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5 Giant Game Changing Energy Trends

A Guide for Energy Investing

A SPECIAL REPORT BY OILPRICE

Energy investing can feel like building a house of cards.

Even with careful planning and precise moves, everything can come tumbling down.

But that's not the whole story.

The risks are great, but so are the rewards, If ***major trends*** are spotted in time.

In 2010, those in the know could see that fracking was about to transform the upstream oil and gas sector. Investors who bought into the shale revolution had to wait a while to see their bet pay off, but when they won, they won big.

The last ten years have seen massive changes in global energy. The next ten will see even more.

Energy storage could revolutionize renewable energy and allow the world to transition towards a cleaner energy mix, just in time to prevent dramatic climate change.

Geopolitical risk has made the world more unpredictable than ever before, bringing back the risk quotient and causing even more volatility to prices.

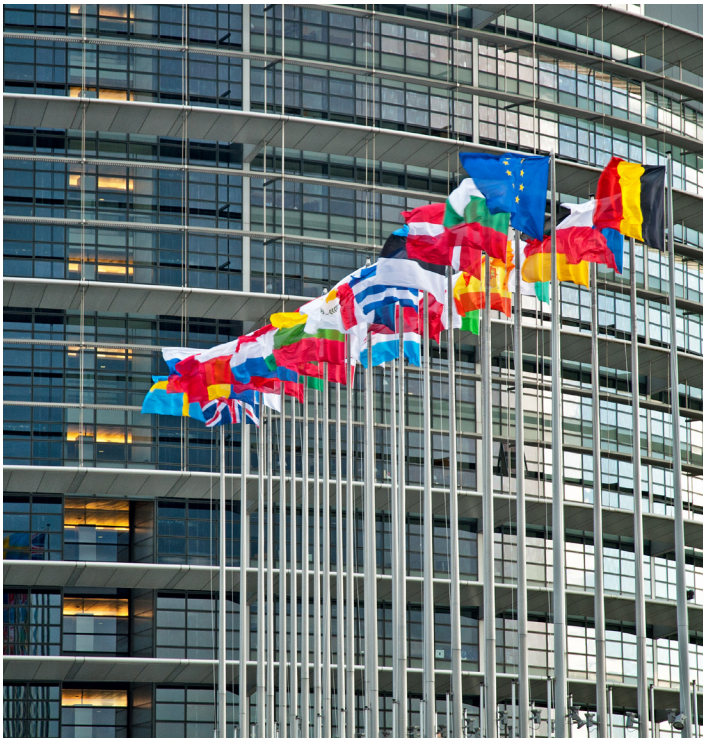
The United States, in the next decade, will become the world's dominant energy producer: No. 1 in both oil and gas production. This shift is a once-in-a-generation change that will affect energy markets worldwide.

A prize firm with all its eggs in one basket can be undone by the slightest change. That's why it pays to diversify, and find long term energy trends to base your investment on.

- **Rising geopolitical risk** could make international oil markets more volatile and encourage more investment closer to home.
- **Energy storage** is becoming more and more important as renewable energy capacity grows, the lithium bubble bursts and the rush for vanadium gets going.
- **Deepwater drilling** is more affordable than ever thanks to improved methods.

- **Natural gas infrastructure** will put a premium on new pipeline construction.
- The market for **liquefied natural gas** is set to see unprecedented growth.

#1 Geopolitical Risk



In a riskier world, volatility is the name of the game.

In 2018, a risk quotient returned to rock oil prices. After a period of relative calm, **oil is poised to become super volatile.**

In Libya and Nigeria, instability and upheaval caused interruptions in exports. **More will come in the next five years,** as both countries struggle with numerous internal challenges.

Venezuela sank deeper into political chaos and economic depression, and its oil **output continued the slow-motion crash** that began in 2015: exports have fallen from 2.9 million bpd to 1.45 million bpd.

New sanctions on Iran went into effect on November 5, and Iranian exports fell rapidly, declining from 2.8 million bpd to 2 million bpd by September. In 2019, Iran's exports **could fall to zero.**

The disappearance and alleged murder of Saudi journalist Jamal Khashoggi brought increased scrutiny of Saudi Arabia, the one country with enough spare capacity to offset the decline in Iranian output. While things may have stabilized, other members of OPEC **may be less willing to follow the Saudi lead.**

On the back of geopolitical risk, prices rose throughout the year, from the low $50s to nearly $80/barrel. Talk was of $100/barrel by January 2019. Now, markets are unsure: prices rose on hopes of a tight market, only to fall when it seemed as if inventories were filling up.

The oil ministers of Russia and Saudi Arabia both see geopolitical risk as just as important as supply fundamentals in affecting price.

Get the picture? Since the price crash of 2014, the world has gotten a lot tougher for oil producers.

And it's about to get even tougher. Here's just a few of the **risk factors coming to disrupt energy markets:**

- Another war in the Persian Gulf, this time pitting the GCC and the U.S. against Iran, which could close the Straits of Hormuz and cut off one-third of the world's oil supply.
- A complete collapse in Venezuela, which could totally shut down oil production and threaten the world's largest oil reserves.
- Ramped-up conflict in Eastern Europe and a showdown between Russia and the EU over Nordstream Two.

Investors can profit from the rising risk quotient by seeking out tried-and-true producers with little international exposure, particularly those based in the United States. Domestic producers will attract more investment and attention from the super-majors, which will turn away from risky bets in favor of safer areas closer to home.

One good pick is **EOG Resources, Inc. (EOG)**, a major player in the Permian Basin. In Q1-Q3 of 2018 EOG realized 13% growth, beating the S&P average of 8.3% and the major energy benchmark SPDR Energy Sector ETF, which was up 3.77%.

Institutional investors have bought up more than 88% of EOG thanks to its diverse holdings and its 20% share of Permian oil. While pipeline constraints have limited growth in the Permian, EOG has been able to shift to its properties in eastern Wyoming at the Powder River Basin. EOG was trading below Chevron and ExxonMobil, two U.S. supermajors that invested heavily in the Permian in 2016-2018, before its steady climb in 2018 from $100.07/share in February to more than $130/share in October. The likelihood of high risk and rising prices will place a premium on its output in 2019.

Other key Permian players are **Pioneer Natural Resources (PXD)**, **Concho Resources Inc. (CXO)** and **Chevron (CVX).**

#2 Energy Storage

One of the biggest trends in energy has been the rise of renewables, particularly solar and wind. But hidden from view has been an even bigger trend: the **battery boom.**

Batteries are needed to make renewable energy flow consistent. As more and more renewable capacity is added, batteries have to be added to handle the extra weight. In 2017 total U.S. energy storage topped 1 GWh for the first time.

Cheaper batteries that can manage flow from distributed energy resources (DER) means that total energy capacity doesn't need to reach peak demand, , which is often much higher than the daily average. According to McKinsey, reliable and cheap battery storage is the missing link between renewable energy generation and reliability.

The total size of the battery storage market will increase from $1.98 billion in 2018 to $8.54 billion in 2023. According to an estimate from GTM Research, total U.S. storage deployment should increase from 1.2 GWh in 2018 to more than 10 GWh by 2023. Investment in battery storage was $440 million in 2017, and will increased to $3.1 billion by 2022 to meet the surge in demand.

The battery boom has just gotten started. Looking ahead, the world's output of batteries will have to increase dramatically in order to support new electricity generation.

To meet climate change challenges and support new renewable infrastructure, battery capacity between 2020 and 2030 will have to quadruple. The UN panel on climate change just put out a report indicating that the world has just twelve years to rein in emissions and save the world from drastic increases in temperature and major changes to the climate. Batteries will be hugely important to meeting those goals.

But so far, very little attention has been paid to the battery market.

This could be the largest energy investment opportunity of the next decade.

Right now, lithium ion batteries dominate the market, accounting for 95% of new storage deployments in 2015. Used in most consumer electronics including cell phones, laptop computers, and electric vehicles (EVs), lithium ion batteries have surged in demand, prompting a lithium mining rush in 2016-2017 that petered out in 2018. High performance lithium stocks such as **FMC Corp (FMC)** and **Sociedad Quimica y Minera (SQM)** stalled in 2018, a sign that stocks of lithium exceeded their value and needed a correction.

Our attention has moved in a different direction: ***vanadium.*** This mineral, Element 23, is used in vanadium redux flow batteries (VRFB), an emerging technology that represents a major improvement on lithium ion. VRFBs can be built at a lower cost and in much larger sizes than the typical lithium ion batteries. China utilized VRFB tech to build the world's largest battery, designed to improve energy efficiency in Dalian province. Vanadium spot prices shot up, due to stronger steel demand (vanadium is used in steel alloys), and the world's supply of vanadium is shrinking. As other commodities, including lithium, cobalt, nickel and copper decline, vanadium is surging upwards.

Vanadium miners like **Largo Resources (TSX:LGO)** and **Ivanhoe Mines (TSX: IVN)** are poised to profit from vanadium's undersupply. Vanadium was included on a list of strategic metals in 2018, and with tariffs on Chinese goods raising the price of lithium batteries, the race will be on in 2019 to secure new sources of vanadium.

#3 Deepwater Drilling

Everyone talks about fracking. But the shale revolution is nearing its end.

The next chapter in energy's history will be written deep, deep under the sea.

Between 2020 and 2030, deepwater drilling will drive new energy production.

Back in 2014, the majors were pouring more than $300 billion into deep water. Investment bottomed out in 2018, falling to $155 billion. But in 2022, this flow of funds is expected to recover past $200 billion, and with cheaper methods of extracting oil, the companies should get a lot more bang for their buck.

Now that prices have recovered, investors are pouring money back into deep water.

New leases opening up in the Gulf of Mexico and higher prices have brought drillers back. Returns from deepwater operations can be immense, once capex costs have been recouped. It used to cost $1 million a day to operate a deepwater well, but now those costs are closer to $400,000. "The most excitement at the moment is from the deepwater," Shell's head of exploration told FT.

Break-evens for major deepwater projects in the Gulf, including Garden Banks, Green Canyon and Ewing Bank, have all declined since 2015, falling under $20 according to RS Energy Group. That compares to breakevens on the shale patch of mid-$60s in Oklahoma, $48-$61 in the Eagle Ford and $37 in the Permian.

BP, the largest Gulf deepwater operator, started up its Thunder Horse Northwest Expansions project four months ahead of schedule, and 15% under budget. The expansion will bring Thunder Horse to 200,000 boe/d.

The attraction from deepwater now that costs have declined is the sheer scale of the discoveries. A well on the shale patch in the Permian Basin will produce 2000 boe/d for a few weeks before falling off. A major find in the Gulf, in contrast, can pump 100,000 boe/d or more for years.

Only the biggest, best-capitalized firms can handle the expense of deepwater. **BP (BP), Chevron (CVX)** and **Shell (RDS.A)** all have large investments in deepwater projects. **Hess Corp (HES)** made one of 2018's biggest discoveries, finding a colossal field offshore of Guyana with partner **ExxonMobil (XOM).** As of late October, Hess and Exxon had discovered nine fields in the Guyana Basin: Liza, Liza Deep, Payara, Snoek, Turbot, Ranger, Pacora, and Longtail. Recoverable barrels could be as high as 4 billion. Five floating project and storage operations (FPSO) should produce 750,000 boe/d by 2025.

Hess has a market cap of $18.77 billion, which puts it well below other deepwater operators. Its diverse revenue stream (with assets offshore and in the Bakken, where Hess has 554,000 acres and produced 110,000 boe/d) and strong dividend (1.64% yield) makes it an attractive choice for deepwater investors. It rose from $50 to $74 during 2018, pricing it under its Guyana partner ExxonMobil. Plans to expand Bakken production to more than 140,000 boe/d are matched by the high hopes of the Guyana field, which makes Hess a prime stock to watch in the deepwater sector.

#4 Natural Gas Production: In Search of a Market

Gas consumption is rising. The natural gas sector is growing three times faster than oil, and according to the BP Energy Outlook 2040, will rise at least 1% globally until 2050.

But market watchers hoping for a spike in domestic gas prices will have to wait: enormous gains in natural gas production inside the United States should keep prices down, though export markets give producers reason to keep pumping more.

Within the domestic United States record gas demand in winter 2018-2019 will be met by domestic production, which is set to to exceed 30 trillion cubic feet in 2019. Natural gas prices have stuck at around $3/million BTU, and the supply-demand balance inside the U.S. will likely keep domestic prices from climbing much higher.

The real growth opportunity lies in natural gas exports: the U.S. became a net exporter of natural gas in 2017. In the next decade, it will surpass every other nation and become the world's largest natural gas producer.

That's the biggest energy shift in a generation.

Future growth will come from LNG and from pipeline exports to Mexico, where U.S. exports have carved out a market.

Natural gas exports to Mexico rose from 333 trillion cubic feet in 2010 to 1,500 trillion cubic feet in 2017, according to EIA data. While growth slowed in 2018 due to lack of pipeline capacity, additions on both sides of the U.S.-Mexico border should allow exports to increase in 2019-2020.

Over the next decade, stable gas prices inside the United States, thanks to abundant supply, will encourage more investment into export facilities, particularly pipelines.

Even with stable prices, companies sending gas south of the border should enjoy expanding capacity and growing demand, as Mexico adds more gas-fired electricity plants amidst declining domestic gas

production. Pipelines will mean less LNG imports, which are more expensive for Mexico than cross-border imports, and will leave US LNG supply free to tap more profitable markets in East Asia, where spot prices are higher.

Inside the United States, expanding production has hit bottlenecks due to a lack of pipeline infrastructure. Together with the need for more U.S.-Mexico pipeline capacity, the companies who will most benefit are those engaged in natural gas infrastructure, particularly firms like **Kinder Morgan (KMI)** and **TransCanada (TRP).**

Kinder Morgan has two long-haul natural gas pipelines planned for the Permian (Gulf Coast Express and Permian Highway Pipeline), part of a planned $4 billion investment in natural gas infrastructure. The company announced Q3 net income available for dividend distribution at $693 million, up from $334 million in Q3 2017, and continues to fund growth capital from operating cash flow.

But we're watching **Antero Midstream GP (AMGP)**. This $3.2 billion market cap company plans to acquire Antero Midstream Partners, including shares of Antero Resources (AR), to form a simplified corporation, Antero Midstream Corp. Once combined, the new firm will possess the upstream assets of Antero Resources Inc. (AR) in the Marcellus and Utica shale fields, where annual growth has averaged 20%. The midstream firm expects to invest $2.7 billion over the next five years to support gas production from existing natural gas facilities.

#5 Liquefied Natural Gas Exports

As global demand for natural gas increases, the biggest story could be the movement of liquefied natural gas (LNG) from American drillers to international consumers.

It's how the U.S. plan for "energy dominance" will truly take off.

In 2016, Sabine Pass became the first major export terminal for liquefied natural gas (LNG) in the United States. Since then, the United States has approved twelve new LNG projects, with a combined export capacity of nearly 15 billion cubic feet per day (bcfd).

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The International Energy Agency expects the global natural gas market to increase by 45% by 2040. Investment into this energy sector has been strong, and in the next decade it will get even stronger.

While U.S. companies face stiff competition in the LNG market, geopolitics will work to their advantage.

Russia, a major natural gas exporter, faces on-going sanctions and could lose market share in Europe, where governments have become more wary of Russian influence. Lithuania and Poland each completed LNG import terminals (in 2014 and 2016, respectively), and in October German Chancellor Angela Merkel announced that a long-delayed LNG import terminal finally has its funding.

Qatar, another major LNG producer, faces an economic blockade led by regional rival Saudi Arabia. Even in the face of competition, U.S. producers will have ample opportunity to seize part of the expanding LNG market, which is expected to tighten by 2024.

Fears that U.S. LNG will get shut out of the China market due to new tariffs will be offset by strong import demand in Europe, South America, non-Chinese Asian markets like South Korea and Japan, and, surprisingly, the Middle East, where Turkey, Kuwait, Jordan and Egypt are all emerging customers of US LNG.

The LNG heavy-hitter on the US scene is **Cheniere Energy (LNG)** which owns the Sabine Pass export terminal. The company has a market cap of $15 billion and hit a three-year high in September 2018 after a positive analysis by Morgan Stanley. Cheniere received approval to add refrigeration at Train 5 of the Sabine Pass facility and Train 1 of the company's Corpus Christi property. Cheniere's performance should be strong thanks to its long-term contracts in China, which it can maintain despite rising US-Chinese tariffs. CNPC (China National Petroleum Corp) has agreed to buy 0.16 bcfd from Cheniere through 2043.

But we also like **Sempra Energy (SRE**), which is nearing completion of a new LNG facility at Port Arthur. The facility is set to be completed on January 31, 2019 and will be a major step forward for Sempra, a San Diego-based energy services holding company. From Port Arthur, Sempra will be able to export 11 million tons per year (mtpa) starting from 2023. The $31 billion company rose 15.34% above its June 06, 2018 market low and is up 8.41% YTD as of October 20, 2018. Sempra has a long-term agreement with Polish Oil & Gas Company (PGNiG) for delivery of 2.7 billion cubic meters per year (bcm) starting in 2023.