

Saudi Oil Production after the Attack of September 14: Analyses and Forecasts

Eugene Khartukov*

*Professor (Economics) of the Moscow State Institute/University for International Relations, (MGIMO), Head of the Moscow-based Center for Petroleum Business Studies (CPBS) and of the World Energy Analyses and Forecasting Group (GAPMER) and Vice President (for Eurasia) of the Geneva-based Petro-Logistics S.A.
Email: khartukov@gmail.com*

Abstract

Current state and the future of Saudi oil production after the drone attack of September 14, 2021, are scrutinized. The article mainly concludes that the attack had no noticeable impact on the kingdom's current oil production, whose long-term prospects are quite bleak as main oil fields are fairly exhausted and there are poor chances for new high-productive oil discoveries.

Key Words: Oil; production; drone attack; Saudi Aramco; OPEC+ cuts in production.

1. Introduction

No doubt, the drone attack on Saudi oil facilities on September 14, 2019, had an impact on the kingdom's ability to supply crude oil to the world market – but to which extent this ability was actually influenced? Let's scrutinize. Generally and immediately after the attack, which took place around 4 a.m., some sources said that starting destroying fires that affected Saudi Aramco's two major oil refineries at Abqaiq and Khurais and some oil-producing facilities at the nearby Abqaiq and Khurais fields in the eastern Saudi Arabia were liquidated in a matter of hours but caused a temporary more than double fall in Saudi oil production cutting Saudi Arabia's oil production by about half (from 9.8 mln b/d down to 4.1 mln b/d) – or some 5% global oil supplies [1-2] (Figure 1).

* Corresponding author.

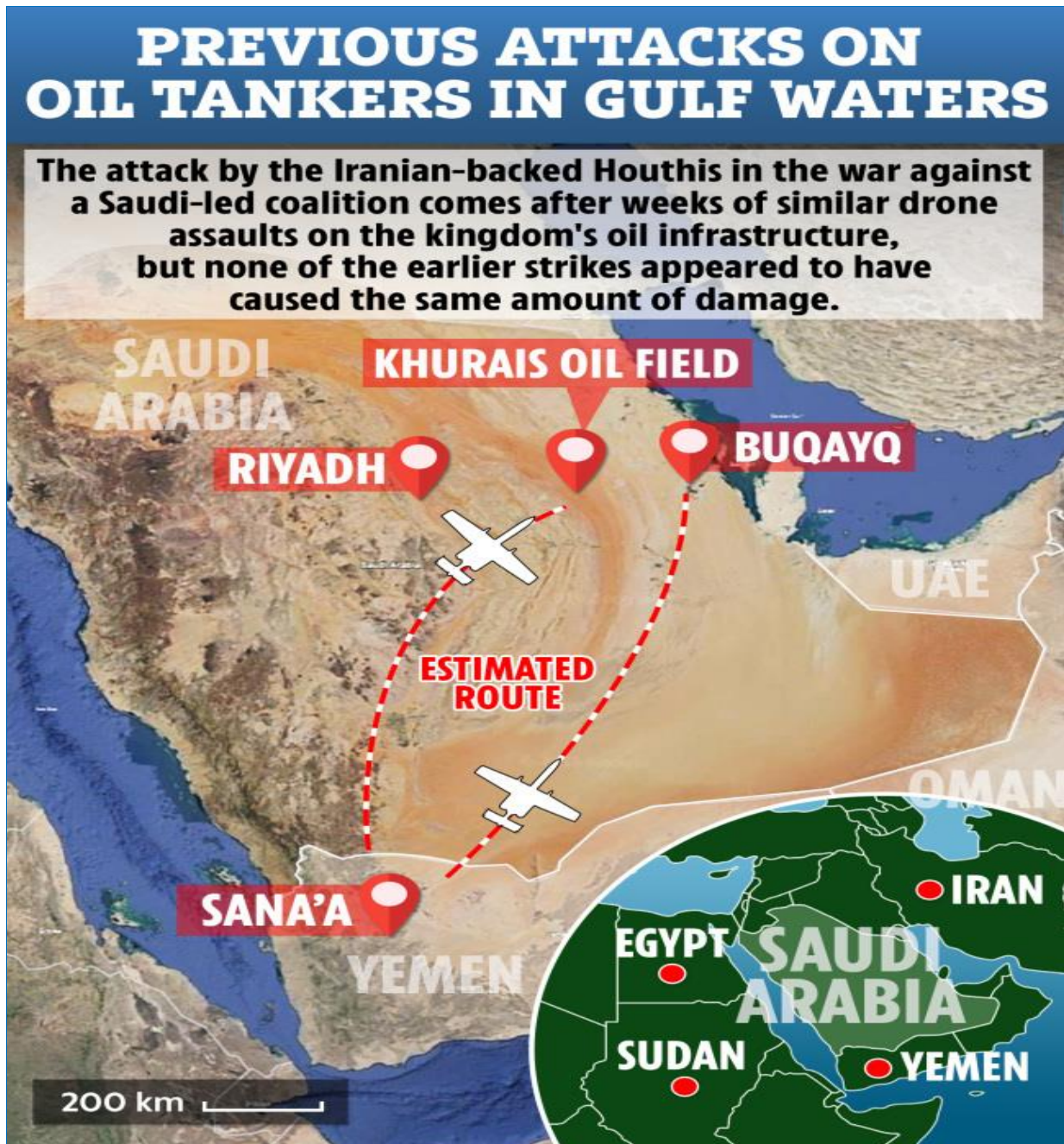


Figure 1: Probable Routes of the Attack

As for the Abqaiq (or Buqayq) oil field, which was discovered in 1940 and produced since 1947, holds initial recoverable oil reserves of 2.27 bln tons and produced before the attack some 36 mln tons a year (over 1.8 mln b/d) [3], which is exported via the largest terminal of the main Saudi port of Ras Tannurah in the Persian Gulf (with capacity of 3.4 mln b/d) and which was not affected by the attack. In its turn, the Khurais is an oilfield, with an area of 2,890 km² and 127 km long, which is located around 250 km southwest of Dhahran and 300 km north southeast of Riyadh. The first production of oil began in 1963, and, in 2009, the Khurais added 1.2 million bpd of Arabian light crude to Saudi Arabia's export capacity [4]. The damaged facilities have returned to full capacity by the end of September. [2]. And the damage effect of the attack on Saudi oil (*see above*) was clearly overestimated. First, only *some* of the oil-producing facilities were actually affected. Second, combined oil

production at the Abqaiq and Khurais fields did not exceed 3 mmb/d (or rather, more exactly 1.6 mln b/d) Immediately after the attack the kingdom has reduced its oil production by 5.7 mln b/d – that is by half of oil produced daily in the country – but that was a decision made by Saudi authorities, not the damage caused by the drones (Figure 2).



Figure 2: Global Disruptions of Oil Supplies, in mln b/d

Source: <https://peakoil.com/business> [5]

Current Production Potential. According to the US Energy Information Administration (EIA/US DoE)'s latest brief on Saudi Arabia, at the end of 2019 oil production capacity of the kingdom was roughly 12 mln b/d [6]. However, in the earlier March 2020 the high authorities of Saudi Arabia said that it would increase its oil production to 12.3 mln b/d starting in April. That is 300,000 b/d more than Saudi Aramco's current production. Later the company said it would produce up to 13 mln b/d. Aramco also said that the Saudi Energy Ministry, led by Crown Prince Mohammed bin Salman, ordered the increase. Saudi Arabia had been producing around 9.8 mln b/d. That amount was in line with an agreement among a number of oil-producing nations, including Russia [7]. This international accord is an attempt to stop the oversupply in the market that had pushed prices down.

OPEC+ Deal. In December 2016, 24 oil producers (13 OPEC members and 11 non-member countries) had struck a deal to withdraw from the world oil market since the start of 2017 1.8 mln b/d of their combined oil production (compared with October 2016) to buoy up the declining world oil prices. Russia pledged to cut its oil production by 300 kb/d (but I wonder which Russian profitably oil-producing company was about to do it as it was the promise of the Russian officials who – by law – have no right to regulate an entity's output... Neither

it would be possible to command any decrease in national oil production as the oil industry in Russia is currently almost entirely privatized ...) while Saudi Arabia – the leading cutter – obliged to reduce its national oil production by 486 kb/d. The accord was extended several times and its terms were changed depending on the market's status. In particular, it was decided until the end of 2019 to decrease the collective oil production by 1.2 mln b/d (compared with October 2018) while the combined cut in the first quarter of 2020 was set at 1.7 mln b/d. In December 2019, Russia managed to exclude *gas condensate* from the agreement's all national pledges to make them in line with the OPEC quotas. In April 2021, after some temporarily frictions between the kingdom and Russia about the level of national oil production (which were quickly dubbed by poorly informed journalists "oil price war") Saudi Arabia has agreed to cut 3.3 million barrels a day from its production levels of 12 mln b/d and Russia has agreed to cut 2 mln b/d from its current production of 10.4 mln b/d. Most delegates who attended a historical virtual meeting of OPEC+ members agreed to collective production cuts of 9.7 mln b/d (around 20% in relation to March 2020) in May and June followed by cuts of 8 mln b/d until the end of 2020 and 6 mln b/d until May 2021 [8]. **Current Production Status.** All available sources indicate that now, after sub-substantial reductions under OPEC+ pledges in July-August 2020 and February-April 2021 as well as the drone attack in September 2021, oil production in Saudi Arabia is around estimated 9.0 mln b/d (*Figures 3 and 4*).

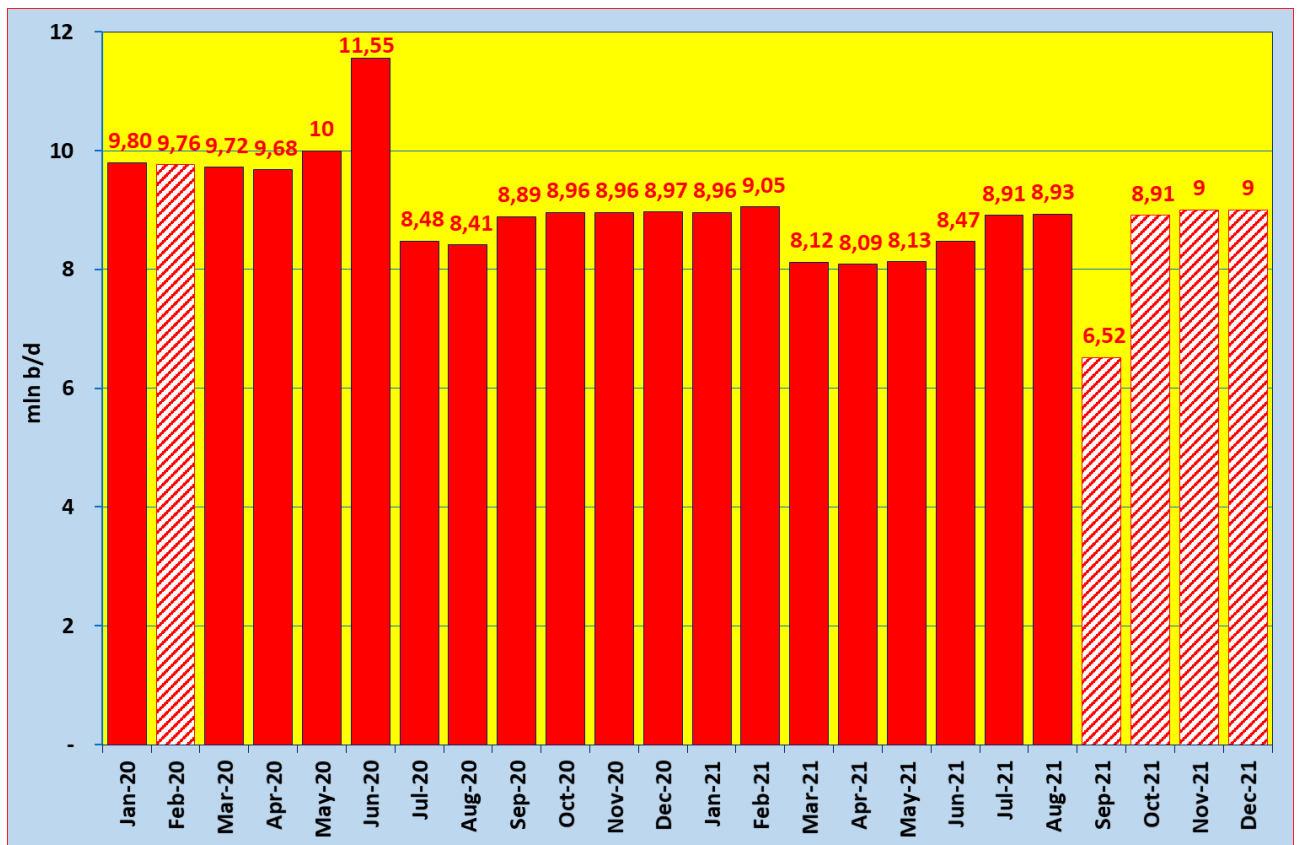


Figure 3: Monthly Crude Oil Production in Saudi Arabia in 2020 and 2021, in kb/d

Note: columns with diagonal lines are estimates

Source: compiled, estimated and drawn by the author based on various sources, including

<https://tradingeconomics.com> [9]; <https://www.ceicdata.com/en/indicator> [10]; <https://take-profit.org/en/statistics> [11]



Figure 4: Oil Production at the Ghawar in Saudi Arabia

At the end of 2020, Saudi Arabia's Aramco announced discovery of four new oil and gas fields in different parts of the kingdom. Although quite big, they are far from the Ghavar in size and productivity [12]. Cost of producing Saudi oil is one of the cheapest (if not the cheapest) in the world mainly because its known oil fields are shallow and huge. Capital investments in oil production estimated by the International Energy Agency are shown below (Figure 5).

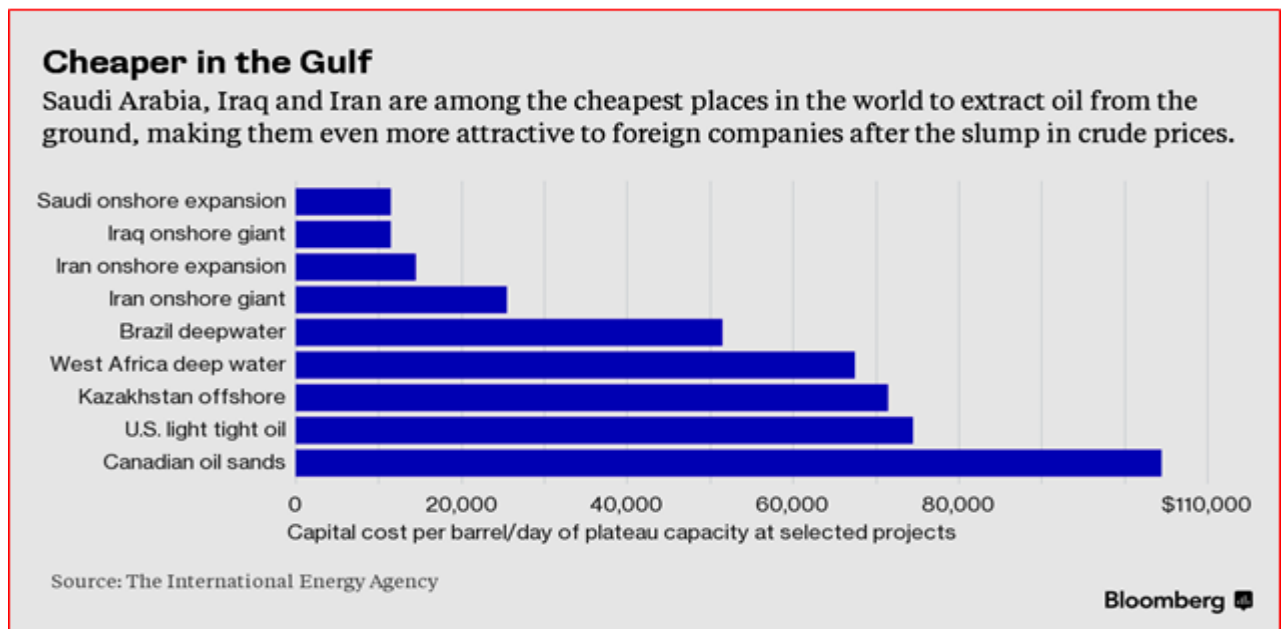


Figure 5: Specific Capital Investments in Selected Projects of Oil Production (according to the IEA), in US\$ thousand per b/d

Source: <https://yandex.ru/images/search?from=tabbar& text=costs> [13]

As for *full* costs of oil production (included capital and current producing, transportation and administrative costs and gross taxes), which were estimated by Norwegian consultancy Rystad Energy in 2016 but still are very popular among all energy experts, in Saudi Arabia these costs were put at US\$ 8.98/boe – the lowest in the world (Figure 6).

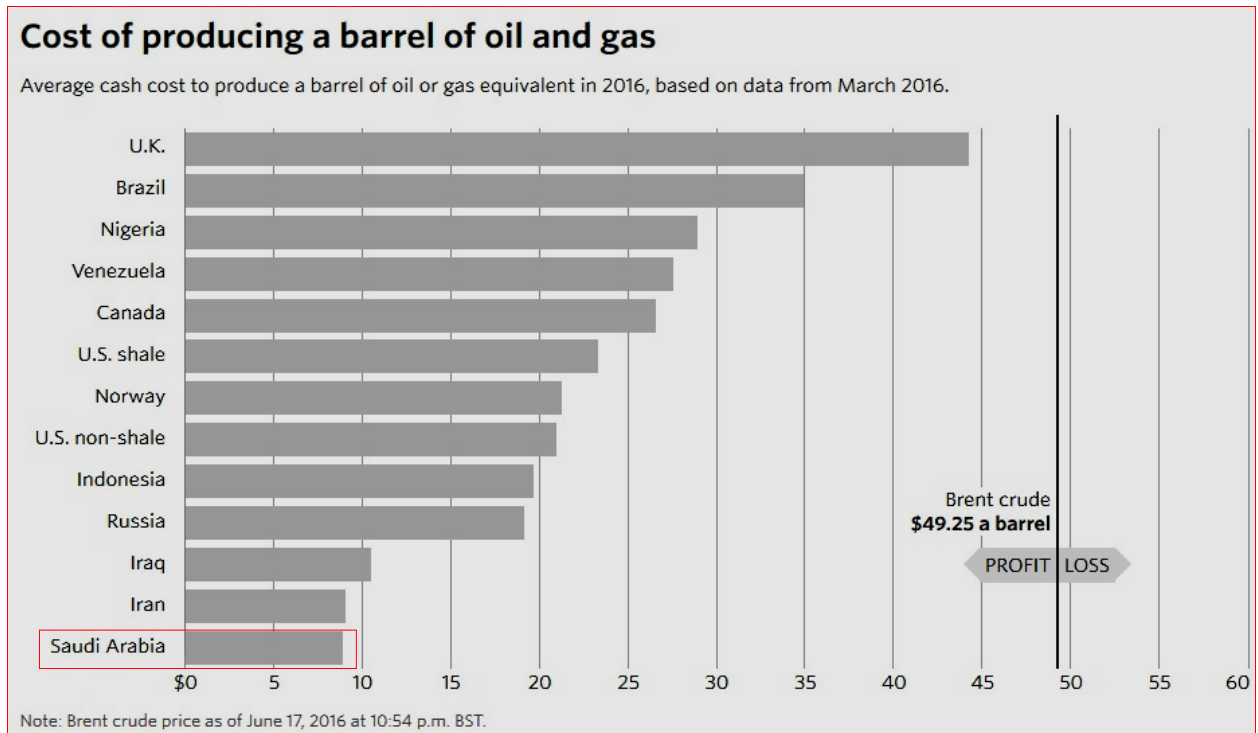


Figure 6: Full Costs of Producing Petroleum in Selected Countries (according to Rystad Energy, including capital and current producing, transportation and administrative costs and gross taxes), in US\$/boe

source: <https://danhajiya.blogspot.com/2016/06> [14]

Term Outlook. Long-term prospects of Saudi oil production are regarded as quite bleak. In particular, an early well-known forecast on future oil production decline in Saudi Arabia (down to less than 7 mln b/d in the late 2020s), made by Euan Mearns (the Scottish geologist who now teaches at the University of Aberdeen), was recently confirmed by both Saudi authorities and the US energy information administration (EIA/US DoE) (Figures 6 and 7).

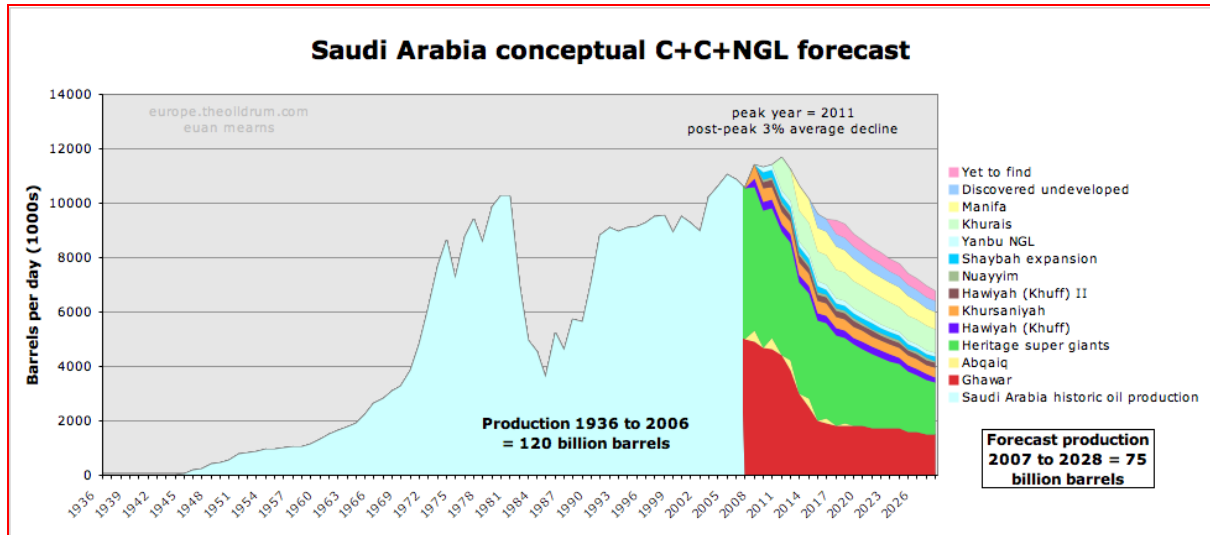


Figure 6: Forecast of Saudi Arabia's Oil Production in 2007-2028 (according to E. Mearns), in kb/d

Source: <http://theoildrum.com/files> [15]

Between now and 2028, 21 Gb of production is shown of an estimated 40 Gb remaining reserves at the Ghawar – the largest Saudi oil field. Some time beyond 2028, Ghawar production will go into rapid decline as the south end of the field becomes exhausted. Abqaiq is the most mature of the Saudi supergiants. The status of Abqaiq is rather obscure. Multi-phase pumps have been deployed to help produce the remaining oil. Abqaiq is an ageing queen that no doubt would benefit from periodic rest and therefore conceptually is shown its sporadic annual production of up to 400,000 bpd that is turned on when needs require. A total of 657 million barrels of Abqaiq production is considered [16].

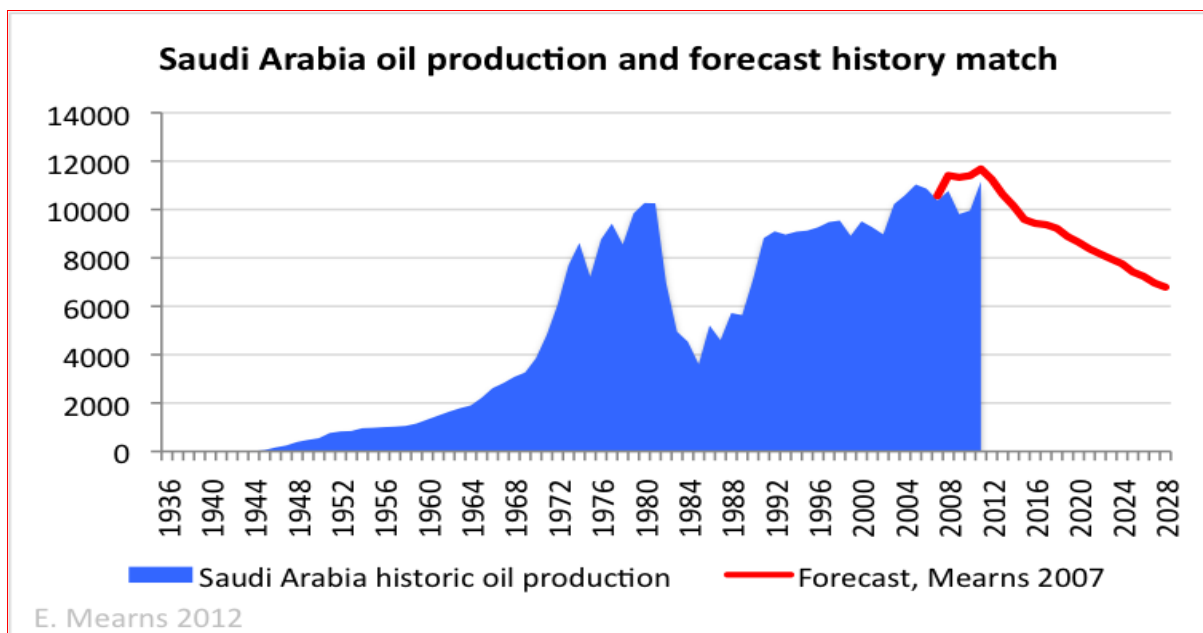


Figure 7: Forecast of Saudi Arabia's Oil Production in 2007-2028 (according to E. Mearns), in kb/d

Source: <http://theoildrum.com/files> [17]

World Prices. Although the drone attack has no irrecoverable impact on Saudi oil production, the attack by itself noticeably affected world oil prices (*Figure 8*).



Figure 8: The Dynamics of Spot Prices of Brent Oil Blend (FOB Sullom Voe) in September 2019, in US\$/b

Source: <https://www.bbc.com/news/business-49710820> [18]

Experts claim the attacks were the “equivalent of 9/11” and “massive heart attack” of the global oil industry, with world oil prices have risen as much as 15-20 per cent to around above \$60-70 a barrel – the biggest percentage spike in almost three decades (the last time prices jumped anywhere this high was the 1990 Iraqi invasion of Kuwait). In particular, spot European prices of Brent oil marker have ended the day up 14.6% at \$69.02/b – the largest percentage gain in record. The US crude oil (WTI) also soared, ending the day of September 16 14.7% higher at \$62.90/b [19]. To sum up, we have to conclude that the drone attack on the Saudi oil production facilities, though greatly influenced world oil prices, had no noticeable impact on the kingdom’s current oil production. However, long-term prospects for the Saudi production are quite bleak as main oil fields are fairly exhausted and there are poor chances for new high-productive oil discoveries.

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