



Special Edition
Concenture Corner
Energy



August
2024

Energizing the Future: Primers and Projections for Energy Use

With this month's Concenture Corner, we're doing a deep dive into the Energy Sector, with a focus on finding the potential pinnacles amid the pitfalls. As we have reported throughout the year, it's a sector with a bright future – but one that still needs to overcome many challenges, both near- and long-term.

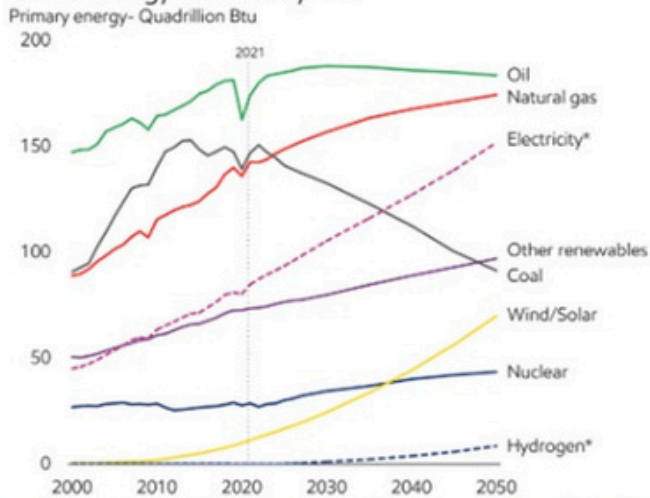
Executive Summary

Global energy is a dynamic force constantly being shaped by innovative technologies, geopolitical tensions, and the ever-growing need for more power. The energy sector offers many investment opportunities, from traditional fossil fuels to renewable options. In this month's report, we explore and offer insights into the significant role of energy. While we anticipate fossil fuels will continue to dominate the field for the foreseeable future, natural gas will emerge as a feasible bridge fuel, with liquefied natural gas (LNG) playing a crucial role in U.S. energy independence. Geopolitics and legislation will both continue to significantly influence energy consumption. Many nations will continue to seek energy independence, emphasizing the importance of investments and advancements in defining a resilient energy future. Significant events, such as the oil shortage of the 1970s, marked the importance of energy resources and nations' energy supply chains. Despite the growing awareness and support for more sustainable energy sources, fossil fuels maintain a large share of the global energy mix due to their established financial advantages.

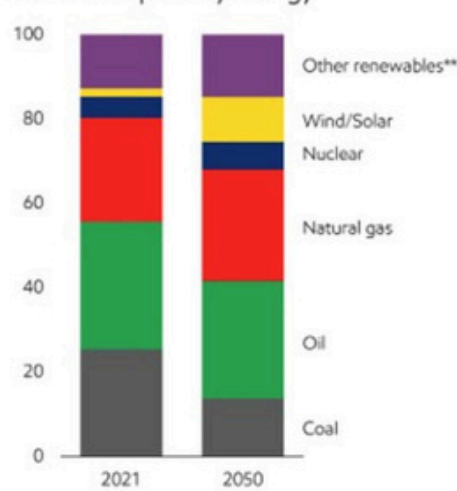
Oil Is Expected To Remain The Dominant Energy Source Out To 2050

With Electricity & Wind/Solar Growing The Fastest From 2030-2050

Global energy demand by fuel



Percent of primary energy



* Electricity and Hydrogen are secondary energies derived from the primary energies shown

**includes biomass, biofuels, hydropower, geothermal

Source: ExxonMobil Energy Demand January 8, 2024

The Lifeblood of Our World

The energy we demand – to grow industries, to travel, and to enjoy life more fully – affects our global environmental outlook as well as the political and economic elements of our lives. Green energy is constantly discussed in the news, but its realistic implementation continues to challenge government, business and society. Organizations such as the International Energy Agency (IEA) propose roadmaps to significantly reduce carbon emissions, but these 'best laid plans' are often prohibitively expensive and sometimes even unrealistic. On top of that, the IEA expects traditional fossil fuel energy companies to still play a leadership role no matter the direction of energy production. Why? Because these companies have decades of research and development in the energy space – invaluable information and expertise that can reshape energy and its consumption.

Clean Power Devours Minerals

Clean energies are typically defined as renewable or natural resources with low greenhouse gas emissions. Alternatives like wind, solar power, and geothermal require far more mineral inputs and a much larger geographic footprint than fossil fuel-based facilities. The IEA highlights the significant difference in mineral requirements between renewable energy technologies and conventional energy sources. A typical electric car, for example, requires six times more mineral inputs than a conventional vehicle. Similarly, an onshore wind power plant needs nine times more mineral resources than a gas-fired power plant. Generating the same amount of energy from offshore wind as from natural gas demands over twelve times the quantity of critical metals and minerals, such as copper. Demand growth can be seen in companies like Southern Copper Corporation (SCCO) at near 5-year highs. While crucial for reducing greenhouse gas emissions, clean energy solutions face countless challenges as sustainable energy sources. (International Energy Agency, The Role of Critical Minerals in Clean Energy Transitions, 6.)

Southern Copper (SCCO)

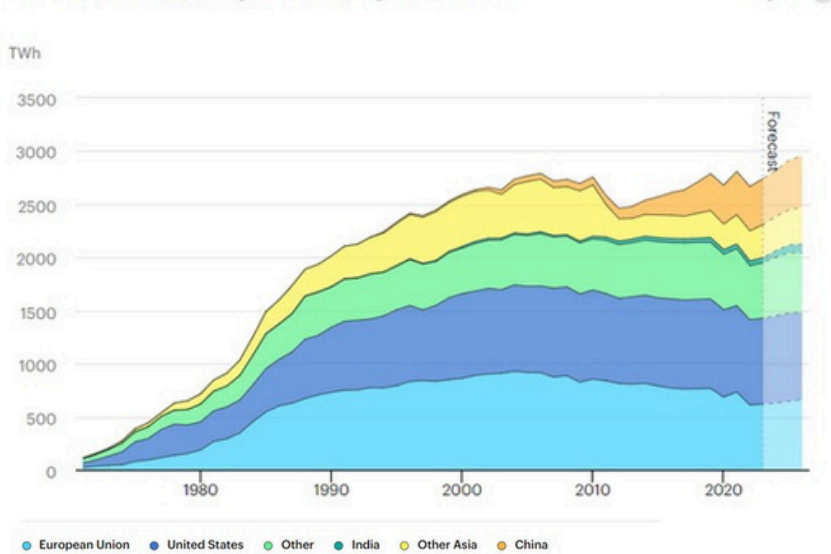


Source: StockCharts.com August 9, 2024

Nuclear Energy: Heating Up For A Comeback?

Nuclear power produces an abundant amount of energy, yet its place in the global energy mix is debated. With no greenhouse gas emissions, nuclear power can play a beneficial role in reducing the reliance on fossil fuels. According to the IEA, "The rapid growth of renewables, supported by rising nuclear generation, is set to displace global coal-fired generation, which is forecast to fall by an average of 1.7% annually through 2026." Nuclear generation is forecast by the IEA to exceed previous records by 2025.

Evolution of nuclear power generation by region, 1972-2026



Source: IEA, Electricity 2024 Analysis and Forecast to 2026

France has been a global leader in the use of nuclear energy as an alternative source, getting 93% of its electricity from nuclear power, according to Michael Schellenberger, an energy researcher and author. However, concerns over safety, radioactive waste disposal, and high initial costs have restricted its widespread use in other countries. During Schellenberger's 2019 TEDTalk "Why Renewables Can't Save The Planet," he references a statistic claiming that if Germany, a country that opposed nuclear energy, "had spent...[the] 580 billion euros on nuclear energy that they did on renewables, 100% of their energy could be covered for electricity and transportation." In the past, many countries, including the U.S., did in fact rely on nuclear power. But following the 1979 Three-Mile Island incident in Pennsylvania and the subsequent suspension of policies incentivizing nuclear power, U.S. uranium production fell 80% between 1980 and 1990. The cycle from discovery to uranium production can take 15 to 20 years using expensive infrastructure. Today Kazakhstan and Canada have the largest uranium reserves, but the difference between the two supplies is disparate. In 2019, Kazakhstan produced 22,808 metric tonnes of uranium, more than the next three largest producers combined: Canada, Australia, and Namibia. Canada's largest publicly traded uranium stock is Cameco (CCJ), a Canadian mining and uranium-producing company. Companies such as OpenAI and Microsoft have also made independent investments in nuclear power to support their data center demands. In March 2024, Amazon paid \$650 million for the rights to electricity from an existing nuclear power plant in Pennsylvania. We believe that the future of nuclear energy depends heavily on innovation in engineering and technology, as well as regulators – but also on public acceptance.

Uranium Price Chart

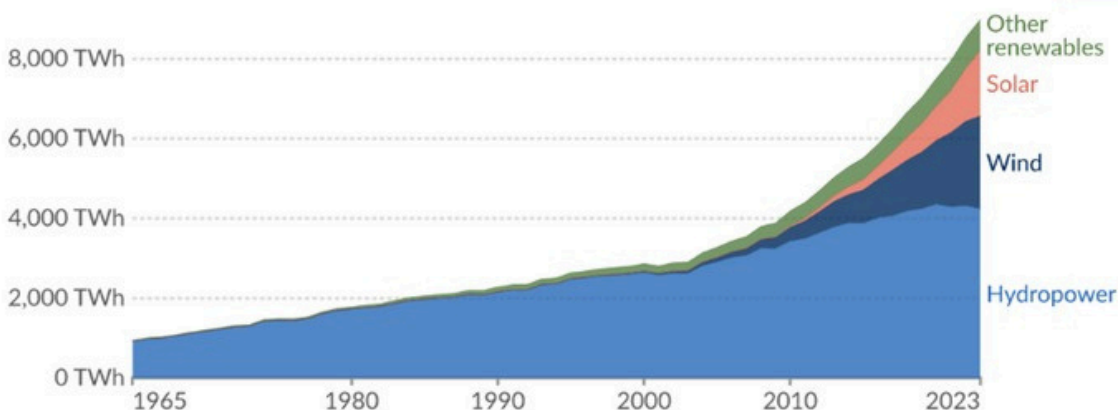
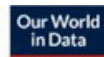


Cameco (CCJ)



Source: StockCharts.com 8/9/2024

Renewable electricity generation, World



Source: Statista, Review of World Energy, 2024

Renewables On The Rise

Renewable energy sources such as solar, wind, and hydroelectric power have grown rapidly, marking a significant shift towards sustainable energy sources with the goal of reducing greenhouse gas emissions. ExxonMobil's (XOM) global energy outlook states, "Renewables and nuclear see strong growth, contributing around 70% of incremental energy supplies to meet demand growth."

Companies Leading the Revolution

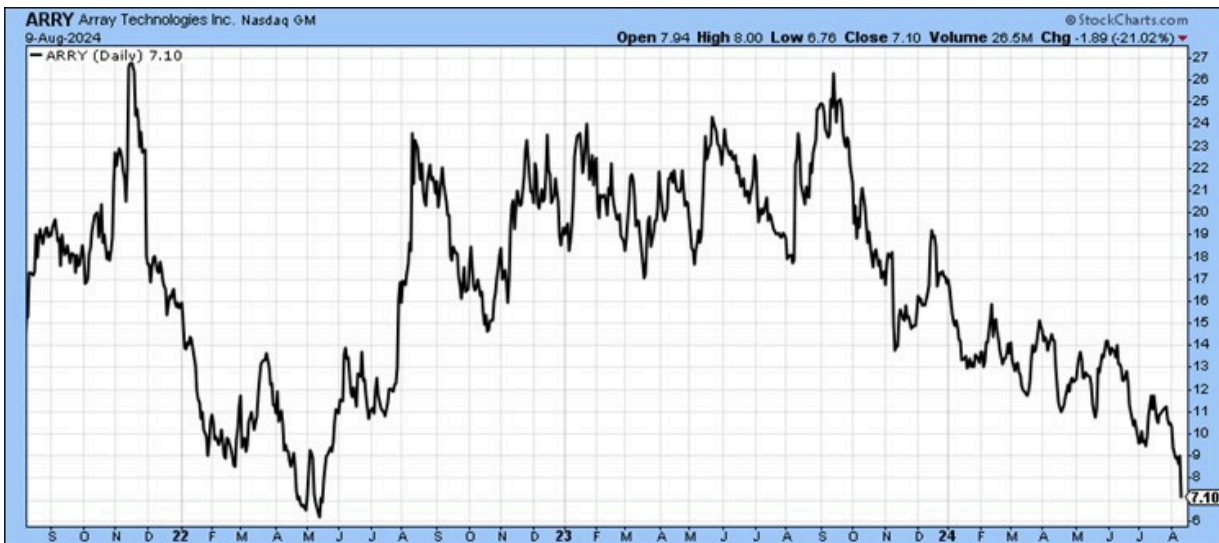
According to Bloomberg, some estimates project an expansion of over 300% in wind and solar capacity between 2020 and 2035. NextEra Energy (NEE), one of the world's largest solar and wind energy producers, is just one example of a company well-positioned if these projections are correct. NEE has produced a total return of more than 225% over the last ten years. NextEra Energy was recently identified as a company that would benefit greatly from a Democrat being elected president this year, according to Strategas. Array Tech (ARRY), a solar-focused company, and Arcosa (ACA), an energy infrastructure construction company, are two more potential beneficiaries. For those seeking general market exposure to clean energy, BlackRock offers the iShares Global Clean Energy ETF (ICLN) – but buyer beware: due to relatively high costs and difficulties with regulations and adoption, ICLN has produced negative returns since its 2008 launch.

NextEra Energy (NEE)



Source: StockCharts.com 8/9/2024

Array Tech (ARRY)



Source: StockCharts.com 8/9/2024

Arcosa (ACA)



Source: StockCharts.com 8/9/2024

iShares Global Clean Energy ETF (ICLN)



Source: StockCharts.com 8/9/2024

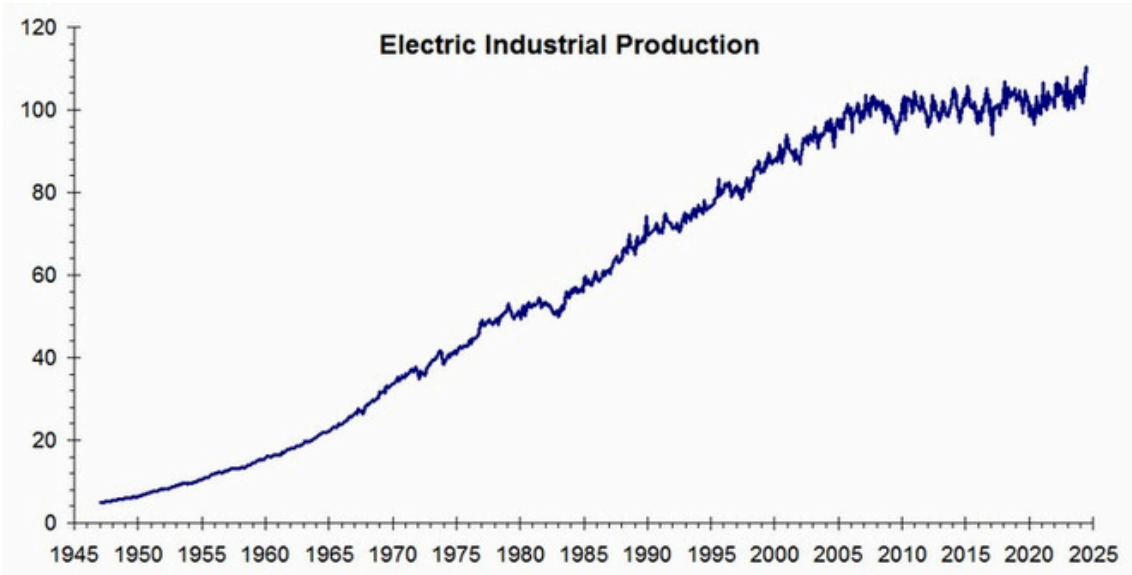
Renewables' Roadblocks

While renewables can offer advantages, including abundant natural resources and reduced environmental impact, one pessimistic long-term problem is waste produced by these alternative sources – for example, old solar panels. Solar panels typically have a useful life of about 25-30 years. But, after this period, the materials used in the panels present an often-overlooked challenge. Some economists worry that the waste byproducts from these panels might be shipped to less developed nations that may lack the resources to manage the waste effectively, leaving them to bear the environmental burden of more developed countries. Other challenges such as volatility in power generation (e.g., solar and wind variability) and the lack of storage capacity also present critical hurdles. Technological advancements and innovative grid technologies are expected to improve the reliability and scalability of renewable energies in the coming decades.

Electricity Demand Grows – First Time In 20 Years!

The demand for electricity is seeing growth for the first time in decades. According to the IEA, global electricity demand grew in 2023 but is on track to grow even faster through 2026. Electricity grew by 2.2% in 2023 worldwide; in 2022, China itself grew even faster at 2.4%. By 2026, projections look closer to 3.4% annually worldwide. The IEA also indicates that data centers, AI, and cryptocurrency energy consumption could double in this timeframe. The electricity demand levels from data centers alone would be roughly the same as Japan's current electricity consumption. The demand growth for electricity is in ratios similar to developing economies consuming more fossil fuels. The IEA said, "85% of additional electricity demand through 2026 is set to come from outside advanced economies."

Electricity Production Rising For The First Time In Nearly 20 Years



Source: Federal Reserve Board, Sanctuary Wealth, August 12, 2024

Electricity is produced and consumed on demand. Emphasis in the past several years has been on renewable power in Europe and the U.S., but renewable power, such as solar and wind, is not up to the task of producing sufficient electricity for AI, let alone electric vehicles and blockchain mining for digital currencies and blockchain transaction records. This challenge requires the manufacture of new equipment: generators, transformers, and miles and miles of transmission lines, all of which require enormous amounts of copper. Such equipment companies represent buying opportunities, especially during any market pullbacks, in our view. Electricity plants require fuel, and natural gas is a good solution since it can be relatively easily installed, and gas-fed plants can be brought up to production quickly. But coal remains a stable source of electricity not only in the U.S. but globally. CNBC has reported that idled nuclear plants may be recalled to production to meet growing electric power demand.

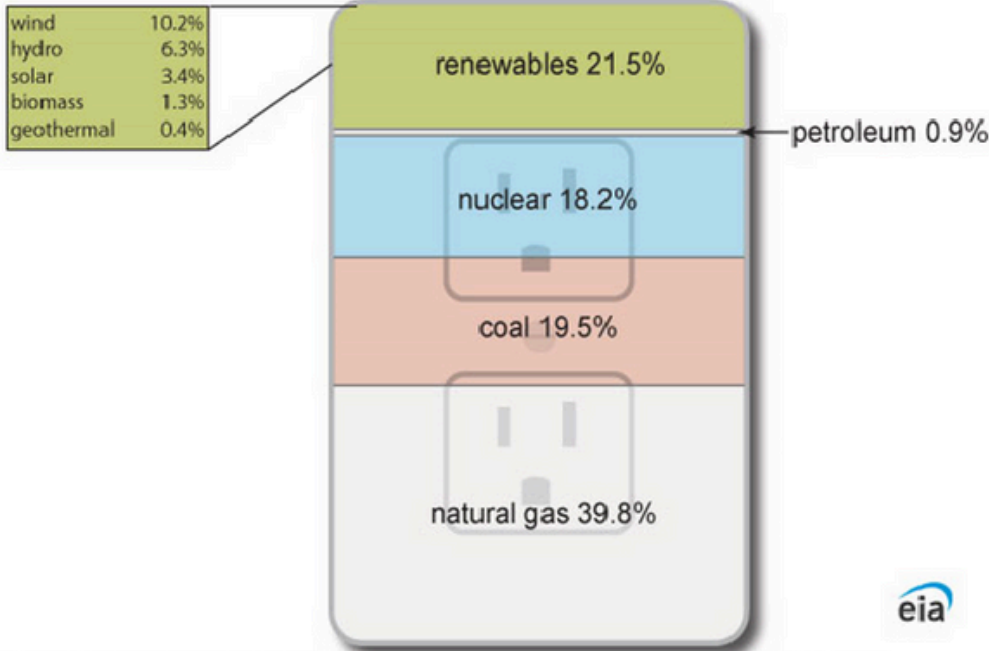
First Trust Clean Edge Smart Grid Infrastructure ETF (GRID)



Source: StockCharts.com, August 12, 2024

Sources of U.S. electricity generation, 2022

Total = 4.24 trillion kilowatthours

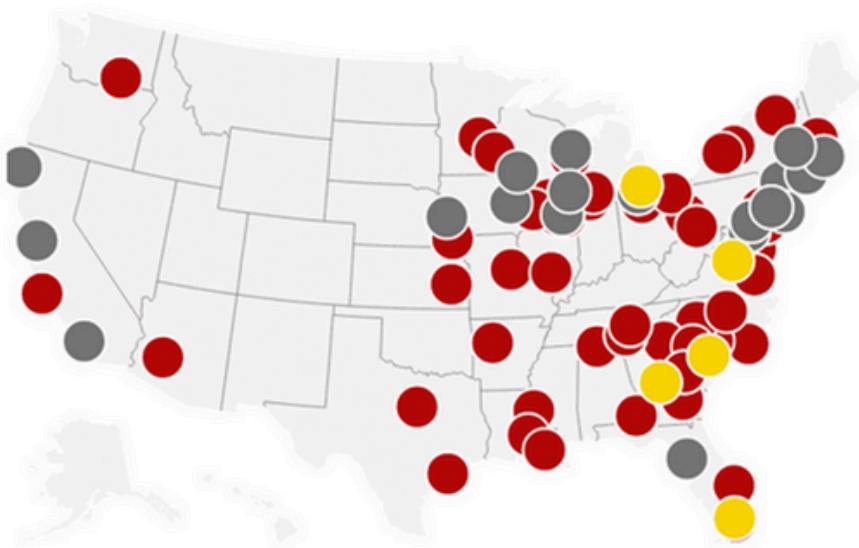


Data source: U.S. Energy Information Administration, *Electric Power Monthly*, February 2023, preliminary data
Note: Includes generation from power plants with at least 1,000 kilowatts of electric generation capacity (utility-scale). Hydro is conventional hydroelectric. Petroleum includes petroleum liquids, petroleum coke, other gases, hydroelectric pumped storage, and other sources.

Source: Energy Information Agency, retrieved May 1, 2024

U.S. nuclear power plants

- Active
- Scheduled to be decommissioned
- Possible future plant



Source: United States Nuclear Regulatory Commission. Data as of October 2021.



Source: CNBC.com, retrieved April 29, 2024

Blockchain Deserves More Attention

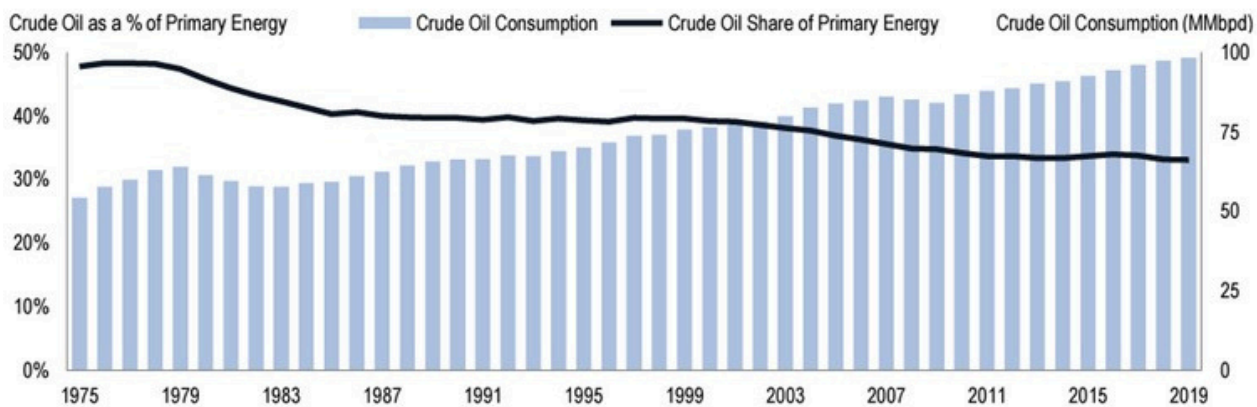
When we talk about electricity, we can't afford to overlook blockchain. We believe blockchain is likely to become the preferred means of recording securities transactions, real estate transactions, wills, estates, and most other legal and financial transactions worldwide. This is, in our view, a booming industry in and of itself, a technological leap. Distributed blockchain requires extreme amounts of power to create. It is estimated that in 2022, blockchain calculations for bitcoin consumed more electric power than the entire nation of Austria. Blockchain applications will only expand going forward, consuming even more electricity. Global electric power demands are likely to explode, particularly as China, India, and Africa begin to adopt blockchain along with artificial intelligence.

Fossil Fuels: Domination And Degradation

According to the IEA, fossil fuels dominate global energy production despite increasing emphasis on renewable energy, providing 84.3% of primary energy consumption as of 2019. According to estimates from Goldman Sachs' recent energy research, crude oil may still see demand growth of over 6% from 2019 to 2030, driven primarily by growth in the developing world. Companies such as ExxonMobil (XOM), Chevron (CVX), Shell (SHEL), and BP (BP) face significant global political backlash for their energy dominance. In 2023, ExxonMobil outperformed the S&P 500, while Shell, Marathon (MPC), BP, and Chevron all underperformed. In addition, these firms face stock price pullbacks after large-scale industrial accidents, such as BP's 2022 Ohio refinery explosion. The extraction, processing, and combustion of fossil fuels contribute significantly to greenhouse gas emissions and environmental degradation, leading to negative perceptions of companies by environmental groups.

Crude Realities: The Continued Demand for Fossil Fuels Amidst Renewables

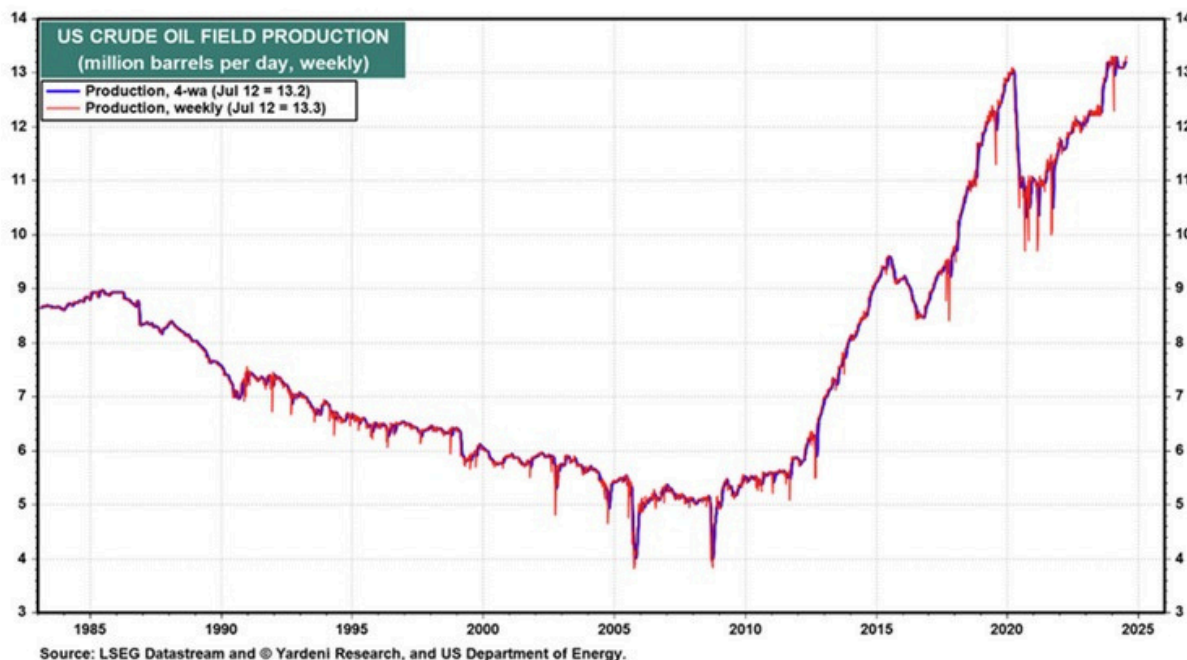
Exhibit 2: Crude Oil Share as a % of Primary Energy and Absolute Crude Oil Demand Over Time (1975-2019)



Sources: BP Energy Outlook 2020 Edition and BP Statistical Review of World Energy 2020 69th Edition.

Source: Goldman Sachs A Primer on the Energy Transition from Fossil Fuels to Alternative Energy, October 2021

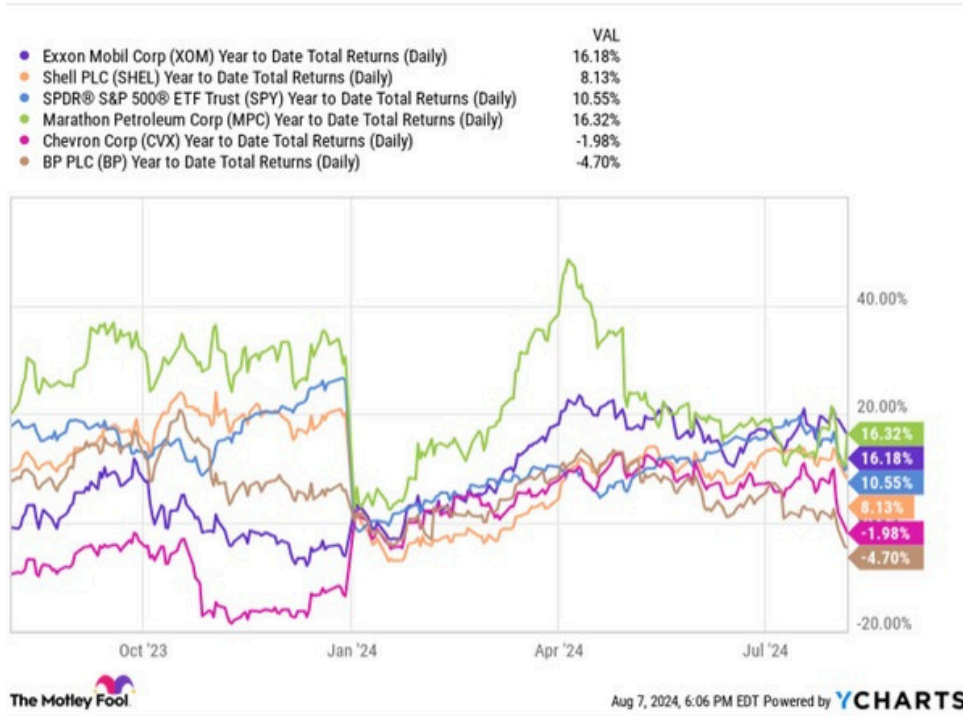
The U.S. Crude Oil Production Surge: A Visual Analysis



Source: LSEG Datastream and © Yardeni Research, and US Department of Energy.

Source: Yardeni Research Weekly Briefing July 2024

YTD Total Returns (Daily) Of Major Fossil Fuels Companies Compared To SPY

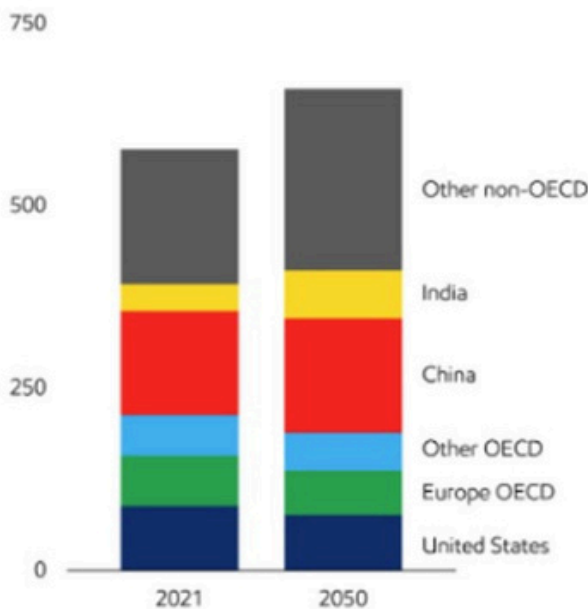


Crude Oil Consumption & Global Economic Disparities

Significant players in fossil fuels are scattered around the globe, making this energy source forever intertwined with geopolitical elements. For example, in 2019, the IEA stated that the U.S., Saudi Arabia, and Russia accounted for 42% of the global crude oil production. As noted in BP's Statistical Review of World Energy, there is a strong correlation of energy demand to economic activities. Fossil fuel usage has historically been and continues to be an indicator of economic growth. For example, in 2019, crude oil consumption per barrel per capita was 21.6 in the U.S., versus only 3.7 in China, 1.4 in India, and 1.1 on average for African countries. European crude oil consumption varies greatly depending on the nation. On average, countries in Western Europe, such as Spain, Netherlands as well as England, report much higher consumption than countries in Eastern Europe, including Poland, Ukraine and Romania. However, even Western European countries in general have not consumed as much crude oil as the U.S. According to the European Commission, Europe still consumes primarily oil and petroleum products, followed by natural gas and then renewables and biofuels.

Developing countries lead energy demand

Primary energy – Quadrillion Btu



Source: ExxonMobil Energy Demand January 8, 2024

Can Natural Gas Get Us To A Cleaner Future?

According to Statista, the U.S. is the world largest natural gas consumer, consuming almost 900 billion cubic meters of gas in 2023. Importantly though, the U.S. is also one of the largest producers of natural gas in the world. According to the U.S. Energy Information Administration (EIA), Texas is the U.S.' largest gas consuming state, consuming over 15% of the country's gas demand, followed by California, consuming close to 7%.

Natural gas is a crucial energy resource that is extensively transported across the globe, playing a vital role in various sectors, including industry and electric power generation. While projections indicate continued growth in natural gas demand, it is uncertain whether it will surpass oil on a global scale. However, in countries with more aggressive environmental policies, there is a strong likelihood that natural gas could overtake oil as a primary energy source, particularly due to its lower carbon emissions and growing infrastructure.

Liquefied natural gas (LNG) is natural gas that is cooled to -260 degrees Fahrenheit to liquefy it, reducing its volume 600 times. This size reduction makes it feasible to transport LNG in ships and trucks. Regasification is one of the most expensive elements in the LNG process, costing upwards of \$10 billion or more for each regasification center.

When natural gas is liquefied, it shrinks more than 600 times in volume.



When liquefied, natural gas that would fill a beach ball...



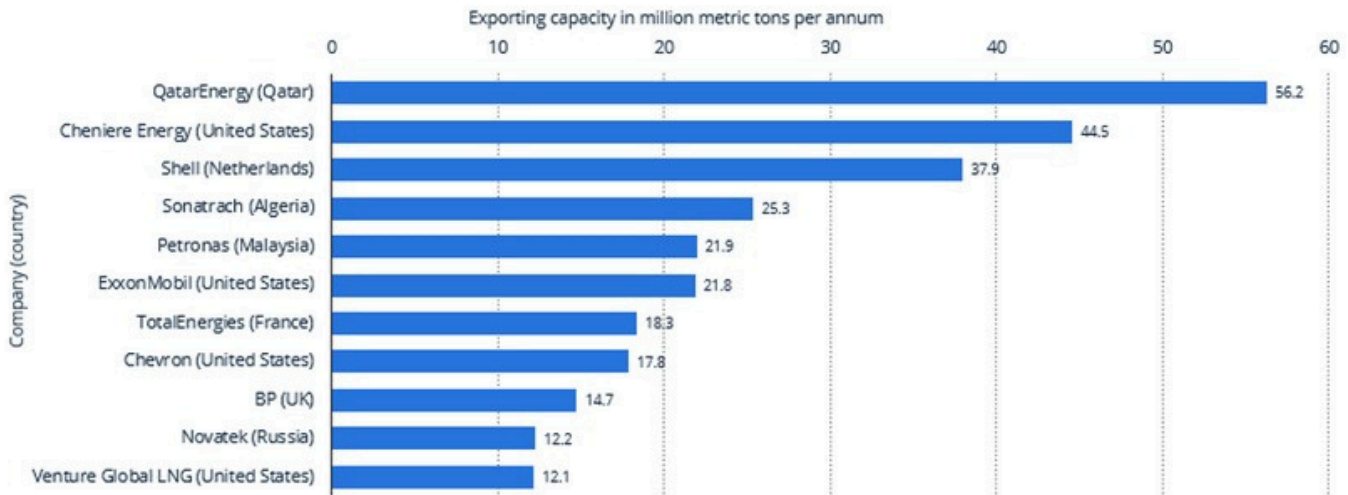
...becomes LNG that can fit inside a ping-pong ball.

Source: Department of Energy Liquefied Natural Gas April 2013

Historically, the U.S. was an importer of LNG, second only to Japan in the number of regasification facilities. Expanding LNG production in the U.S. would help the country achieve energy independence. Currently, around 1.0% of U.S. natural gas demands are met through LNG imports. That 1.0% mainly comes from cheaper trade imports or short-term contracts. According to the EIA, "The U.S. has historically been a net importer of natural gas by pipeline... with shipments of LNG ...playing an important role in serving pipeline capacity-constrained... However, the increase in U.S. natural gas production, spurred by the shale revolution, has reduced the need for imports and enabled greater exports." LNG exports have risen four times since 2016. Natural gas is increasingly essential in the global consumption of energy.

Leading liquefied natural gas exporting companies worldwide by operational storage capacity as of 2023 (in million metric tons per annum)

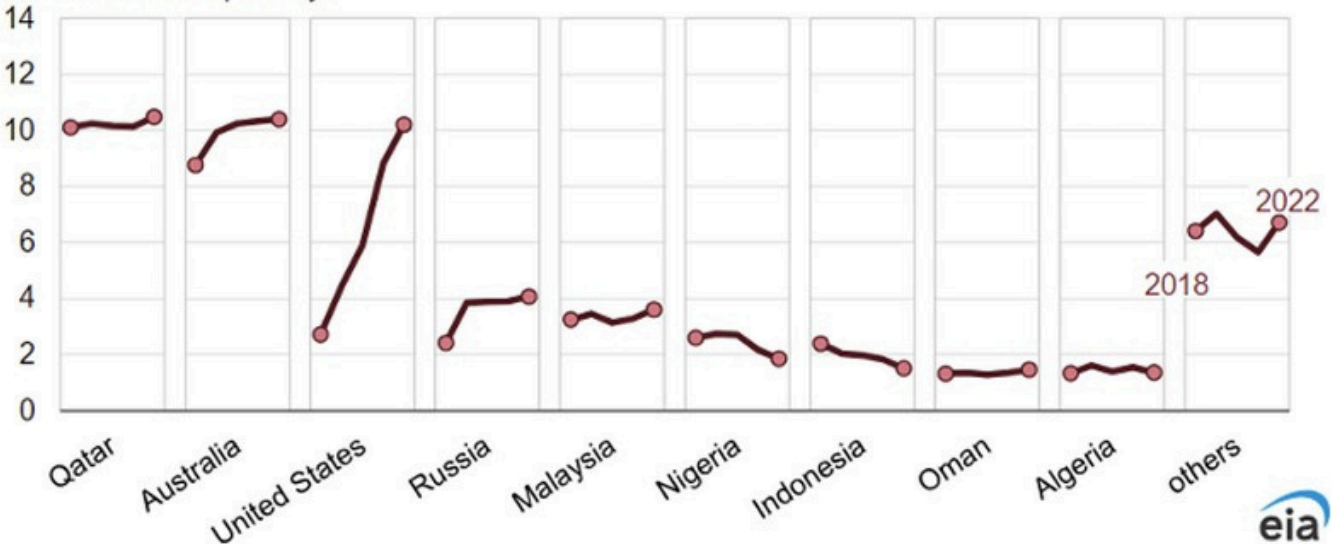
Annual exporting capacity of largest global LNG companies 2023



Source: Statista, LNG Overview 2024 Edition

Annual liquefied natural gas exports from exporting countries (2018–2022)

billion cubic feet per day



Source: Kinder Morgan, U.S Liquefied Natural Gas: Opportunity Becoming Reality Jan 2024

According to the EIA, on a per unit basis, coal may emit 30% more CO₂ than gasoline and about twice as much CO₂ as natural gas, so much so that EIA states that coal is responsible for over 40% of energy-related CO₂ emissions. Most estimates do not project significant demand for coal; according to ExxonMobil, coal usage in most scenarios declines heavily. Electricity producers are moving towards other alternatives, such as natural gas. People often refer to natural gas as a “bridge fuel,” a fuel that will power society with the least environmental cost while we work on cleaner reliable alternatives. Growth in natural gas has been pushed forward by developments allowing for horizontal drilling and discoveries of natural gas reserves in the eastern U.S. Shale gas is natural gas found trapped within shale formations. Modern technology has allowed producers to tap into previously inaccessible shale gas, and production from tight formations will account for greater than 92% of U.S. Natural Gas Production by 2050. The future of fossil fuels hinges on technological advancements, regulatory policies, and market dynamics.

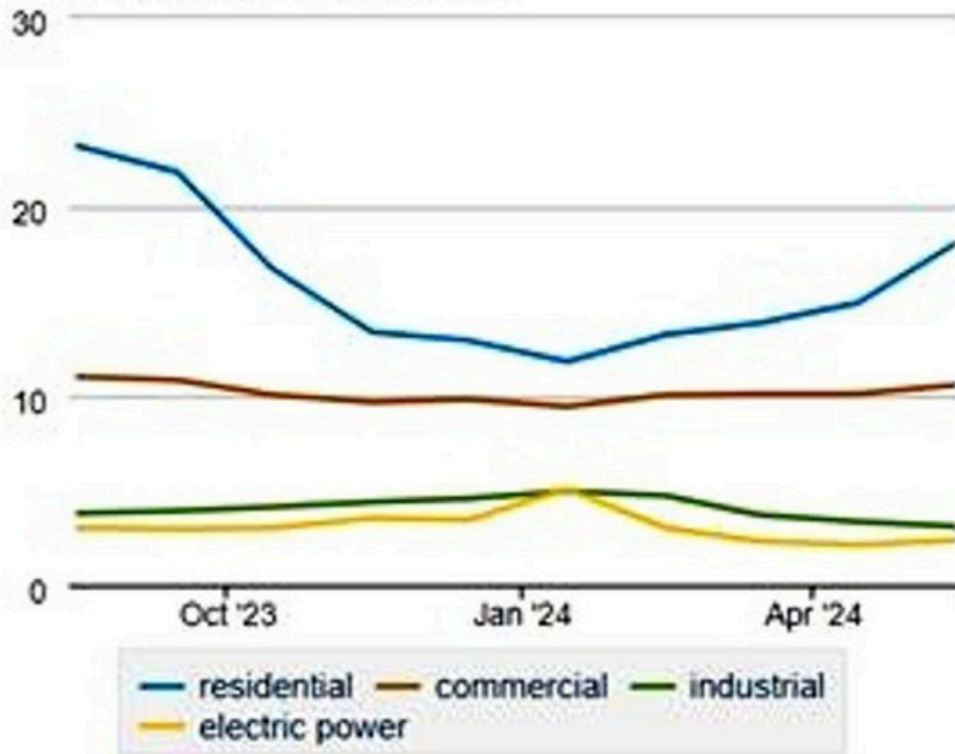
ETFs With Exposure To Natural Gas

Symbol	ETF Name
UNG	US Natural Gas Fund LP
BOIL	ProShares Ultra Bloomberg Natural Gas
KOLD	ProShares UltraShort Bloomberg Natural Gas
UNL	US 12 Month Natural Gas Fund LP
USAI	Pacer American Energy Independence ETF
LNGZ	Range Global LNG Ecosystem Index ETF
GPOW	GS North American Pipelines & Power Equity ETF

Source: VettaFi Commodity ETF List: Natural Gas ETFs, August 13, 2024

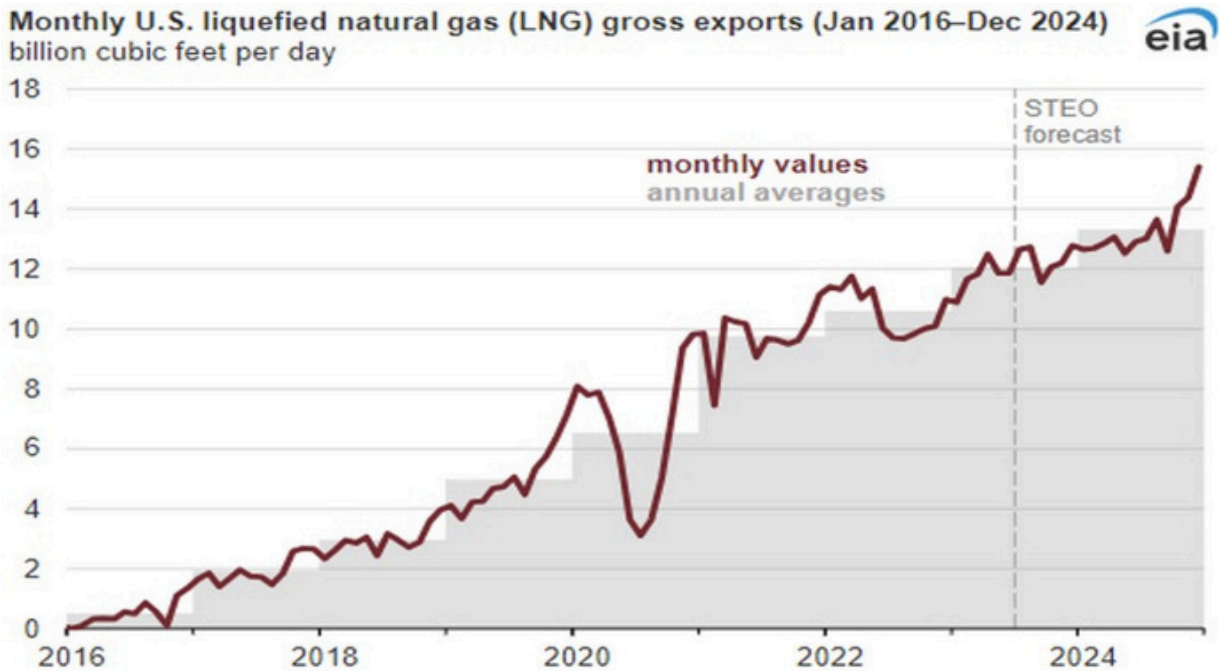
U.S. average consumer price of natural gas

dollars per thousand cubic feet



Source: U.S. Energy Information Administration

Source: Energy Information Admin Natural Gas Monthly July 2024



Source: U.S. Energy Information Admin July 2023

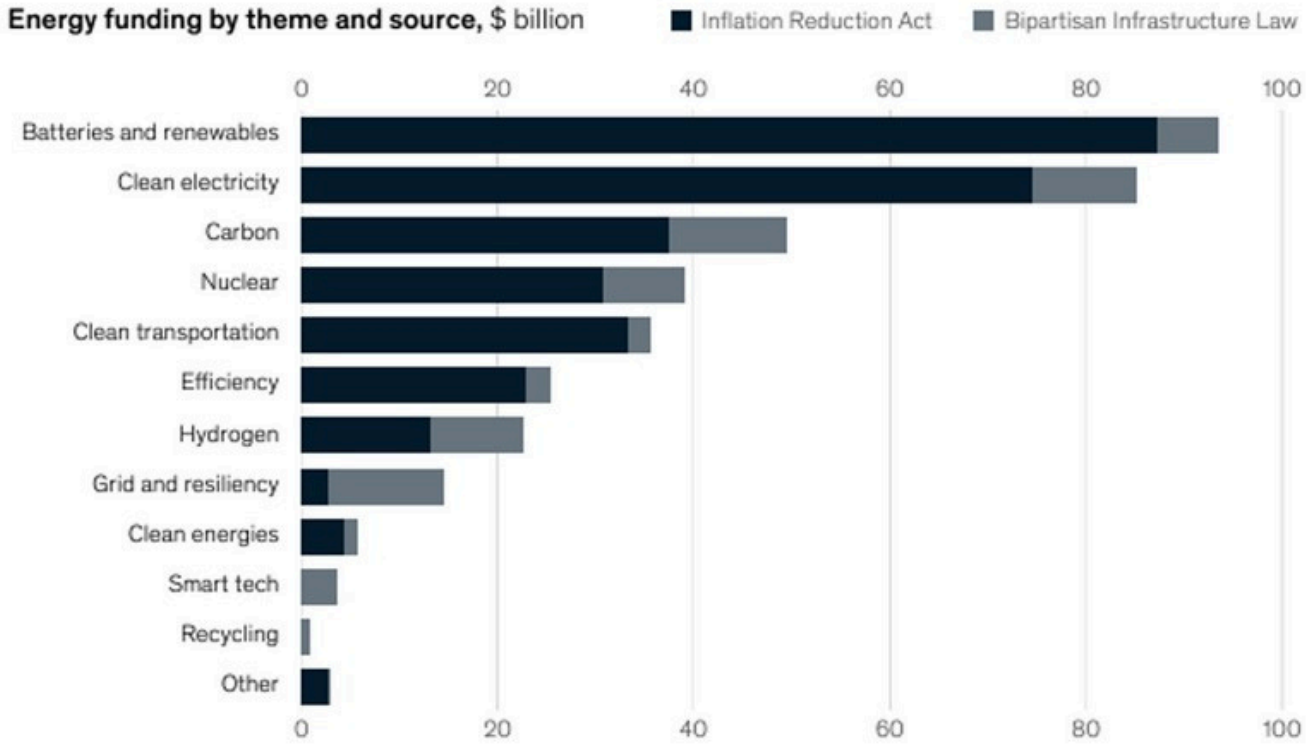
Energy & Global Geopolitics

Energy resources, particularly oil and natural gas reserves, have historically been a critical source of geopolitical leverage and conflict worldwide. These resources significantly influence international relations and economic stability. Geopolitical tensions, such as those in the Middle East and Eastern Europe, play a crucial role in shaping the strategic importance of energy security and diversification as well as international agreements such as the Paris Agreement on climate change.

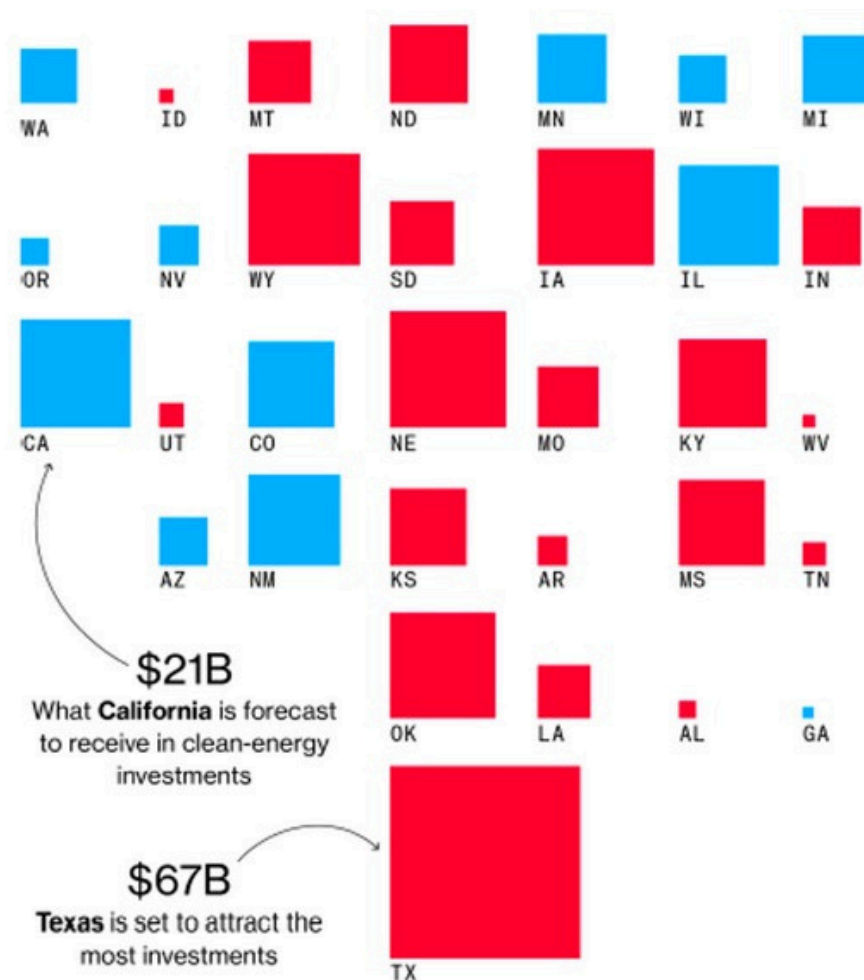
Inflation Reduction Act Powers Up U.S. Energy

The U.S. Inflation Reduction Act under the Biden Administration appropriated approximately \$370 billion for energy security and diversification, making it the most significant expenditure the U.S. has made on climate investment. This Act gives similar principle investments as those in the bipartisan Infrastructure Bill. Two of the main points of both pieces of legislation are achieving energy independence and reshoring manufacturing, especially in semiconductor development and batteries. The largest appropriation in the Inflation Reduction Act funds battery manufacturing and other renewable energy resources, some \$80 billion before any appropriations from the Infrastructure Bill. Other significant expenditures include clean electricity production, carbon capture technologies, and nuclear power. It is expected that even if a Republican Administration is elected in November, much of this bill will stand because it will positively impact many Republican "red" states. According to a recent Bloomberg report, "Red States to Reap the Biggest Rewards from Bidens Climate," if Harris is elected, she is expected to follow the Biden Administration's energy policies. Texas is scheduled to receive or attract \$67 billion from the U.S. Inflation Reduction Act, the most of any state. Nebraska, Kansas, and Oklahoma are three of the states that have prominent projected appropriation figures as well.

Energy Funding From The Bipartisan Infrastructure Law And The Inflation Reduction Act Spans Major Funding Themes And Totals \$370 Billion.



Source: McKinsey & Company, The Inflation Reduction Act, October 2022



Source: Bloomberg April 2023

Election Fuel: Political Parties Diverge On LNG Expansion

The winner of this year's Presidential election may very well determine the future of LNG exports. President Biden has paused any new long-term expansion projects for exports – a pause that may continue under Harris, should she be elected. On the flipside, former President Trump fully supports LNG exports. Political researcher Dan Clifton from Strategas has predicted that if the Republican Party returns to the White House with a Trump victory, natural gas companies like Cheniere Energy (LNG), ONEOK (OKE), and Kinder Morgan (KMI) may benefit – along with Peabody Energy (BTU) and Phillips 66 (PSX), two companies in the coal industry.

Cheniere Energy (LNG)



Source: StockCharts.com 8/9/2024

ONEOK (OKE)



Source: StockCharts.com 8/9/2024

Kinder Morgan (KMI)



Source: StockCharts.com 8/9/2024

Peabody Energy (BTU)



Source: StockCharts.com 8/9/2024

Phillips 66 (PSX)



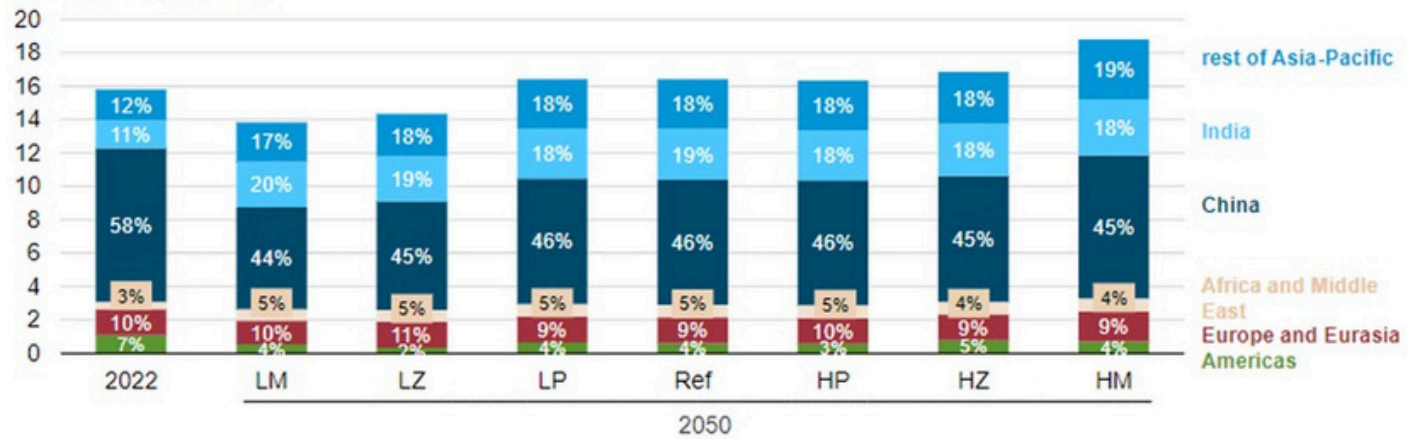
Source: StockCharts.com 8/9/2024

The Growing Energy Needs Of An Urbanizing World

Figure 9

CO₂ emissions from coal use by region

billion metric tons CO₂

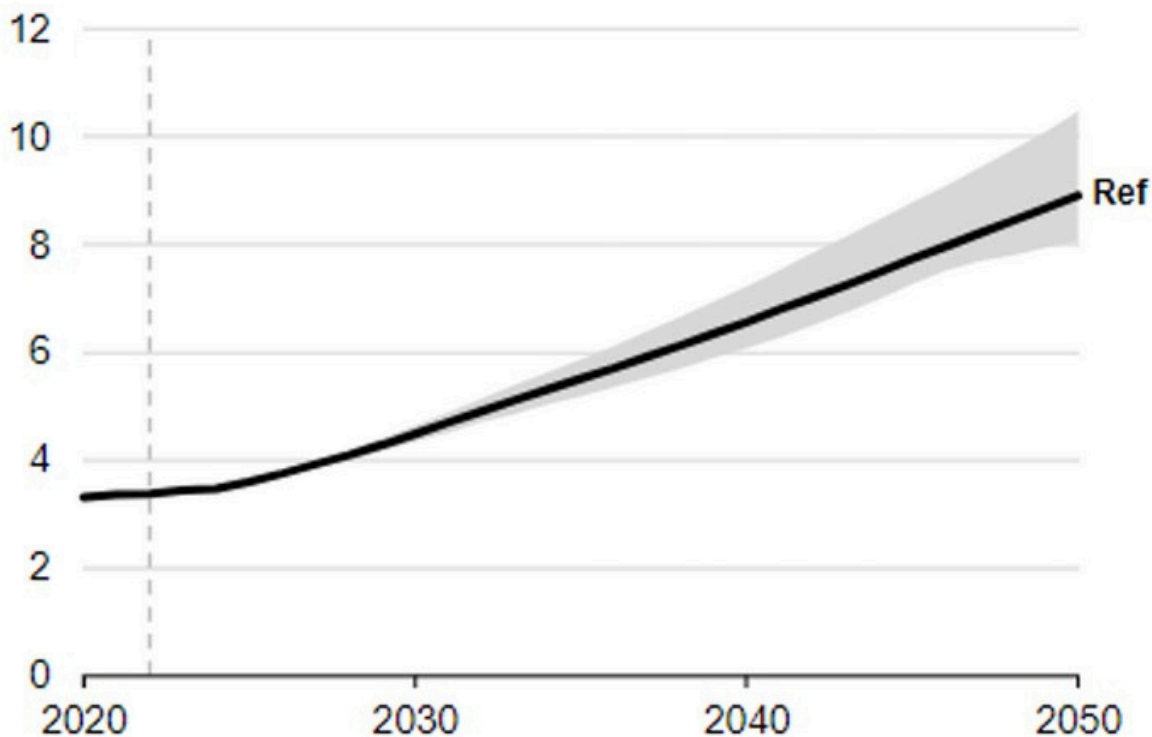


Source: US Energy Information Admin, International Energy Outlook October 2023

How energy demand is met depends on our policymakers. Population growth, urbanization, and industrialization are all factors that drive increases in energy consumption. Economies such as Brazil, India, and Mexico are experiencing rapid energy consumption growth. Long-term investment in these emerging economies might be wise, in our view. As a demonstration of the disparity in energy consumption between different nations worldwide, BP notes that, as of 2018, 10% of the world's population did not have access to electricity and that 45% of the world's population lived in countries with limited electricity access. Nations like India, Brazil, and Mexico also use a different energy mix from that of more developed nations. While economies like the U.S. and Western Europe move away from coal, India's coal consumption is expected to increase. Countries like India and China are expected to be large CO₂ emitters for years to come.

Iron and steel industry coal demand, India

quads



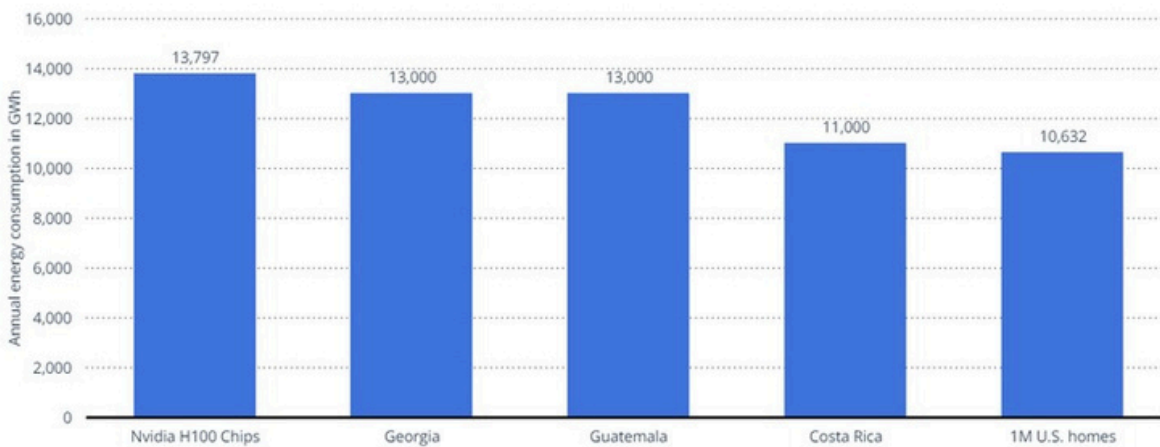
Source: US Energy Information Admin, International Energy Outlook October 2023

Modern Tech Is Sparking Energy Demand

How energy demand is met depends on our policymakers. Population growth, urbanization, and industrialization are all factors that drive increases in energy consumption. Economies such as Brazil, India, and Mexico are experiencing rapid energy consumption growth. Long-term investment in these emerging economies might be wise, in our view. As a demonstration of the disparity in energy consumption between different nations worldwide, BP notes that, as of 2018, 10% of the world's population did not have access to electricity and that 45% of the world's population lived in countries with limited electricity access. Nations like India, Brazil, and Mexico also use a different energy mix from that of more developed nations. While economies like the U.S. and Western Europe move away from coal, India's coal consumption is expected to increase. Countries like India and China are expected to be large CO2 emitters for years to come.

Nvidia's high end H100 microchips will consume the energy of a small nation in 2024

Energy consumption of Nvidia's high end microchips in 2024

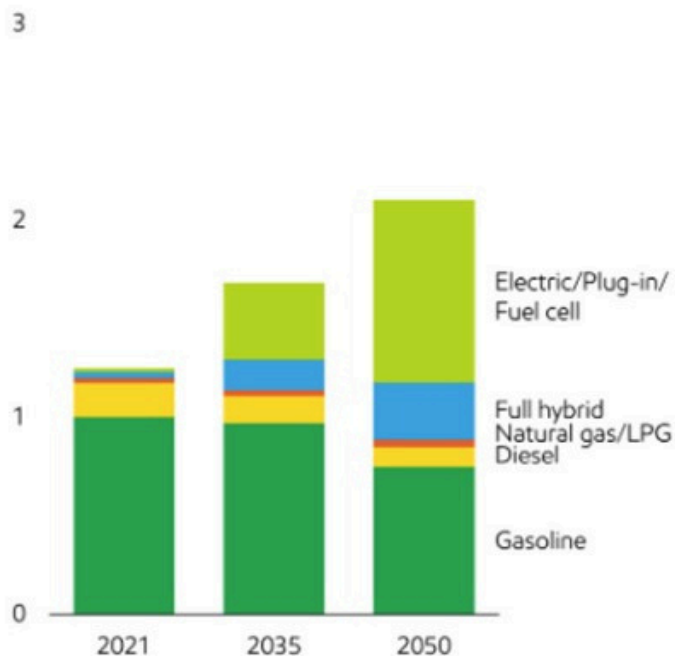


Source: Statista, Nvidia Report 2024

According to ExxonMobil's annual energy outlook, passenger vehicles, general transportation, and travel are expected to increase along with middle-class and urban growth. Goldman Sachs projects an estimated 30% growth in global energy transportation needs between 2021 and 2050. Battery electric vehicles (BEVs) are poised to grow from a little less than 1.0% of cars globally in 2020 to 9.0% by the end of 2030 as that fleet grows from 7 million to 135 million vehicles.

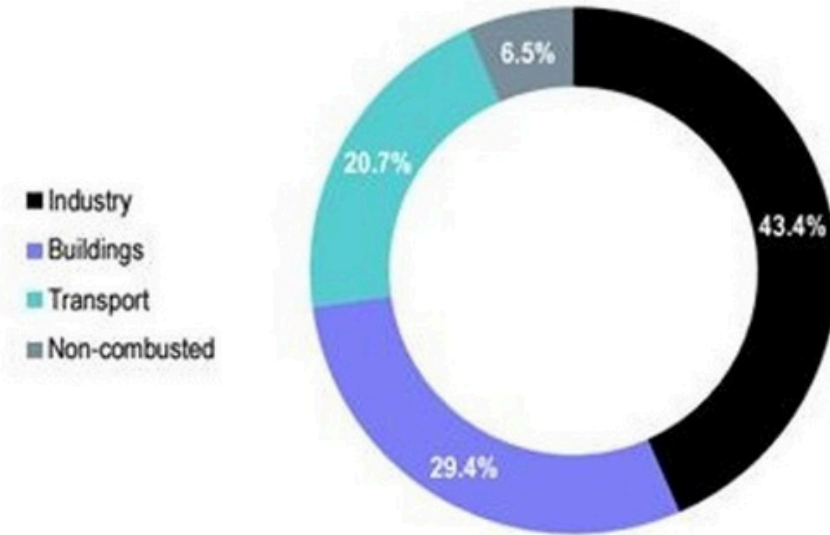
Light-duty fleet by type

EVs take market share – Billion fleet vehicles



Source: ExxonMobil Energy Demand January 8, 2024

Exhibit 6: Global Primary Energy Consumption by End-Use Sector



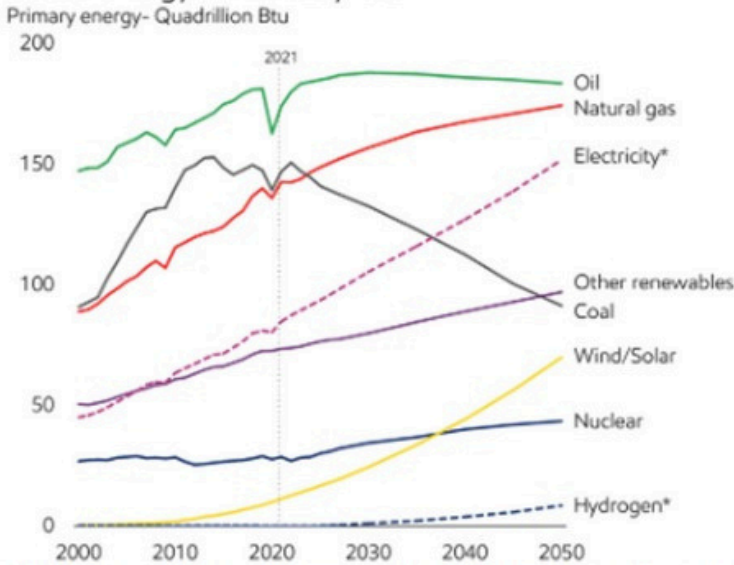
Source: BP Energy Outlook 2020 Edition. Data as of 2019.

Source: Goldman Sachs A Primer on the Energy Transition from Fossil Fuels to Alternative Energy, October 2021

From a more holistic viewpoint, there is also a demand for materials that are heavily involved in the energy sector. The IEA estimates that, relative to 2020 levels, demand in 2040 will rise by 42 times for lithium, 25 times for graphite, 21 times for cobalt, 19 times for nickel, and 7 times for rare earth metals. Correctly positioning client portfolios requires a holistic view of where different industries will be projected, not only on the tech stocks but also on the materials, mining, and utilities that will power those technologies.

A Constant Demand for Energy Across the Globe

Global energy demand by fuel

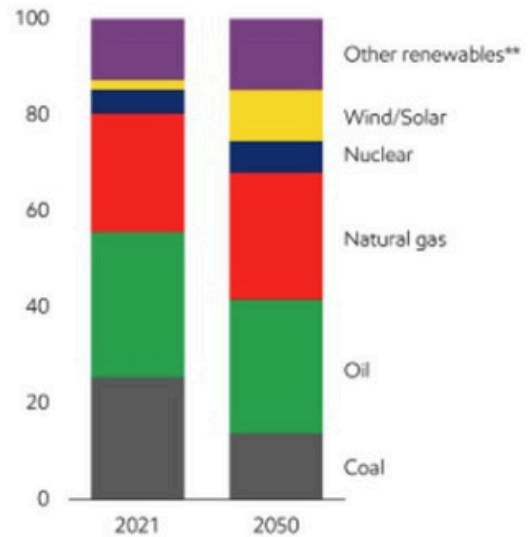


* Electricity and Hydrogen are secondary energies derived from the primary energies shown

**includes biomass, biofuels, hydropower, geothermal

Source: ExxonMobil Energy Demand January 8, 2024

Percent of primary energy

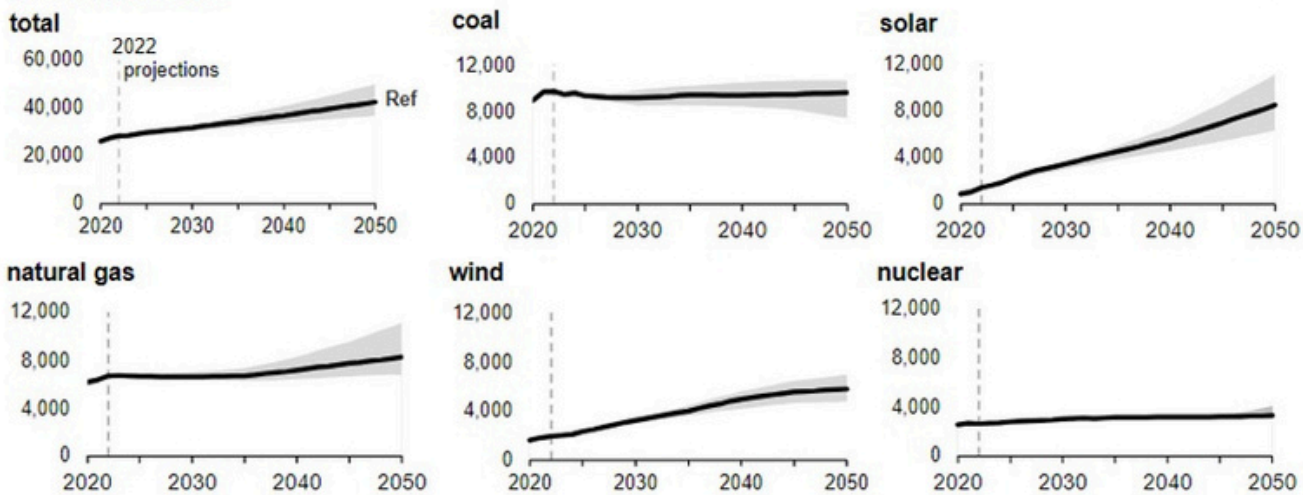


Key takeaways:

- Diverse investment options exist in our equity markets, from fossil fuels to renewables.
- While fossil fuels remain dominant, natural gas is likely a bridge fuel. Renewable energy, such as solar and wind energy, is in demand and growing, but not a replacement.
- Keep your eye on nuclear energy – this source of energy has the potential to grow, but it presents both potential and challenges.
- The demand for crude oil and coal remains significant, especially in developing markets.
- Liquefied natural gas' (LNG) role in energy independence is growing. U.S. LNG exports are at near all-time highs.
- The future of LNG exports depends heavily on the outcome of this fall's presidential election, and if Trump wins, natural gas companies could win as well.
- Technology innovations like artificial intelligence (AI), data centers, and electric vehicles are all increasing electricity energy demand.

Figure 24

Electricity generation by fuel, world
billion kilowatthours



Source: US Energy Information Admin, International Energy Outlook October 2023

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Last Words

One thing is for sure: We need energy resources to power almost everything we do and want to do in the future. Not all energy resources are created equal, nor are their investment counterparts. Investing in energy means understanding the long-term demand needs and where our energy resources will be coming from. Energy is highly political, particularly given the geographic location and concentration of oil. When investing in the Energy sector, it's crucial to understand the geopolitical elements and environmental issues that touch every energy source.

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