

# *U.S. Energy Dominance: from Whale Oil to Shale; How the New U.S. Energy Doctrine will Change the World*

BY AMRO ZAKARIA

By the mid-1800's, whale oil was the primary source of energy, used principally to illuminate homes and lubricate wheels and machines. The ever-increasing demand for whale oil helped create a vibrant global whaling industry in which the United States was by far its dominant player, with a fleet of 735 ships out of 900 in the world in 1846.

Luckily for the whales, which by the middle of the nineteenth century were hunted almost to the brink of extinction, crude oil was discovered in Pennsylvania in 1859. Kerosene, a crude oil byproduct, rapidly became the preferred source of fuel, replacing the more expensive whale oil and alcohol-based camphene, which had become costly due to a newly introduced tax on alcoholic products.

The discovery of crude oil in the mid-1800s and the subsequent mastery of its refinement into different products precipitated an industrial revolution that led to the advent of many modern industries that we have today. Crude oil distillates like gasoline and diesel transformed the locomotive engine and with it, the automobile, marine, and aviation industries. War and commerce changed drastically in both means and purpose ushering a global race to control this new source of wealth and power that has continued unabated ever since.

## Post-WWII Energy Doctrine

The American energy doctrine post-WWII and until recently has focused on energy independence and security. Its primary motive is rooted in two historical events. First was the wave of nationalization that gripped many of the major oil producing regions during the 1950-70s. This development had put most of the oil and gas reserves under the control of governments and consequently, exposed to global geopolitical flux and the whims of national movements ubiquitous at the time.

The second event was the October 1973 oil embargo imposed by the Organization of Arab Petroleum Exporting Countries (OAPEC), which consisted of the Arab member countries of OPEC plus Egypt and Syria. The oil embargo left the U.S. feeling vulnerable and exposed the extent of its dependence on Middle East oil. Prices shot up from \$3 to \$12, but still, widespread shortages and long lines persisted in gas stations with signs posted "NO GAS TODAY."

For the Nixon administration, the oil embargo could not have happened at a more inconvenient time. The Vietnam war was intensifying, and so was the opposition to it.

The U.S. dollar had been devalued due to the U.S. unilaterally pulling out of the Bretton Woods Agreement in August 1971. Moreover, the U.S.

economy was going through a recession, with real GDP growth slowing from 7.2% to negative 2.1% and inflation rates quadrupling from 3.4% to 12.3% between 1972-1974.

Under pressure, the Nixon administration enacted drastic steps to address the economic and national security threat as well as the humiliation and hardship resulting from the oil embargo by announcing the "Project Independence" strategy in November 1973.

The strategy, which prioritized American energy independence, has formed one of the main rudders of the American military, energy, and foreign policy strategies for the past four decades. As Amory Lovins of the Rocky Mountain Institute, a Colorado-based think-tank, put it "the oil embargo was the crisis that caused America to lose its energy innocence."

Measures focusing on energy independence and security established by Nixon and expanded by subsequent administrations included improvements in energy consumption, reduction of regulation on domestic production, promotion of overseas exploration, and the development of alternative fuels and renewables. As a result, electricity generation from oil in the United States has decreased from 15% in 1975 to less than 1% today.

Iran under the Shah had continued to produce and supply oil to the United States during the Arab Embargo. The Iranian revolution in 1979 resulted in the loss of a dependable oil supplier and further highlighted the need for proactive engagement in the Middle East, primarily since the new regime was hostile towards the U.S. and represented a credible threat to the regional oil supply. The gravity of those developments prompted President Jimmy Carter to announce during his 1980 State of the Union address that "An attempt by any outside force to gain control of the Persian<sup>1</sup> Gulf region will be regarded as an assault on the vital interests of the United States of America. Such an assault will be repelled by any means necessary, including military force." Eleven years after President Carter's address, the United States deployed boots on the ground to lead the fight in the first Gulf War and has had permanent presence ever since.

The pursuit of energy security and independence led to the formation of close cooperative synergies with most of the major oil producers in the Gulf and around the world. Security constituted the bedrock of those relationships, which developed into intertwined

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See footnote at end of text.

geopolitical agendas lasting for decades resulting in U.S. projection of power to all four corners of the world.

Diplomatically, the U.S., together with other members of the OECD, pushed for the creation of the International Energy Agency (IEA), a member group responsible for coordinating energy policy, security, and development among its members. An example of the IEA requirements geared towards achieving supply assurance and insulation from supply shock is the mandate that its members maintain total oil stock levels equal to at least 90 days of the previous year's net imports. In OECD countries petroleum inventories stood at 2.98 billion barrels by the end of 2016 or roughly 65 days of consumption as per the EIA short term energy report (July 2017). Such measures weaken the invisible hand of the market when the fundamentals favor the producers and help blunt their collective leverage.

The multi-pronged approach to security dependence succeeded in insulating the U.S. from further oil supply shocks for the past four decades. So much so that The U.S. found itself ready and able to draw a new energy doctrine.

In December 2015, President Obama lifted the ban on U.S. crude oil exports which had been in place for over 40 years. The ban was increasingly being viewed as archaic, mainly by the new star of oil production, the U.S. shale industry. Furthermore, the U.S. had enough global diplomatic and military presence that a significant oil supply disruption was less likely to happen.

## Dawn of the New Doctrine: Energy Dominance

Although already in motion, the new U.S. Energy Doctrine was stated in unequivocal terms in a June 2017 White House press briefing by the Secretary of Energy Rick Perry. He said for the first time that the U.S. is after energy dominance and the statement was reiterated by President Donald Trump on June 29 at the Energy Department in which he declared the U.S. was on a path to "energy dominance."

It is worthy to note that Secretary Perry is acutely aware of America's energy production prowess, having been the longest-serving governor of the most prolific oil-producing region in the U.S.: the state of Texas. Furthermore, he has a good understanding of geopolitics having served in Europe and the Middle East in the seventies with the U.S. Air Force.

In trying to discern the motives behind the new doctrine, multiple factors present themselves and it is that confluence of factors that lead many to prognosticate its endurance.

## Horizontal Drilling and the Shale Revolution

In a recent report, the EIA has put the U.S. oil shale technically recoverable resources at 2.6 trillion barrels with estimated economically recoverable oil reserves at about 1 trillion barrels, more than that of Saudi Arabia,

Russia, and Venezuela.

Horizontal drilling leading to the shale revolution is probably the most significant development in the oil and gas sector in recent history and without a doubt, a powerful catalyst for the change in the U.S. energy doctrine. The new technology created hundreds of thousands of new jobs in the U.S. and seemingly reversed the protracted decline in U.S. oil production that started in the early 1970s. Output jumped from less than 5 million b/d to an average of 9.3 million b/d in 2017 and is expected to reach 9.9 million b/d in 2018 according to the EIA. A similar trajectory is taking place in natural gas production which has resulted in the lowest level of liquefied natural gas (LNG) imports into the U.S. since 1998, while exports grew by 30% in 2016 to reach an all-time high.

The resilience of the shale industry was tested when oil dropped from \$106 in April of 2014 to below \$27 by February 2016. Shale oil producers came under intense financial strain as it was widely believed that the industry's break-even price was between 60-70 U.S. Dollars. However companies, unlike countries, can trim down operational cost fast and they did. The number of oil production rigs bounced back from lows of 404 recorded in May 2016 to 958 active rigs today. Furthermore, the number of Drilled Uncompleted Wells (DUCs) stands at over 6,000, signifying an expanded capacity for rapid production increase.

## Continentalism and Protectionism

The Dominance doctrine cannot be decoupled from the rise of American nationalism that helped sweep in Donald Trump to the office of the U.S. presidency. Protectionism and continentalism have rekindled the spirit of manifest destiny in America.

The "America First" slogan has come to represent the administration's willingness to give up America's international leadership role in issues such as climate change, globalization, and free trade if such a position conflicted with American interest as defined by the nationalists presently at the helm of U.S. policymaking.

As it pertains to energy production, it also meant that there should be no barriers to exploiting America's natural resources, aggressively securing market share to America's hydrocarbons overseas, and becoming an energy exporter for the first time since 1953. This paradigm shift marked a change in the status of oil, from a strategic commodity grounded in national security interest to further becoming a significant component of the country's exports and GDP.

The new direction has yielded quick results. For the first time, U.S. crude has found its way to China and India, traditional markets for producers that consider the U.S. the vital ally. The significance of those two markets lies in the fact that they are projected to have the most substantial increases in energy demand in years to come. In India alone, the growth in demand is expected to increase by 333% by 2040. The question becomes, how will the relationship between the U.S.

and its oil-producing allies change when competition for global market share of oil exports turns the U.S. from an indispensable partner to a heavyweight contender and a possible existential threat?

Recent technological advancements in renewable energy are rapidly making them commercially viable competitors in fulfilling the new growth in energy demand, which would have traditionally gone to fossil fuels. Japan is leading the pack with hydrogen cell and molten salt battery technology. In the U.S., Tesla is making electric vehicles competitive and affordable with its Colorado-based Gigafactory and the introduction of the Model 3, which had five hundred thousand pre orders at launch. Not to be outdone, China has adopted policies to open up the automotive industry to electric vehicles encouraging investors and producers with generous subsidies. Additionally, China is diligently trying to shift its energy mix away from fossil fuels primarily for national security and environmental reasons. Recently the world's largest floating solar power plant was inaugurated in Huainan in May. India is not too far behind with the country planning to install 225 GW of renewables by 2022 which will comprise 57% of its electricity generation capacity.

Other forms of energy are increasingly and successfully becoming part of the energy mix such as geothermal energy which is projected to cost only 4.78 cents per kWh in 2020 according to the EIA, and that is lower than a natural gas combined cycle plant.

With a perfect storm of fossil fuel demand destruction and increasingly cheaper alternatives, producers will become ever more aggressive in gaining and keeping market share. The United States will have a technological advantage that will allow it to increase production and export capacity faster and cheaper compared to many producers who will struggle just to maintain current levels of production as their domestic consumption keeps growing.

Astutely, the vanguards of solar energy are some of the major oil producers such as the Kingdom of Saudi Arabia and the United Arab Emirates, with the Emirate of Abu Dhabi holding the current record for the lowest solar electric production cost, at 2.42 cents/kWh in 2016.

Such pragmatic thinking is necessary as their oil consumption keeps increasing to fuel their growing economies. Saudi Arabia today consumes 3.895 million barrels per day, an increase of 4.36% from a year ago as per BP Statistical Review of World Energy Report.

Energy dominance now more than ever, is strategically indispensable for the U.S. as it deals with multiple geopolitical threats such as the adversarial relationship with China and a resurgent Russia that is getting ready create the largest military buildup at the edge of NATO territory when it conducts military drills with 100,000 troops in Belarus this summer. China, on the other hand, is rapidly modernizing its defense industry and projecting its power beyond its immediate vicinity having set up and opened its first ever overseas

military base in Djibouti in September of this year.

Oil and gas comprise over 60% of Russia exports, and make up over 30% of its GDP so naturally the Rubble is highly correlated to the price of oil. As such, the United States no doubt gains leverage from any acquired influence over the global price of oil and gas.

On the other hand, geopolitical tensions around vital maritime choke points, such as the Strait of Hormuz and Bab el-Mandeb, implores the U.S. national security policymakers to push for maximum energy self-sufficiency. That will help free up America's military capacity to focus more on emerging threats with higher priority like the new quest for Africa, North Korea, and the South China Sea.

Another geopolitical dynamic that energy dominance will create is that it will turn market share into a diplomatic token of friendship that can strategically be given-up by some exporters, or offered by importers such as India, in return for closer diplomatic and military ties with the U.S., regardless of the economics of such propositions. Internationally, Lines will be redrawn in the global oil and gas trade. Strategic alliances will need to find new common bonds to remain viable. Military doctrines, strategies and by extension equipment will change accordingly.

Domestically, the U.S. economy will be extremely competitive as it will have access to cheap energy which will have a positive spillover effect on jobs, housing, the stock market, and in turn improve the wealth-effect of households.

One thing is for sure, American energy dominance bears massive implications and potentially drastic consequence for friends and foes alike. Presenting the challenging question that behooves political and business leaders to ask and contemplate; "What are the risks and how can they be mitigated, and what are the opportunities and how can they be capitalized on?"

#### Footnote

<sup>1</sup> Although President Carter said the "Persian Gulf", currently the U.S. and the Arab countries use the term "Arabian Gulf"

