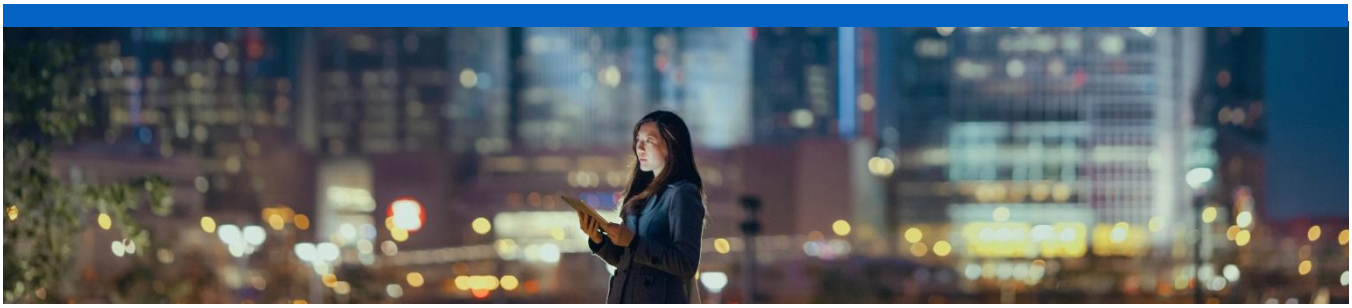

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Sustainable Investment Strategy

Shifting to a more sustainable world: Energy

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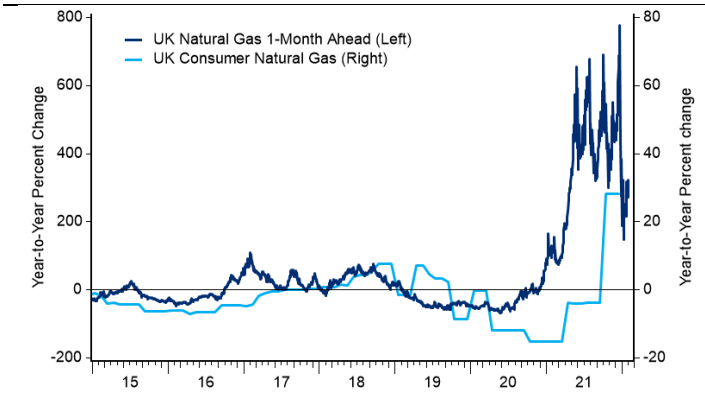
SUMMARY

The recent satirical film *Don't Look Up* reminds us that global collaboration and focus is required to protect the long-term wellbeing of the planet – and that all stakeholders will face the consequences of not doing so. Energy is perhaps the most obvious component of Greening the World, an Outlook unstoppable trend, but also one of the biggest challenges for collaboration. The early 2021 slowdown in performance for alternative energy in no way altered our conviction that the energy market is going through a once-in-many-generations transformation. But with geopolitical risks for the traditional energy sector surging (e.g., Russia and Ukraine) it is no less crucial to view this winter's European natural gas crisis and current elevated oil prices in the context of the long run trend towards decarbonization. It is in this context that we see relatively high prices of traditional energy, plus a pullback in valuations of alternative energy companies (possibly reflecting a broader pull back in tech names) as a potential opportunity to increase exposure to the green energy revolution.

Higher Fossil Fuel Prices are Good for Alternative Energy (Volatility Can Be Better)

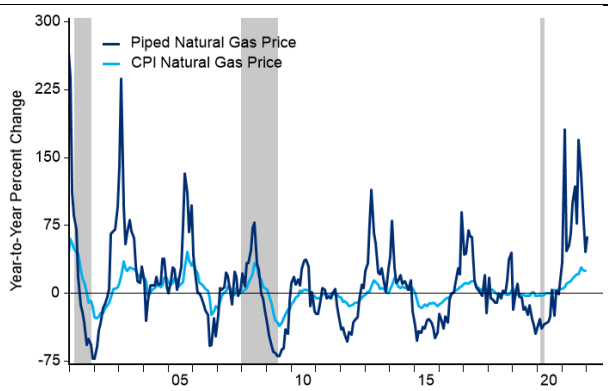
This winter, depleting stockpiles and geopolitical disruptions combined with cold weather to drive natural gas prices up sent shock waves through national markets. Most developed countries have regulations in place to limit consumer price shocks for essential heating gas, so often these spikes were absorbed by natural gas distributors (See Figure 1 & 2). In the UK for instance since the start of 2021, roughly 30 energy distributors have gone out of business as regulations have limited the price that can be passed on to consumers, while free markets set sky high input costs for producers. Now backstop deals and risk sharing agreements have sent these unprofitable customers on to other suppliers who face the same existential crisis.

Figure 1: UK open market natural gas prices and consumer prices for natural gas



Source: Haver Analytics as of February 5th, 2022.

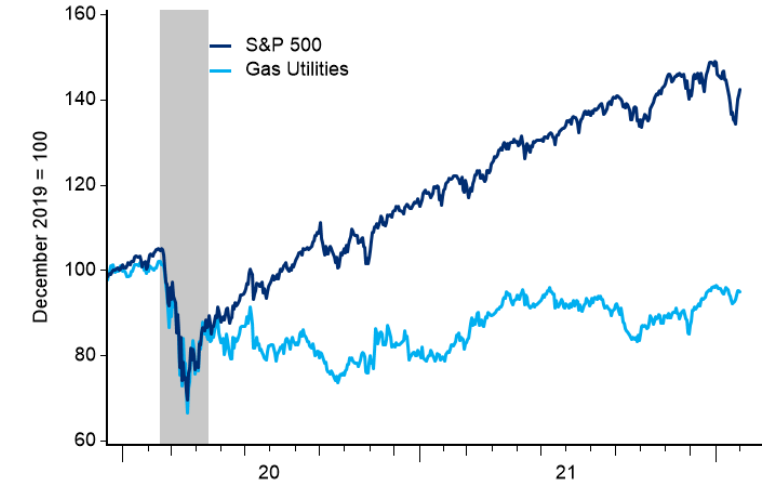
Figure 2: US open market natural gas prices and consumer prices for natural gas



Source: Haver Analytics as of February 5th, 2022. Shaded region is US recession.

In the short run this poses a threat to utility company solvency, but in the longer-term firms will either need to find ways to pass costs and risks to consumers (threatening a just energy transition and reelection risks for politicians), or we will see firms reducing their exposure to natural gas distribution and governments offering even more subsidies to electrify consumers. Even in the US, which was insulated against the worst surges from the global natural gas crisis, a collection of state run and regulated private suppliers have not been able to raise consumer prices of natural gas enough to sufficiently compensate distributors for the record high input costs that they have had to purchase (See Figure 2). This will mean that in the years ahead, natural gas companies will have to raise prices to recoup recent losses and recapitalize to prepare for future. Looking at the US, gas utilities in the broad market S&P 1500 are still down 5% relative to December 2019, before Covid caused the global recession and the subsequent market (up more than 40% for the S&P 500 over the same period, see Figure 3) and economic rebound.

Figure 3: Natural Gas utilities in the broad S&P 1500 have not enjoyed the same recovery as soaring gas prices have crushed margins.



Source: Haver Analytics as of February 5th, 2022. Shaded region is US recession. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Index returns do not include any expenses, fees or sales charges, which would lower performance. Past performance is no guarantee of future results. Real results may vary.

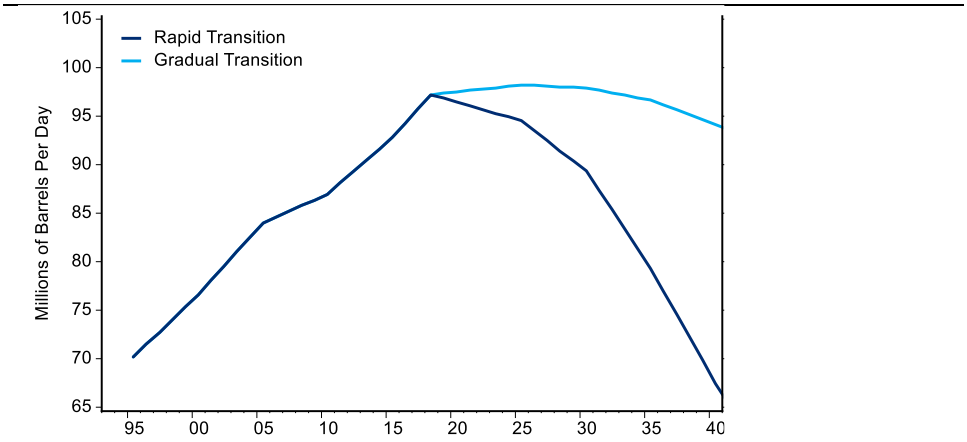
When we contrast this to the volatility of the price of wind or sunshine it is clear why many energy suppliers are increasingly adding renewables to their portfolios of power sources. While in some sense the price of wind and sunshine is clearly a jest, as the cost of renewables is in the technology that makes use of the sun and the wind, it

has a serious side as well. Once built, renewable energy projects have minimal input cost risk. While they, like their traditional energy competition, face market price risk for the energy they supply, they do not face the same risk to a change in input costs. As natural gas this winter has shown, and oil is currently showing the increasing share of renewables in the global energy basket is unlikely to lower fossil fuel price variability.

Why the Energy Transformation Will Mean More Volatile Fossil Fuel Prices

Take for example the transition from internal combustion vehicles to electric vehicles. There will be many key moments of transformation, but probably the largest will be when we see peak gasoline demand. As the transformation of electricity demand from EVs progresses there will be a moment when global oil demand starts to contract. Even looking at the energy outlook of BP plc (See Figure 4), which has every incentive to maintain business as usual, their outlook with a slow energy transformation is that oil demand has basically peaked at the current level, and in the case of a rapid transition to alternative energy demand is likely to collapse and face years of decline.

Figure 4: BP Global energy outlook for rapid and gradual transition in oil demand scenarios for the next twenty years



Source: Haver Analytics as of February 5th, 2022. All forecasts are expressions of opinion and are subject to change without notice and are not intended to be a guarantee of future events.

It may not be obvious why falling demand means greater volatility, but we will be watching the oil markets with their strong ties to national wealth and prosperity deciding how to carve up an ever-shrinking pie. This means declining national revenue to states that have become dependent on high energy prices and avoiding a durable collapse in oil prices will require careful calibration of supply to match demand from the managed suppliers in OPEC+. If they over supply, prices will collapse and if they undersupply prices will temporarily jump – and US frackers and other marginal suppliers will gain market share. So far OPEC+ has shown a strong willingness to restrict supply in order to maintain higher prices, and this is unlikely to change as revenue from oil shrinks as a source of national wealth. In effect oil producers will take on the role of a central bank, trying to keep oil prices at a level that balances the needs of natural budgets, but also doesn't rise too high to attract competition from new oil suppliers and renewables. A crucial corollary is the transition to alternative energy will be faster than in an unregulated market, as continuously falling oil demand will be met with punctuated drops in oil supply, so falling prices will not spoil the cost advantage of improving green energy technology.

This bears repeating in a free market where falling green energy prices would mean falling prices for their competitors which would place a speed limit on adoption with green energy always roughly the same price as fossil fuels. But oil prices are likely to be kept artificially high by cutting supply to match demand to avoid declines in price. This cartel style behavior will help national treasuries to be maintained and likely allow for a smoother transition for countries and companies that need to remodel their economic model to face a post oil future. But it also could be surprisingly good for the environment. If the oil price was governed by a free market every

improvement in EV technology and green energy production would be met with a moderate decline in the price of oil which would keep traditional Internal Combustion Engines (ICE) roughly price competitive with EVs. Instead, oil prices will likely be held up, helping EVs to fall well below ICE engines in total cost of ownership. Because there is such an enormous fleet of existing vehicles it will be better for OPEC and other oil producers to enjoy reasonably strong prices while the technology changes than to slow the energy transformation with prices that they can barely break even with.

The dynamic between green energy and different fossil fuels is truly unusual, with a modest positive correlation (See figure 5) between the price of West Texas Intermediate (WTI) oil and the MSCI Global Alternative Energy index over the past 4 years. This makes sense as both sectors have global economic activity as a key determiner of demand, and as we saw above the cartel style behavior in the oil market will tend to keep oil prices high and thus also support demand for alternatives. In contrast the relatively unregulated natural gas price has had a negative correlation to alternative energy stocks, this comes as something of a surprise as presumably sky-high natural gas prices will help drive alternative energy in the longer run.

Figure 5: Correlations between monthly changes in alternative energy stocks and fossil fuel prices

	MSCI Global Alt Energy	WTI oil
MSCI Global Alt Energy		**0.16**
WTI oil	**0.16**	
Natural Gas	**-0.13**	**0.24**

Source: Bloomberg as of February 5th, 2022. Note: Correlations are run on monthly percent changes from January 2017 to through January 2022. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Index returns do not include any expenses, fees or sales charges, which would lower performance. Past performance is no guarantee of future results. Real results may vary.

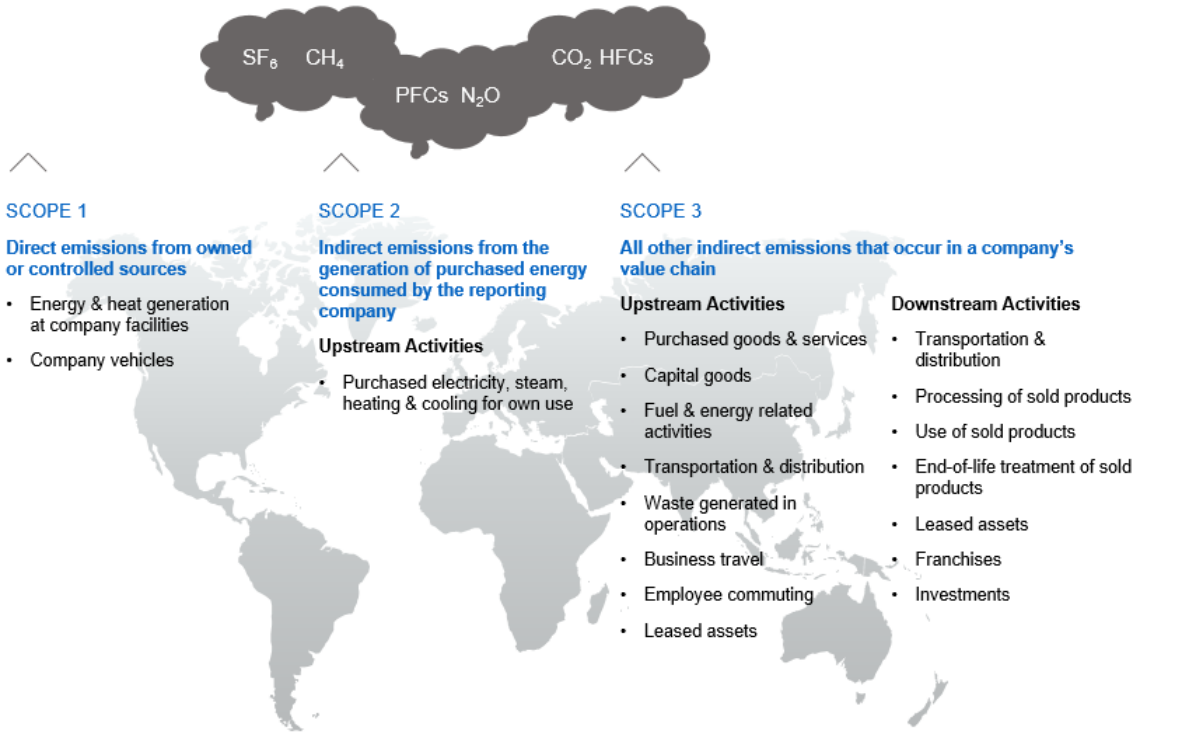
Carbon

Another source of potential volatility for fossil fuels is how the price of carbon will impact demand. There are two driving forces at play: (1) the actual price of carbon regulated under schemes such as the EU ETS, and (2) investor and consumer demand for companies to report on all of their emissions with greater standardization. With carbon pricing taking center stage at COP26 and the EU having entered its most comprehensive and aggressive emissions trading scheme (Emissions cap and allowances (europa.eu)), the potential for these costs to be passed onto consumers in the near-term is significant. While this may lead to greater investment into decarbonization, there are some near term price pressures for certain sectors. Currently the EU ETS covers CO_2 emissions from electricity and heat generation, certain energy intensive sectors, aviation within the EU, and certain industry N2O and PFC emissions.

There's also an increased awareness of emissions that are associated with the entire value chain of a good or service (see Figure 6). Currently companies are reporting and responsible for costs associated with emissions in the direct production of their goods and services and emissions associated with energy consumption in their operations (Scope 1 and 2 emissions, respectively). Scope 3 emissions have largely been unreported – these are emissions found across a company's value chain, including financed emissions. Scope 3 emissions are by far the largest source of emissions for many industries, including energy. The cost of capital for companies with high Scope 3 emissions could continue to rise as creditors become more discerning of their own carbon footprint (financed emissions). In 2019, Scope 3 emissions accounted for an average of 75% of total greenhouse gases

emitted by the electric utility sector, and about 88% from the oil and gas sector, making this a material consideration for lenders.[1]

Figure 6: An overview of the three scopes of a company's greenhouse gas emissions



Source: Greenhouse Gas Protocol. as of February 8, 2022. Corporate Value Chain (Scope 3) Accounting and Reporting Standard

There is still a long road ahead for most industries and companies to be able to quantify and report on Scope 3 emissions in a consistent fashion. However, carbon markets are already at play, forcing certain industries to internalize the cost of emissions.

Conclusion

Emerging new technologies often face volatility in their valuations with long term winners and losers yet to be determined by consumers and markets. This time though the volatility will not just be for the new untested companies that are seeking to find solutions for some of the largest problems the world faces today, but also for the sectors they are seeking to displace. We anticipate the energy transition will shock the world in its speed, as firms and consumers around the world adopt new technologies that improves lives, reduces greenhouse gases and soon lower costs.

This higher volatility in traditional energy prices will create additional potential opportunities for the disruptors and accelerate the energy transition. We can already see higher volatility in natural gas prices is driving firms out of business and decreasing the profitability of those who remain. Increasingly multiline utilities will likely help push consumers towards electric options away from natural gas with its high variability and potential for punishing losses.

[1] Source: Oil, gas companies under pressure to manage Scope 3 emissions to reach net-zero goals: analysts | IHS Markit

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