 1944 around which time additional American companies joined the consortium. The relationship developed closely in the next years with new finds (including the world's largest oil field, Ghawar in 1948) and ever growing wealth flowing to the royal court.

By 1950 threats of nationalization were advanced on the back of nationalist trends sweeping the region and in response the Aramco consortium agreed to begin giving the Saudi government 50% of the profits. With time however the Saudi government gradually began to acquire direct control over Aramco's operations, acquiring 25% of the company in 1973, which was increased to 60% the following year. This was spurred in part by the Israeli-Arab conflict – the first real rift between the countries over the support for the State of Israel. 1973 was also the year that

OPEC<sup>1</sup> first showed its teeth, slashing production and causing the price of oil to increase by 70%; specifically embargoing the United States and the Netherlands for assisting Israel. For Saudi Arabia, as OPEC's largest oil exporter, it meant a huge increase in revenues, forever changing the Kingdom. Saudi Arabia's net oil export revenues (in real (year 2000) U.S. dollars) more than quadrupled from \$19.3 billion to \$85.1 billion from 1972 to 1978, despite the country's output increasing by only 38% in the same period.

Saudi Arabia has made decisions about restricting oil production output since the 1973 embargo, but this has been in the context of OPEC price management, and, at least ostensibly, not for political reasons. Thus, while differing in opinion about the formation of OPEC and the state of Israel, Saudi Arabia remained close to United States policy through the Cold War years. Aramco was fully nationalised in 1980, and named Saudi Aramco formally. In November 1988, a royal decree changed its name from Arabian American Oil Co. to Saudi Arabian Oil Co. (or Saudi Aramco) and took the management and operations control of Saudi Arabia's oil and gas fields from Aramco and its partners.

Today, Saudi Aramco activities span the entire oil and gas supply chain including exploration, producing, refining, chemicals, distribution and marketing and it is (by far) the leading oil producer within the OPEC cartel. The activities of the company are monitored by the Ministry of Petroleum and Mineral Resources together with the Supreme Council for Petroleum and Minerals.

The upstream oil sector is closed to foreign investment (except for contractors that Aramco hires on a fee-for-service basis) but the Saudi government has allowed four foreign consortia (in joint ventures with Aramco) to explore for non-associated natural gas in the Empty Quarter region early in 2000. Saudi Aramco's value has been estimated at up to US\$10 trillion in the Financial Times, making it the world's most valuable company.

In a very real sense, post WWII marked a change in the country's history and the latter half of the 20<sup>th</sup> century saw the Kingdom rise to a central position in global energy markets.

## **(2) Oil and Gas**

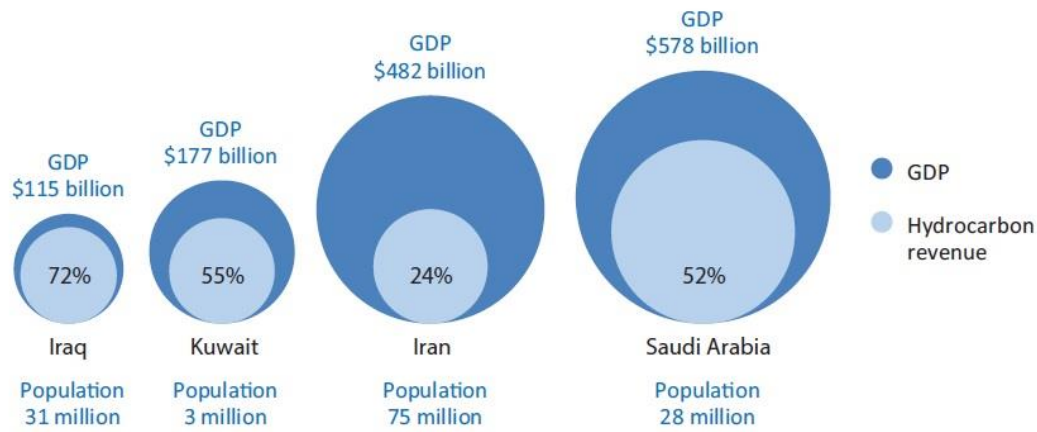
Describing the Kingdom's oil supplies as central is an apt characterization. Consistent flow of Saudi supplies is central to both global markets but also to the health of the Kingdom itself. Saudi Arabia is the world's largest exporter of crude oil and has consistently ranked as a top 3 producer (along with the United States and Russia in recent years). Such is the importance of Saudi production for world markets that its national oil company, Saudi Aramco, claims to maintain redundancy within its crude supply system to offset any supply disruptions that may occur due to sabotage, technical failure or natural disaster (more on this in section 2.2).

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<sup>1</sup> See section 2.4 for a discussion of Saudi Arabia's role within the OPEC cartel.

Furthermore, despite its leading role within the OPEC cartel, the Kingdom goes to great lengths to communicate its stabilizing role on the global marketplace. These efforts have been evidenced in recent years in its spearheading of the ‘Consumer-Producer Dialogue’, agreeing to host the secretariat in Riyadh’s diplomatic quarter and financially supporting the initiative<sup>2</sup>.

Saudi Arabia produced on average 11.6 million bbl/d of total petroleum liquids in 2013, of which 9.6 million bbl/d was crude oil production and 2 million bbl/d was non-crude liquids production (NGLs). Petroleum export revenues accounts for roughly 80% of budget revenues, 45% of GDP, and 90% of export earnings<sup>3</sup>. In 2013 export revenues amounted to \$274 billion according to the EIA.



Note: GDP is measured at market exchange rates (MER) in year-2011 dollars.  
Sources: IMF, UNPD, World Bank and national government databases; IEA analysis.

Figure 1: Oil Revenue as % of GDP in 4 Gulf Countries.

It is hence for the imperative of stability, both internal and external, that the confluence of interrelated factors governing the Kingdom’s oil supplies are so closely monitored by governments, analysts and other stakeholders.

### (2.1) Oil and Gas Production Complex in Saudi Arabia

Maintaining Saudi Arabia’s goliath oil output is a sophisticated network of wells, pipelines, crude processing facilities and export terminals; which function around the clock to the serve the global oil markets. The bulk of Saudi production originates from onshore and offshore fields in Saudi Arabia’s Eastern Province or Ash Sharqiyah (see Map 2 for location of major oil and gas wells). The Kingdom maintains the world’s largest crude oil production capacity, estimated to reach about 12.5 million bbl/d at the end of 2014<sup>4</sup>. Saudi Arabia has the world’s largest oilfield, Ghawar, which is alone capable of producing 5 million bbl/d according to Aramco. Aramco also

<sup>2</sup> An historical account of the evolution of this initiative is provided in the downloadable publication; The International Energy Forum: ‘Twenty years of producer-consumer dialogue in a changing world’

<sup>3</sup> CIA World Factbook

<sup>4</sup> U.S. Energy Information Administration (EIA)

claims that the offshore Safaniya field, with a production capacity of 1.2 million bbl/d, is the world's largest offshore field.

Saudi crude oil fields range from super light to heavy (degree of viscosity) types, with the largest portion in the light range (33° to 34° on the API scale). Lighter grades generally are produced onshore, while medium and heavy grades come mainly from offshore fields. Most Saudi oil production, except for the Extra Light and Super Light crude oil types, is considered sour, containing relatively high levels of sulfur.

The Kingdom's major on and offshore fields/field complexes include:

<b>Onshore Field</b>	<b>Capacity (as of 2012)</b>	<b>Crude Grade</b>
<i>Ghawar</i> * <sup>5</sup>	5.8 mbbl/d	Light
Khurais	1.2 mbbl/d (300 kbbbl/d expansion by 2017)	Light
Shaybah	750 kbbbl/d (250 kbbbl/d expansion by 2017)	Extra Light
Qatif	500 kbbbl/d	Light
Khursaniyah	500 kbbbl/d	Light
Abqaiq	400 kbbbl/d	Extra Light

*Table 1: Saudi Arabia's Largest Onshore Fields by Production Capacity.*

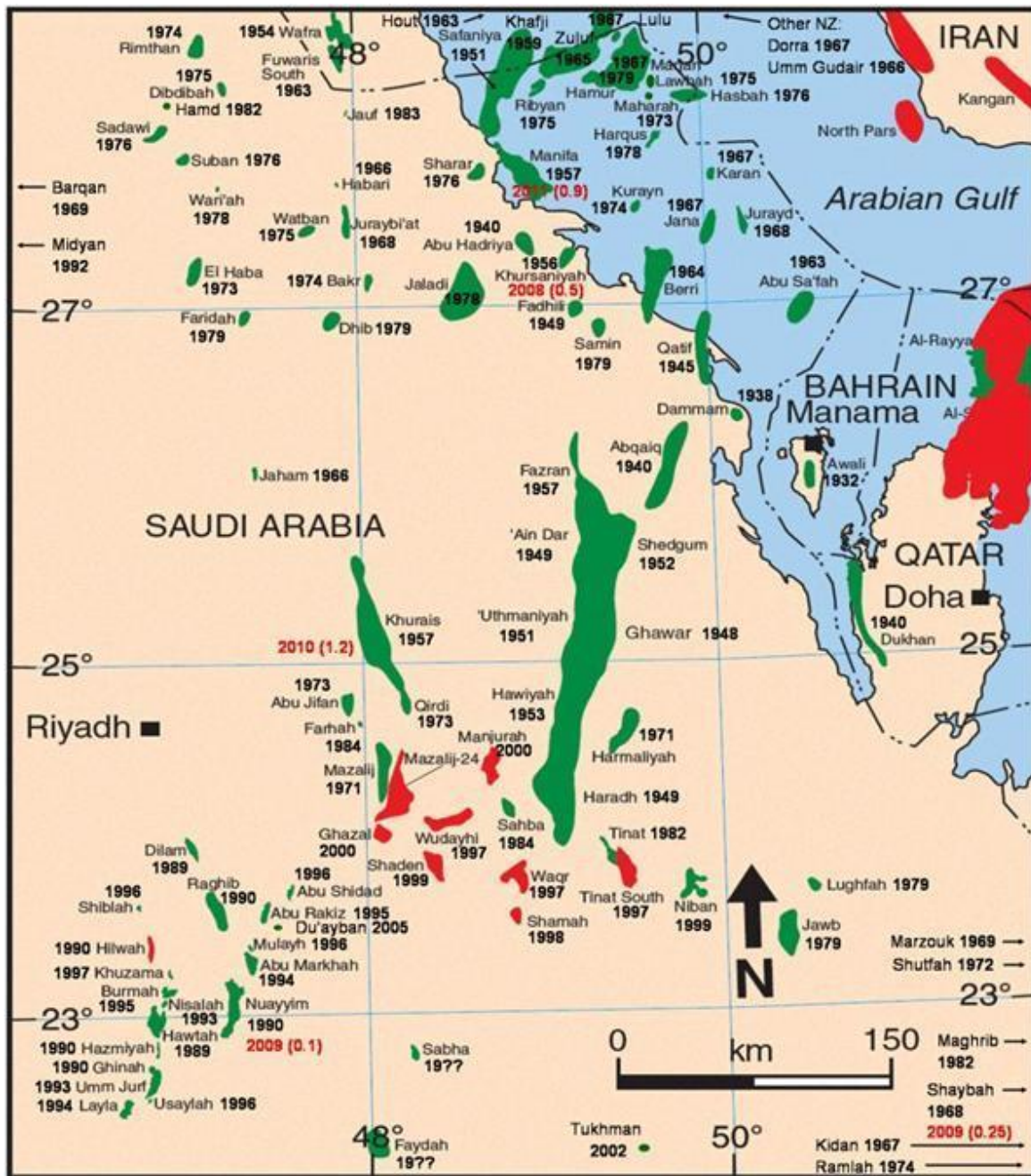
<b>Offshore Field</b>	<b>Capacity (as of 2012)</b>	<b>Crude Grade</b>
<i>Safaniya</i> * <sup>6</sup>	1.2 mbbl/d	Heavy
Manifa	900 kbbbl/d	Heavy
Zuluf	500 kbbbl/d	Medium
Berri	400 kbbbl/d	Extra Light
Abu Sa'fah	300 kbbbl/d	Medium
Marjan	270 kbbbl/d	Medium

*Table 2: Saudi Arabia's Largest Offshore Fields by Production Capacity.*

Saudi Arabia's proven reserves are a matter of some contention. But Aramco cites a figure from *Oil & Gas Journal* of having 259.9 billion barrels of proven conventional reserves as of the beginning of 2009. This is about twice as much as the next-largest conventional crude oil reserves, those of Iran (at 138.4 billion barrels) and nearly 25% of world conventional reserves. Given production levels, outside observation prior to the nationalisation of Aramco, evidence presented by Aramco at public forums, and anecdotal evidence, it is reasonable to believe that Saudi Arabia's conventional reserves are by far the largest in the world, even if the actual number is somewhat imprecise.

<sup>5</sup> World's largest onshore oil field.

<sup>6</sup> World's largest offshore oil field.



Map 2: Major Oil and Gas Fields in the Eastern Region with years of discovery.

In terms of natural gas, Saudi Arabia has 7.45 trillion cubic meters of proven reserves according to Aramco, though an independent assessment has it slightly lower at 7.32 trillion cubic meters. This is the fourth-largest in the world, behind Russia, Iran, and Qatar. Most (about 57%) of Saudi Arabia's gas is in associated fields, that is, fields that contain layers of oil and gas, including ones mentioned above such as Ghawar and Safaniya. Some important non-associated fields (see red on Map2) are Mazalij, Manjura, Shaden, Niban, Tinat, Al-Waar, and Fazran. There have recently been two new natural gas discoveries offshore, Rabib and Arabiyah, which boosted

reserves. The first non-associated offshore gas field to be developed is Karan, where five platforms are under development. Production of the field is expected to be 45 mcm/d.

Saudi Arabia also produces natural gas liquids (butane, ethane, and propane) that are stripped out at downstream separation plants (discussed in the next section) as well as condensate, a mixture consisting primarily of pentanes and heavier hydrocarbons which is recovered as a liquid from natural gas in lease (at the well) separation facilities. Natural gas liquid (NGL) production was about 2 mmbbl/d in 2013, constituting a significant fraction of total production.

## **(2.2) Transport and Export Infrastructure**

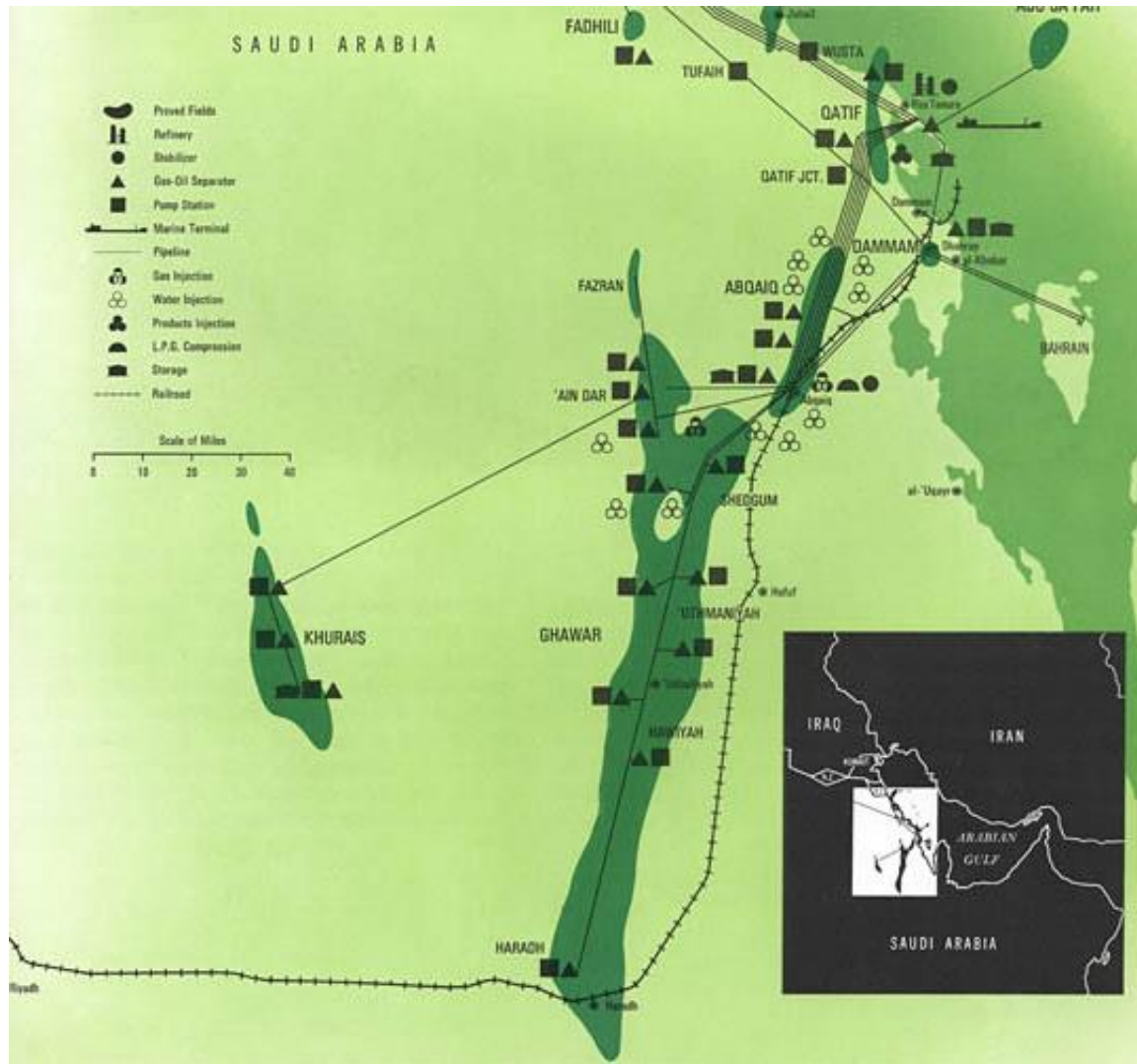
The majority of the oil production discussed in the previous subsection is routed to the oil processing complex at Abqaiq<sup>7</sup> and then onto the export terminal at Ras al-Ju'aymah, Ras Tanura, and Yanbu (for NGL (see Map 4 for geographic location of terminals)) or to refineries. Abqaiq is the world's largest oil processing facility and crude stabilization plant with a crude capacity of 7 million bbl/d. It's operated by Saudi Aramco and is responsible for processing approximately 70 % of Saudi crude oil. The facility's infrastructure includes pumping stations, gas-oil separation plants (GOSPs), hydro-desulphurization units and an extensive network of pipelines that connects the plant to the afore mentioned terminals. Abqaiq was the site of a terrorist attack attempt by al-Qaeda on 24 February 2006, targeting the oil processing facility<sup>8</sup>. The news of the attack pushed oil prices up by 2 dollars and has resulted in an increase in security to oil and gas installations. At any given time there are currently between 25,000 and 30,000 military personnel protecting the Kingdom's infrastructure. Then U.S. ambassador James C. Oberwetter said in a statement that, "The Saudi government and Saudi Aramco deserve considerable credit for what they have done in recent years to enhance the security of oil facilities throughout the Kingdom... I know firsthand the robust security systems that are in place there. When they were needed, those systems worked, and the facility at Abqaiq was fully protected." Nevertheless, threats to Saudi oil and gas facilities continue to worry the global energy market and the Saudi leadership – especially now with the threats stemming from ISIS in Iraq, with whom the Saudi's share an 814 km border.

The map below provides a schematic of the infrastructure linking Khurais, Ghawar and the northern offshore fields with the Abqaiq processing facility.

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<sup>7</sup> Not to be confused with the Abqaiq oil field, the Kingdom's 9<sup>th</sup> largest by production capacity.

<sup>8</sup> A review of this incident and the security ramifications are detailed in an article by the Center for Strategic and International Studies (CSIS): 'The Impact of the Abqaiq Attack on Saudi Energy Security'.



Map 3: Ghawar, Abqaiq, Ras Tanura and other Key Infrastructure.

Upon exit from Abqaiq or other crude processing facilities, the oil moves to export terminals Ras Tanura (6 mbb/d export capacity), Ras al Juaymah (3 mbb/d export capacity) or another smaller terminal. Most export oil moves through the Strait of Hormuz, which is a waterway between Oman and Iran (see Map 2). This chokepoint is so important to world markets given that 17 million barrels of oil flow through the strait on average in 2013. More than 85% of the crude oil that moves through this strait is destined for Asian markets. As for Saudi crude, 68% is destined for Asia, 10% flows to Europe, 19% is destined for the Americas and 3% goes elsewhere. By country breakdown however, the United States is still the top importer of Saudi liquids<sup>9</sup> with estimates of 1.5 In 2013, after the United States, the next four top importers of Saudi crude and petroleum products according to GTIS were Japan (1.2 million bbl/d), China (1.1 million bbl/d), South Korea (0.9 million bbl/d), and India (0.8 million bbl/d).

<sup>9</sup> This is crude oil in addition to liquid petroleum products. In other words, including refined crude oil products as well as products identical to those produced in refineries only that they come from the well head in this form.



Map 4: East-West Pipeline and other Major Oil and Gas Infrastructure

Incidentally, much of the pipeline capacity that is not located in the Eastern Region is pipeline capacity which serves the dual purpose of serving the Kingdom's markets in the Western Hemisphere but also acts as a back-up export route, which would route Eastern Region oil production westward to the export terminal in Yanbu on the Red Sea should the Strait of Hormuz ever close in the event of a security problem. Saudi Arabia has the 746-mile Petroline, also known as the East-West Pipeline, which runs across Saudi Arabia from its Abqaiq complex to the Red Sea. The Petroline system consists of two pipelines with a total nameplate (installed) capacity of about 4.8 million bbl/d. Saudi Arabia also operates the Abqaiq-Yanbu natural gas liquids pipeline, which has a capacity of 290,000 bbl/d, which serves petrochemical plants in Yanbu. A 236-mile multi-products line between Dhahran in the Eastern Province and Riyadh and a smaller 220-mile multi-products line between Riyadh and Qassim to the north were also built in the 1980s.

Arabia's only functioning international crude pipeline system is a 60-year old complex of four small underwater pipelines carrying Arabian Light crude from Saudi Arabia's Abu Safah field to Bahrain.<sup>22</sup> This aging pipeline system is expected to be decommissioned after the construction



of a new pipeline with a capacity of 350,000 running between Abqaiq and Bahrain's refinery at Sitra. The new pipeline is expected to be completed in the third quarter of 2016.

As regards the gas stemming from GOSPs, Saudi Arabia has a large petrochemical industry that uses crude oil as well as natural gas. Processing facilities in addition to Abqaiq includes the Khursaniyah gas plant which is able to process 28 million cubic metres of associated gas per day, produce 15.9 million cubic metres per day of sales gas, and 280,000 bbl/d of natural gas liquids. Other important gas assets include gas processing units at Ju'aymah and Yanbu gas plants. Saudi Arabia does not export natural gas; rather, it is used domestically for electricity generation, petrochemical feedstock, and to power oil and gas operations and desalinisation plants. Domestic gas transport is controlled by the Master Gas System (MGS).

Prior to the MGS (begun in 1975), all of Saudi Arabia's natural gas output was flared. The MGS feeds gas to the industrial cities including Yanbu on the Red Sea and Jubail. To supply natural gas to the expanded gas processing facilities, several additions to the MGS are in the planning or construction phases. The largest pipeline to be built is the 132-mile conduit to the Rabigh complex and to the Yanbu NGL processing facility. Installation of four other pipelines will connect Manifa to the Khursaniyah gas plant and to Ras al-Zour for gas processing and raw power production.

### **(2.3) Downstream: Refineries**

Saudi Arabia has an impressive refinery capacity consisting of four refineries 100%-owned by Aramco (at Jeddah, Ras Tanura, Riyadh, and Yanbu); and three joint-venture refineries, the SAMREF refinery 50%-owned by ExxonMobil, the SASREF refinery 50%-owned by Shell, and the Petro Rabigh refinery 62.5%-owned by Sumitomo Chemical. This year Yanbu Aramco Sinopec Refining Company (YASREF) Limited, a joint venture with Chinese Petrochemical Corporation (Sinopec) (able to process up to 400,000 bbl/d of Arab Heavy crude oil from Manifa) came online.

The main refineries, from largest to smallest processing capacity are:

- |        |  |                 |
|--------|--|-----------------|
| (i)    | Ras Tanura (Saudi Aramco)                      | – 550,000 bbl/d |
| (ii)   | SATORP Jubail (Saudi Aramco, Total S.A.)       | – 400,000 bbl/d |
| (iii)  | Petro Rabigh (Saudi Aramco, Sumitomo Chemical) | – 400,000 bbl/d |
| (iv)   | SAMREF Yanbu (Saudi Aramco, Exxon Mobil)       | – 400,000 bbl/d |
| (v)    | YASREF (Saudi Aramco, Sinopec)                 | – 400,000 bbl/d |
| (vi)   | SASREF Jubail (Saudi Aramco, Shell)            | – 305,000 bbl/d |
| (vii)  | Yanbu (Saudi Aramco)                           | – 250,000 bbl/d |
| (viii) | Riyadh (Saudi Aramco)                          | – 122,000 bbl/d |
| (ix)   | Jeddah (Saudi Aramco)                          | – 85,000 bbl/d  |

Saudi Arabia has grown to be a very large consumer of petroleum products. This is due in part to the heavy retail subsidies on petroleum products as well as relatively high level of industrial

activity associated with petroleum products in the Kingdom. Saudi Arabia is the largest oil-consuming nation in the Middle East consuming 2.9 million barrels per day (bbl/d) of oil in 2013, almost double the consumption in 2000.

#### (2.4) OPEC Leadership

Underpinning Saudi Arabia's dominant role in the oil cartel is Kingdom's massive infrastructure detailed in the 3 preceding subsections. No other producer in the cartel comes near to rivaling Saudi Arabian production capability which effectively gives Saudi the ability to manipulate the global crude oil markets (see figure 2 for relative comparison of spare capacity). As mentioned in the introduction to this section, the Kingdom has gone to lengths to spin its role from cartel leader to market stabilizer. Such an interpretation is euphemistic as the objective of Saudi policy is to, as in any cartel, (1) manipulate prices in the cartels favor and (2) throttle competition. The cartel's objectives have at times prompted the lead producer to shock markets and alternatively to ramp up oil production to offset price increases which may adversely affect longer term supply<sup>10</sup>.

The intricacies of Saudi production policy are discussed further in section 4 in light of Saudi response to U.S. tight oil surge.

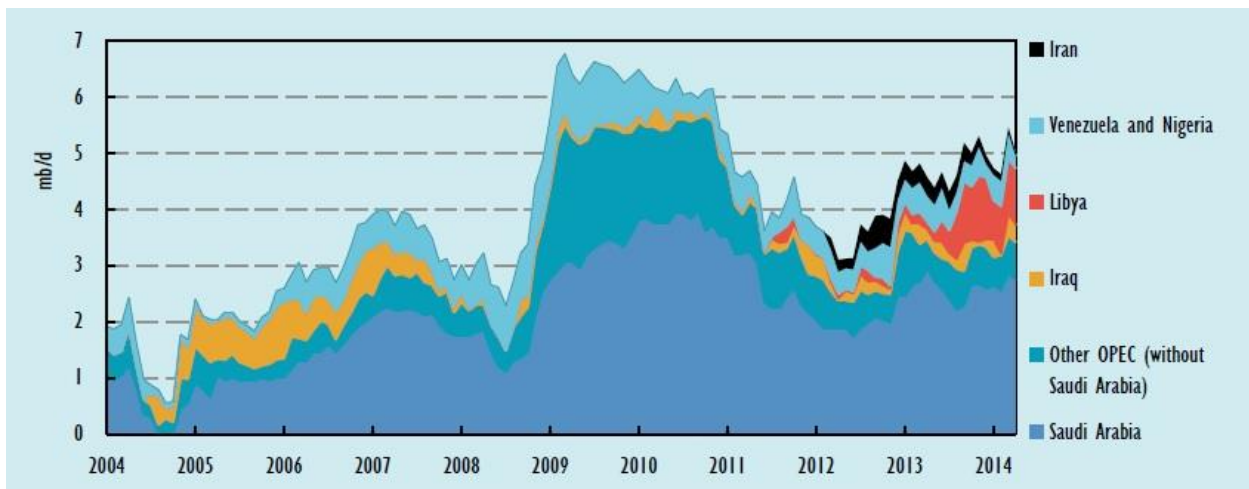


Figure 2: OPEC Spare Capacity.

<sup>10</sup> Shock here referring to a drastic cut in exports. An example of this is in the 1980s, when Saudi Arabia dropped its production of crude oil from nearly 10 million barrels per day (bbl/d) in 1981 to less than 2.5 million bbl/d in some months of 1985 in a bid to move prices up. See figure 4 for a chart detailing swing production behavior in the 2000's.

As can be seen in figure 3, OPEC production constitutes 39.4% of daily oil supply. Within the production block, Saudi Arabia is the largest producer. Underpinning Saudi Arabia's dominant role in the oil cartel is the massive infrastructure detailed in the 3 preceding subsections. Furthermore, Iran has been under sanction, Iraq has not been part of the quota system, Libya has experience severe outages in the post revolution period and Nigeria has been victim to sabotage. What's more, Venezuela has been experiencing fiscal issues. This effectively has left the UAE, Kuwait, and Saudi Arabia playing the dominant role in the cartel, with Saudi leading this producer subset.

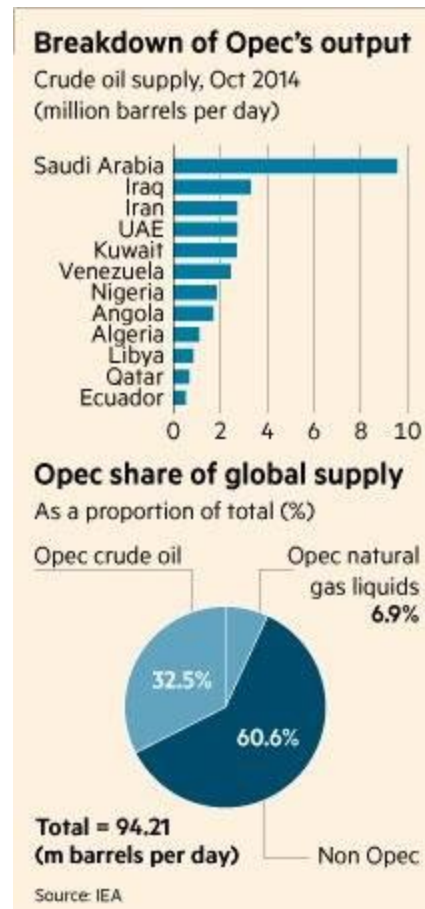


Figure 3: OPEC Output

### (3) Electricity Generation

The state-owned Saudi Electricity Company (SEC) is the largest provider of electricity in Saudi Arabia, with total available generating capacity of 58 GW.<sup>43</sup> The state-owned Saline Water Conversion Corporation (SWCC), which provides most of the Saudi Arabia's desalinated water, is the second-largest generator of electricity. There are also independent power producers (IPPs), which sell to another state entity, the Water & Electricity Company (WEC). According to the BP Statistical Review of World Energy 2014, Saudi Arabia generated 292.2 billion kilowatthours (kWh) of electricity in 2013, 7% more than in 2012 and more than double the electricity generated in 2000.

Like many developing countries in the Middle East and North Africa, Saudi Arabia faces a sharply rising demand for power. Demand is driven by population growth, a rapidly expanding industrial sector led by the development of petrochemical cities, high demand for air conditioning during the summer months, and heavily subsidized electricity rates. Saudi Arabia is one of the few countries that directly burn crude oil for electricity generation. Normally, less-expensive fuel oil is used by oil-fired generating plants worldwide. Direct burn of crude oil for

power generation reached an average of 0.7 million bbl/d from 2009 to 2013 during the months of June to September according to the Joint Oil Data Initiative (JODI). The Saudi Electricity Company (SEC) has plans to reduce direct crude burn for electricity generation by more than 500,000 bbl/d by switching to natural gas. But this has put a strain on the generation sector, particularly as the government has preferred to bring on natural-gas fired (rather than petroleum-fired) power plants as the gas to power these plants has not always been available. As mentioned, Saudi Arabia does not export natural gas; rather, it is used domestically for electricity generation, petrochemical feedstock, and to power oil and gas operations and desalination plants.

In late 2008, the government unveiled plans to invest about U.S. \$53 billion by 2015. This includes a \$21 billion programme for nine independent power projects that would add 9,360 MW to capacity, a U.S. \$1 billion contract to add 30 gas turbines to the Riyadh Power Plant for an additional 2,000 MW of capacity. The King Abdullah City for Atomic and Renewable Energy (K.A. CARE) program seeks to ensure that half of the electricity generated in Saudi Arabia comes from renewable sources by 2032, when forecasted electricity demand growth will necessitate power generation capacity to increase to 120 gigawatts (GW). The increased use of renewable sources allows for more oil and natural gas originally allocated for domestic power needs to be freed up for export. In the interim, Saudi Arabia is participating in the Gulf Cooperation Council's efforts to link the power grids of member countries to reduce shortages during peak power periods. Saudi Arabia does not use coal for electricity and has no significant hydropower resources.

#### **(4) Impact of Shale Gas and Light Tight Oil Production in the U.S.**

The uptick in U.S. light tight oil (LTO), colloquially referred to as ‘shale oil’, has seen the U.S. grow oil production by some 4 million bbl/d since 2008. The amount of oil coming from the U.S. LTO surge is larger than the production of any single OPEC member except Saudi Arabia. It has hence been a direct challenge to OPEC and more specifically OPEC’s de facto leader, Saudi Arabia. Saudi policy is studied with a level of scrutiny comparable to that experienced by the FED, ECB or other central bank of comparable importance, simply because of its ability to manipulate the market for crude oil. Its response (or non-response) to the US LTO surge is a debated topic and arguably the latest OPEC meeting in Vienna Nov. 27<sup>th</sup> is the first time a clear decision with respect to the LTO surge has been taken.

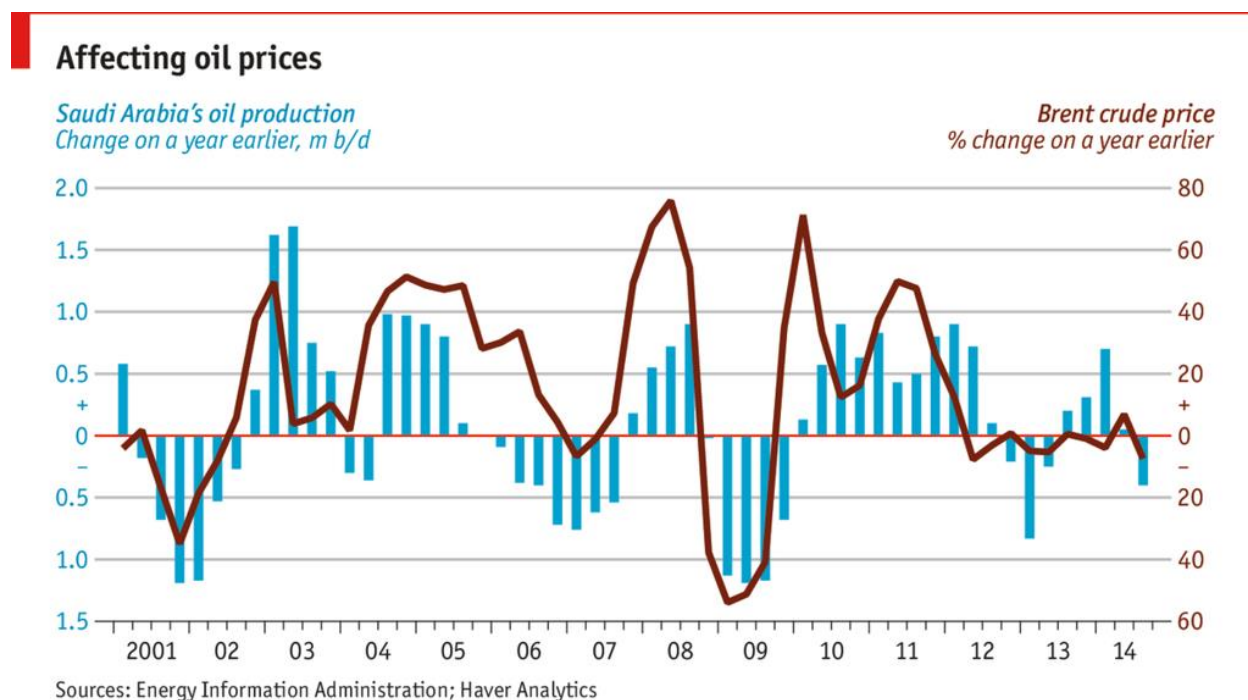


Figure 4: Saudi Production Response to Price Environment

The graphic above plots Saudi production movements (in blue) in response to the price of crude oil (in burgundy), demonstrating the Kingdom’s effort to target prices. In recent years, Saudi’s (and hence OPEC’s) target price has been known as the long serving Saudi oil minister Al-Naimi has on occasion communicated the price which Saudi considers to be ‘fair’. This has however been a moving target as each fiscal year revisions are made to the Saudi budget with commensurate adjustments to what price for crude oil Saudi Arabia is interested in receiving.

#### (4.1) Budgeting & Internal Stability: Riyadh’s Social Contract

Energy is the backbone of the Saudi economy and the diligent use of its revenue has been crucial to maintaining stability within a kingdom ruled by an absolute monarchy. The causes of the Arab Spring – as concern high youth unemployment – are not beyond Saudi Arabia. Despite maintaining a per capita GDP of \$31,300 at PPP and holding some \$739.5 billion (estimated 31 December 2013), the country feels the pressure to increase Saudi participation in the workforce and ensure a living wage (and achieving all of these things in a sustainable manner). The trend of maintaining such a disproportionate percentage (60%) of the population under the age of 30 means that the challenge of accommodating the Saudi labor is a lingering problem and one set to grow in the coming years as population is highly skewed towards the youngest end of the population.

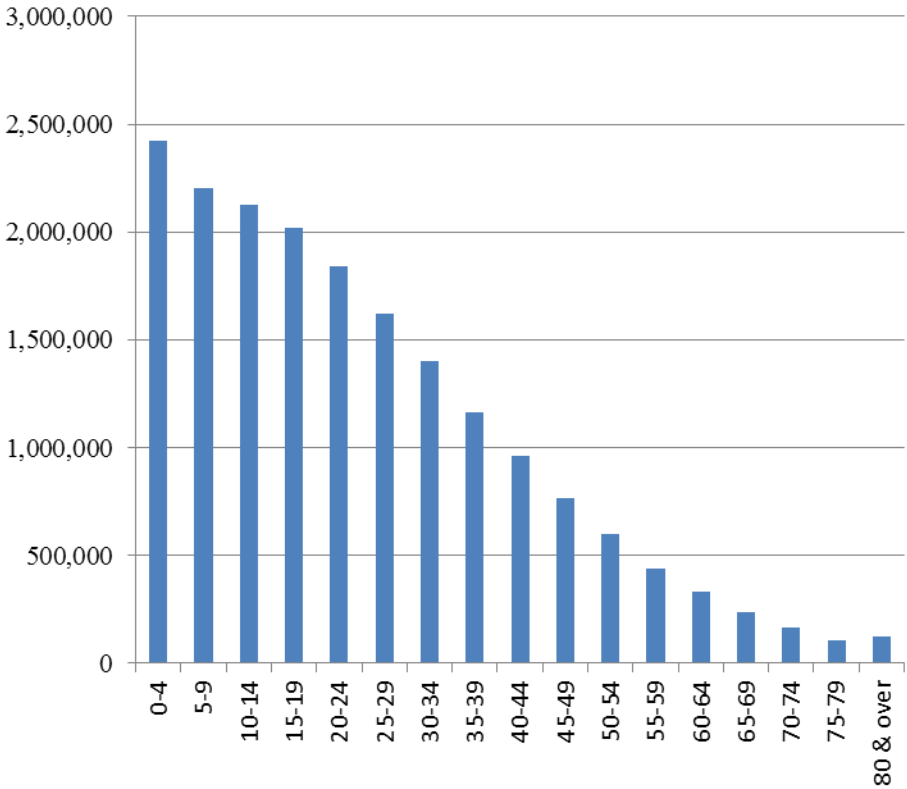


Figure 5: Population Age Structure (Saudis Only)

One aspect of the effort to address this problem is known as ‘Saudization’ which entails substituting expatriate labor with Saudi labor. With an estimating 6 million expatriates employed in the Saudi economy the scope for progress is, on a quantitative basis, quite high. Indeed, efforts to increase the numbers of Saudi nationals in the workforce and reduce dependence on expatriates at Saudi Aramco have been quite successful, where 87% of the work force is now Saudi. However, the oil and gas industry is a capital-intensive industry, so it will never be able to

support mass employment in the Kingdom. Rather, much of the opportunity for Saudization is in the services sector.

In addition to Saudization, increasing the role of women in the workplace will do much to supplement household income. The trend in recent years has witnessed a dramatic increase in the number of women unemployed (see figure 6 below).

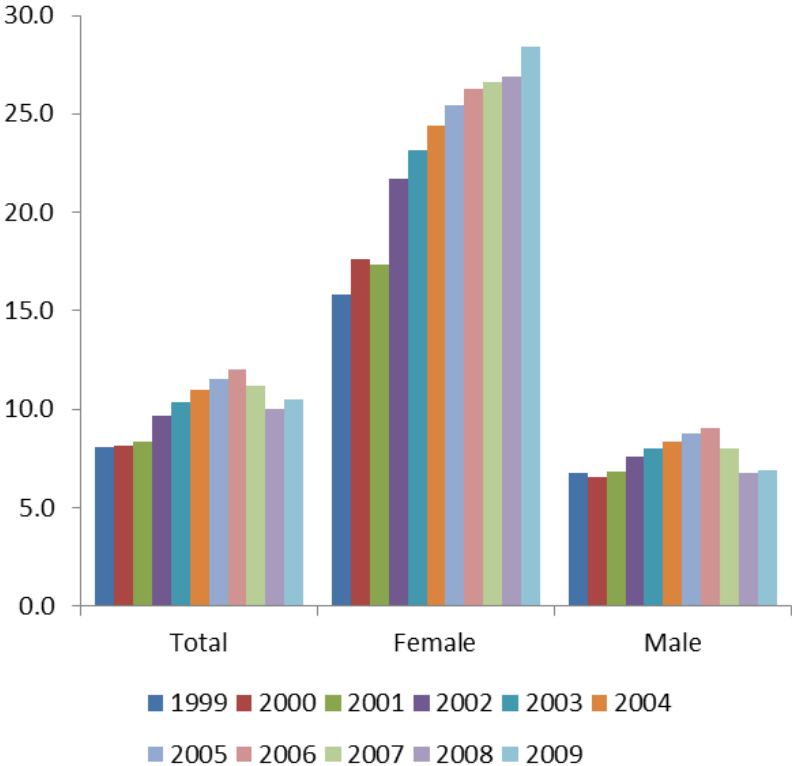


Figure 6: Official Unemployment rate Among Saudis in % (Source: SAMA)

For 2014, the Saudi Arabian government has plans to spend \$228 billion, up by 4.3% on last year. The recent 30% decline in world oil prices has led many to question the ability of key oil exporting nations to balance their budgets in the advent of the new price environment, including Saudi Arabia. This has inevitably led to questions regarding how OPEC may respond. Chiefly, the question has concerned whether the cartel would cut production or whether they would leave output steady with the latter choice almost certainly maintaining or even decreasing the current crude oil price and with it state revenues.

The figure below charts the price of oil with budget break even values for key oil exporting countries. Since October Saudi Arabia has been below this value and the question which remains

is how much longer the Kingdom would be willing to run a deficit. And if it chooses to run a deficit, what benefits does it expect.

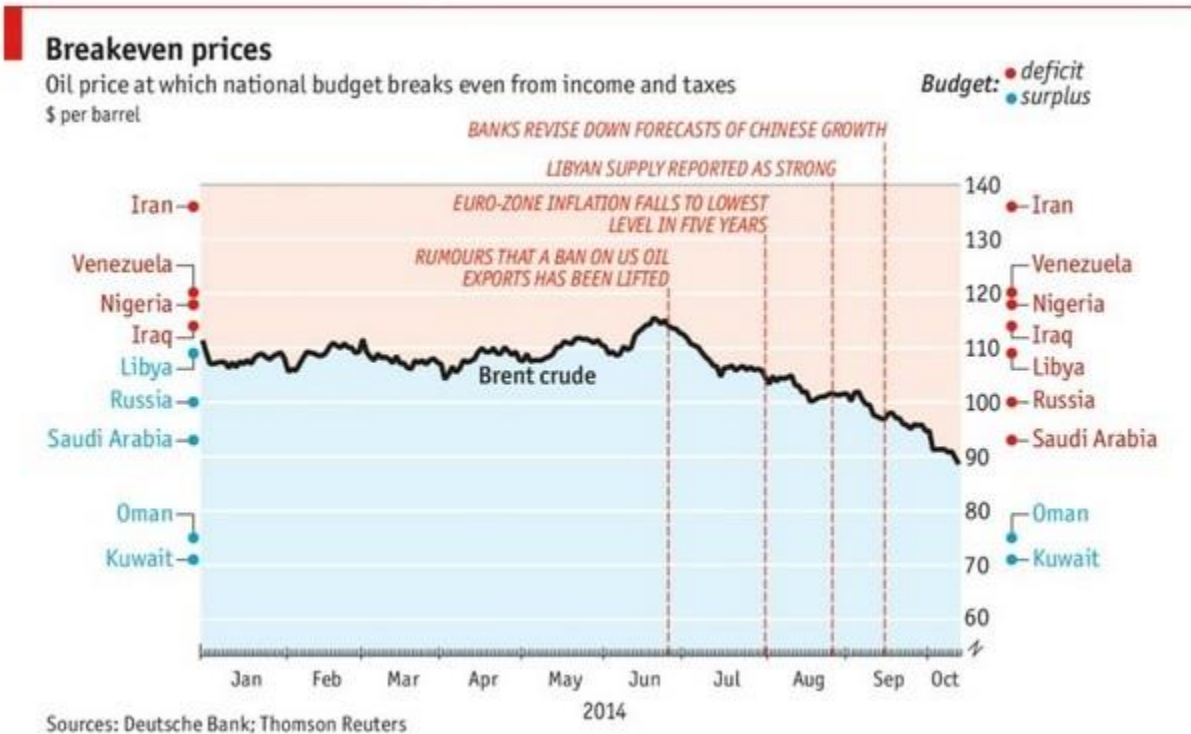


Figure 6: Breakeven Oil Prices for Major OPEC and non-OPEC Producers

Many analysts suspect that Saudi would only be willing to run this deficit in an effort to try to squeeze competitors out of the market place, hence increasing OPEC’s market power. The obvious target in this case is high cost LTO production in the United States and to a lesser extent, the oil sands in Canada.

**(4.2) Saudi Policy Response: Market Share Prerogative**

OPEC ministers met Nov. 27<sup>th</sup> to decide which course of action to take with respect to their production. The results of the meeting have seemed to point conclusively to the cartel confronting U.S. LTO. The decision not to cut production means that OPEC will collectively maintain output at the 30 million bbl/d for the coming 5 months.

However, referring to the decision as collective is quite a misnomer. The November 27<sup>th</sup> OPEC meeting followed the November 24<sup>th</sup> P5 +1 meeting regarding Iran’s nuclear program in which the prospect of sanctions being lifted against the OPEC producer were discussed. Iranian Oil Minister Bijan Namdar Zanganeh predicted that oil exports could double within two months were the sanctions to be lifted (for more information see Country Report: Iran). The results of

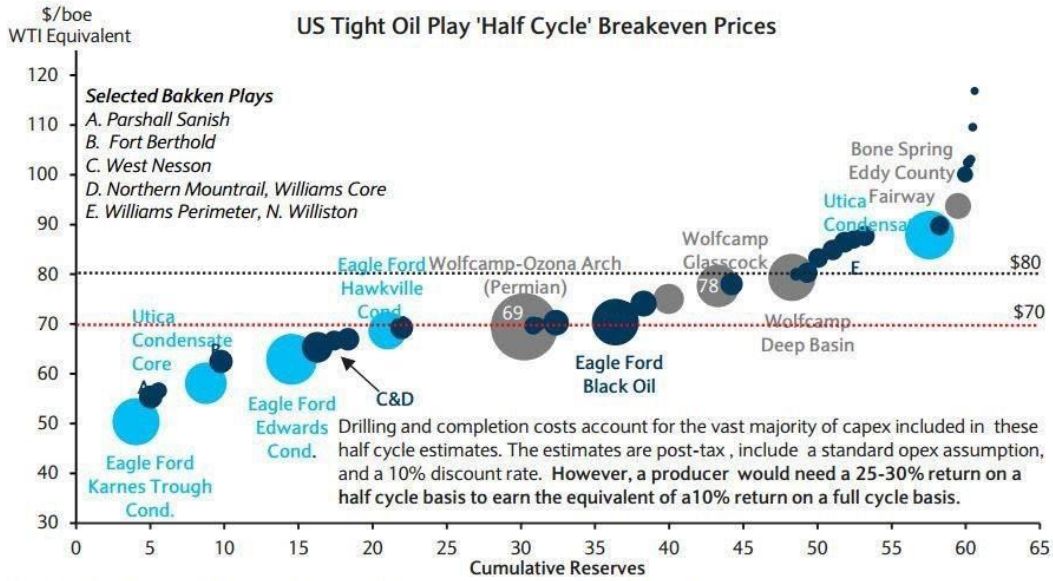


the meeting saw an extension to the sanctions regime until June when talks are set to resume. With the results in from the nuclear talks, it persisted that Libya, Iran and Nigeria (one of two sub-Saharan African producers) have effectively “cut involuntarily” since OPEC’s last coordinated reduction. Libyan output is 49 percent lower since the 2008 action as militias battle for control of the country (see Country Report: Libya, for more information), while Iran’s is down 28 percent amid sanctions. Nigeria has also lost 300 kbl/d of oil to theft and sabotage last year, according to Nigerian National Petroleum Corp. The implication of all this is that the decision essentially came down to Saudi Arabia, who would provide the lion’s share of cutting capability.

Saudi Arabia had made it known in advance that any action, if required, would need commitment from all members. As discussed, this was not a realistic expectation. Indeed, according to the Petroleum Economist information has emerged after the meeting that Saudi would only have been willing to cut production if Mexico and Russia had participated.

The stakes have been high as the International Energy Agency has warned that the price slide could continue into the first half of next year. Indeed, in the wake of the meeting the price slid below \$70 on November 28<sup>th</sup> (down from \$115 per bbl in June). It appears the course is set for a direct confrontation with US shale. IEA chief economist Fatih Birol said last week that the sharp decline in oil prices was good news for consumers but threatened investments in future supply, warning that that US capital spending could drop by 10% next year if oil prices were to remain at current levels. Later the same day, the US Energy Information Administration trimmed its previous forecast of US crude production in 2015 by an average 80,000 b/d, saying drilling activity was likely to be lower because of an expected average price of below \$78/b for WTI crude. As can be seen in the graphic below, the majority of LTO reserves are not economic below \$70 bbl.

Zooming in further, though it appears most US tight oil proven and probable recoverable reserves break even from \$60-80/bbl (WTI), full cycle economics would require a higher oil price. WTI may discount further than the 5.5% that WoodMac assumes. Cost improvements and infrastructure build-out should mitigate these effects.



Source: WoodMackenzie, Barclays Research. Wood Mackenzie assumes a roughly 5.5% discount for WTI.

Figure 7: Breakeven Prices in U.S. LTO

Prince Alwaleed bin Talal, an influential businessman, called lower prices a “catastrophe” and expressed astonishment that the government was not trying to push them back up. But Saudi Arabia’s long-term interest may in fact be served by a period of cheaper oil. It can afford one, unlike most other exporters. Though public spending has risen in recent years, its foreign reserves have risen as well. Net foreign assets were 2.8 trillion riyals (\$737 billion) in August—over three years’ current spending. It could finance decades of deficits by borrowing from itself even if oil were cheaper than it is now. The Saudis might conclude that the main beneficiaries of expensive oil have been non-OPEC members. A period of cheaper oil could drive some high-cost operators to the wall, discourage investment in others and let the Saudis regain market share. Since the OPEC meeting on the 27<sup>th</sup> the market cap of Apache and Marathon have fallen by 11%, EOG by 6.8% and Continental (one of the largest players in the LTO space) by 20%. It remains to be seen however if Saudi Arabia is able to reduce the production capacity of these players in the medium term.

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## **Saudi would consider output cut if Russia, others join in**

By Guy Faulconbridge, Reuters | London

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Saudi Arabia would only consider cutting production if other countries, including non-OPEC producer Russia, joined in limits, former Saudi intelligence chief Prince Turki bin Faisal said on Tuesday.

“The Kingdom is not going to give up market share at this time for anybody and allow producers whether in Russia, Nigeria, Iran and other places to sell to Saudi customers because we cut our production,” Prince Turki said during a visit to London.

“If there is a reasonably guaranteed oversight of production quotas - if they ever are agreed with and someone can definitively say there will never be under-the-table selling of the oil from these other countries - maybe then I think Saudi Arabia and other oil producers would be willing to cut down production,” he said.

“But we have tried that in the past and unfortunately other producers took advantage,” the prince added.

Oil has fallen since June to reach its lowest since October 2009 on Monday as new supplies of high-quality, light crude from North America overwhelmed demand, which in turn has suffered from slower economic growth in China and Europe.

The Organization of the Petroleum Exporting Countries had been expected to trim output last week to try to rebalance the market but agreed to maintain existing production targets.

Prince Turki said the Kingdom had accumulated sufficient financial reserves over recent years to finance requirements even if oil prices fell.

“I see no immediate crisis for Saudi Arabia in the coming couple of years or so,” he said.