Foresight: The world needs energy

> "Energy security is not just about keeping the lights on; it's about ensuring economic stability and national security."
>
> FATIH BIROL, EXECUTIVE DIRECTOR OF THE INTERNATIONAL ENERGY AGENCY (IEA)

The world is grappling with the dual challenges of energy security and sustainable generation. Global energy demand continues to grow, driven by population growth, emerging market development, electrification and industrialisation. The U.S. Energy Information Administration estimates energy use will increase approximately 50% by 2050, compared to 2020 levels. The world needs more energy.

Policy makers are focused on securing sufficient, reliable, cleaner and affordable energy. Since the start of the 2021 energy crisis, governments globally have allocated circa US$900 billion to short-term energy affordability measures, according to the IEA. Governments have also committed over US$1 trillion to clean energy investments since 2020.

Despite increased growth in clean energy, global demand for traditional energy sources continues to rise. We expect oil and gas to remain important in the global energy mix – specifically, natural gas is expected to grow as it displaces coal.

In recognition of Earth Day 2025, themed *"our power, our planet"*, this Foresight article highlights the significant role of strategic investment by traditional energy companies, together with the development of innovative technologies to secure energy supply now and in the future.

At Mutual Trust, clients can take advantage of this thematic through a range of direct and indirect portfolio exposures across the energy supply chain. These include exposure to traditional energy companies *transitioning* elements of their business (e.g. carbon capture), businesses *enabling* the transition (e.g. critical minerals and components) and *leading* companies reshaping the future of energy production.

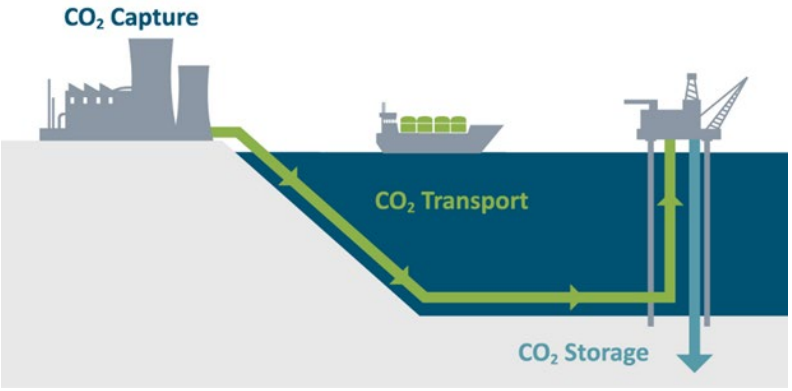
Transitioning	Enabling	Leading
OXY Occidental	Freeport-McMoRan	Sundrive
ExxonMobil	MGA Thermal	Siemens Energy

Traditional companies transitioning through strategic investment

Traditional energy companies remain essential in the global supply of reliable and resilient energy. Oil and gas producers are looking to the future and pursuing various investment opportunities in lower-emission businesses, such as carbon capture, biofuels and hydrogen.

Traditional energy companies investing in carbon capture

U.S. listed energy companies **Occidental Petroleum (OXY)** and **Exxon Mobil Corporation (XOM)** are pioneering solutions to capture, transport and store carbon dioxide (CO_2) – a process is known as carbon capture, utilisation and storage (CCUS). CCUS involves capturing CO_2 that would otherwise have been released into the atmosphere and injecting it deep underground, effectively reducing greenhouse emissions in the atmosphere.



High carbon emitting companies are willing to pay for the capture and storage of their emissions as they aim to achieve their emissions reduction targets. This provides potential future revenue streams for OXY and XOM, which have announced offtake agreements with several corporate customers – including CF Industries, Calpine Corporation, Linde, Airbus, Amazon and AT&T – highlighting the demand for this technology.

In April 2025, OXY entered into an offtake agreement with CF Industries for the sequestration of approximately two million metric tons of CO_2 per year (equivalent to taking approximately 500,000 cars off the road).

Enabling the transition: minerals, storage and critical components

Critical minerals enabling the transition

Minerals and natural elements are needed to build, enhance and electrify energy infrastructure. Copper is critical in the energy supply chain, being one of the best conductors of electricity, maximising efficiency in the transmission and distribution of electricity.

Demand for copper is anticipated to rise significantly between now and 2035, driven by the energy transition. This is expected to result in a supply shortage over the medium term (please refer to Wealth matters – of critical importance to read more). Companies including **Freeport-McMoRan Inc (FCX), Rio Tinto Group (RIO) and BHP Group Ltd (BHP)** are well positioned to benefit from their exposure to copper over the long-term.

As the world's largest copper producer, FCX is an industry leader in finding innovative ways to improve the efficiency and sustainability of copper extraction and production. In January 2025, FCX received final approval for a federal grant of US$80 million to help tap clean geothermal heat to increase copper production at its Arizona sites and to upgrade its existing electrical grid in the region. By integrating geothermal energy into mining operations, FCX aims to enhance its sustainability metrics, improve its long-term energy resilience and reliability and potentially lower costs.

The storage of energy – battery technology

The storage of energy is a critical challenge in the future of power. Storage is needed to address the intermittency issues related to renewables, however battery technology is still in its nascent stages and presents its own drawbacks.

New South Wales-based start-up company **MGA Thermal** is developing innovative thermal energy storage solutions. MGA blocks can store intermittent renewable energy (such as solar) as heat for up to 48 hours in a brick-like material. The blocks are heated using renewable energy, then the stored heat is converted back into electricity using a turbine. Unlike traditional energy storage (batteries), MGA Thermal's technology can simultaneously charge and discharge, enabling a continuous 24/7 discharge of stored renewable energy. These blocks can also be stacked on top of each other, making the storage technology scalable.

Critical components of the energy supply chain

Critical components are required for energy to be reliably transmitted and distributed.

Prysmian Group, headquartered in Milan, is a global leader in the production of cables for the distribution of power to residential, commercial and industrial facilities. It also provides state-of-the-art solutions for high voltage underground and submarine cable links, which are crucial for connecting offshore wind farms and other renewable energy projects.

There are also companies, such as Nasdaq-listed **Shoal Technologies**, which provide combiner boxes, junction boxes, wiring and cable assemblies that are essential for connecting solar panels to inverters and to the grid.

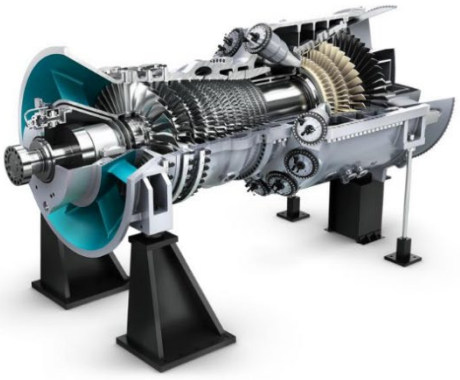
Leading the transition: shaping the future of energy

Gas – the reliable backbone of a sustainable energy system.

While the future of energy requires continued innovation, traditional sources such as gas will remain a crucial source of reliability. Specifically, demand for natural gas is expected to grow as it displaces coal in the energy supply mix by being a cleaner alternative.

Countries in Southeast Asia are investing heavily in gas infrastructure. **Woodside Energy Limited's** CEO, Meg O'Neill, recently pointed out that if just 20 per cent of Asia's coal-fired power stations switched to gas, it would reduce carbon emissions by an estimated 680 million tonnes a year. That's more than one and a half times Australia's total annual net greenhouse gas emissions.

Siemens Energy AG, a global leader in energy technology, built the world's most powerful gas turbine station in North Carolina. This facility is designed to provide reliable and efficient gas-fired power to complement the intermittent nature of solar energy being produced by **Duke Energy Corporation** (largest supplier of solar energy in the U.S.), therefore ensuring a stable energy supply.



Duke Energy Lincoln Combustion Turbine Station equipped with the new heavy-duty gas turbine from Siemens Energy; Kai Kadau, simulation expert at Siemens Energy in North Carolina, with rotor disks.

In 2022, this gas turbine earned two Guinness World Record titles: the most powerful simple-cycle gas power plant and the world's fastest ramp-up rate by a 60 Hz gas turbine power plant.

Domestically, privately owned Denison Gas is involved in the exploration and production of gas. The company is focused on the Eastern Australian gas market, primarily operating in the Denison Trough in Queensland. The company is also committed to sustainability and decarbonisation and has projects involving hydrogen production and carbon capture partnerships with leading research institutes and industry partners.

Innovation in renewables and their components

The focus on renewable energy is not new. Interest in generating electricity from solar or wind can be traced back to the 1970's oil crisis. Since then, the world has made significant technological leaps in the efficiency of generating electricity from natural sources.

SunDrive is an early-stage solar technology company based in Sydney, Australia. Starting as a PhD project in a garage, SunDrive is now fabricating the world's most efficient silicon solar cells. Their unique solutions reduce the cost of high-efficiency solar cells, whilst enhancing performance and sustainability by using more abundant materials such as copper instead of silver.

Mutual Trust invests across the energy supply chain

The world needs energy, which presents unique investment opportunities for long-term investors.

> "Energy is the lifeblood of modern society. Without it, our world would come to a standstill."
>
> ALBERT EINSTEIN

At Mutual Trust, our portfolios incorporate a range of investment exposures across the energy supply chain, in both public and private markets. We believe it is important to look beyond only renewables or traditional energy producers to companies that are supplying the components, minerals and innovative technology required throughout the energy mix – including those involved in the connection, transmission, storage and decarbonisation of energy.

Many of the companies highlighted throughout this article are accessible directly or indirectly through our range of investment solutions, spanning major asset classes including early-stage venture capital, private credit, listed equities or infrastructure opportunities.

Please call or email your Mutual Trust Advisor if you have any questions or for more details regarding Mutual Trust's investment approach.

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