



THEMATIC INSIGHTS

The energy transition: transformative on a global scale



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At a glance

- We met with numerous global businesses to discuss how the energy transition is affecting each of their industries and influencing their own strategies, competitive positioning and capital plans
- Consistent views emerged around key risks to the transition: grid infrastructure, inputs dependency, labour shortages and the powerful effect of the US IRA
- As investors we will carefully watch the changing industry dynamics, volatility in margins, technological evolution and supply-chain hurdles, and challenge companies on their risk/reward equations



Introduction

The energy transition is part of our fundamental research at Columbia Threadneedle Investments.

This is the shift from an energy system dominated by fossil fuels to one powered by clean energy, and is a theme we believe is changing the global economy and transforming many industries.

We therefore want to better understand how companies are embracing this transition, how they are assessing the risks it brings, and how they are capturing the potential opportunities.

Recently, a group of 25 Columbia Threadneedle financial professionals – including portfolio managers, industry analysts, thematic research analysts and responsible investment specialists – met with close to 20 companies from different sectors for a three-day discussion in New York on this topic.

With our depth and breadth of expertise we discussed with the businesses how the energy transition is affecting each of their industries and influencing their own strategies, competitive positioning and capital plans. Common themes were raised, consistent views emerged around the key risks to the energy transition, and bright spots on key opportunities for investors became apparent.



Grid infrastructure

This is the key risk for the energy transition.

The current grid infrastructure is not able to connect the large amount of renewable energy we are producing and will not be able to handle the increased demand for electrification from things such as electric vehicles (EVs) and heat pumps.

With investment in renewable projects expanding, modernising grids is paramount – and currently lagging. The International Energy Agency¹ estimates that triple the level of investments in clean energy are needed to deliver an energy transition – from an estimated \$1.7 trillion in 2023 to around \$4.5 trillion annually by 2030. Of this, investments in the grid are required to increase from an estimated \$350 billion in 2023 to around \$800 billion a year by 2030.

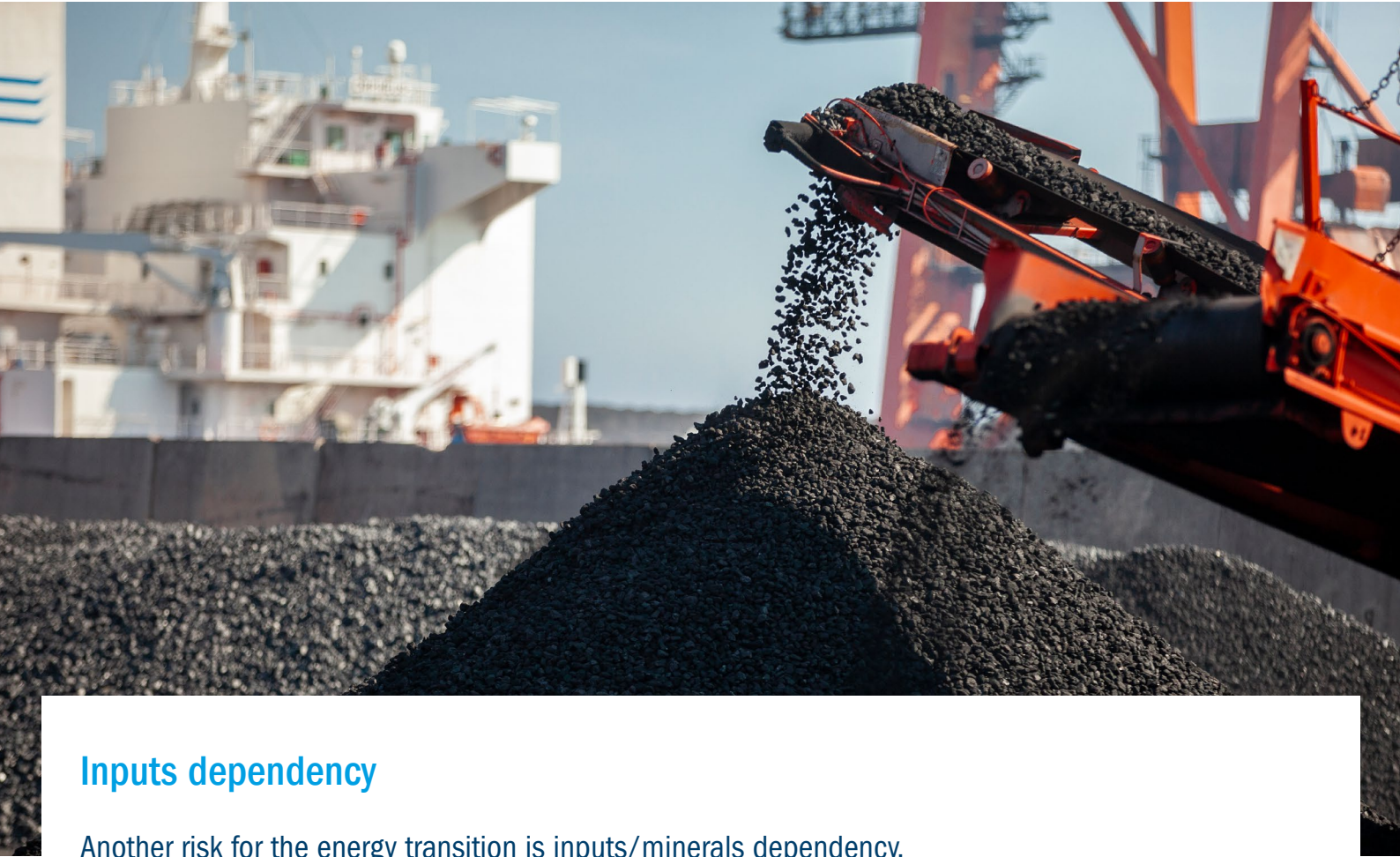
What is behind this underinvestment? In the US, companies see the main bottleneck as regulatory, both at state and federal levels. Multiple layers of agencies and bureaucratic processes impede the acceleration of investment, with capital spending on grids largely concentrated on enhancing reliability and upgrading

outdated infrastructure. In the EU, complex and long permitting processes are a bottleneck. So reducing the red tape around this is a priority, in both the US and EU, but the response is so far very slow.

Against this backdrop, companies believe utilities firms will be pushed to respond and will eventually invest more and at a faster pace. We therefore expect to see higher capex from utilities firms, but regulation/policy in the form of simplified permitting will be an important catalyst.

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¹ IEA, World Energy Investment 2023.



Inputs dependency

Another risk for the energy transition is inputs/minerals dependency.

The IEA² estimates that \$1.2 trillion of cumulative investment to 2030 is needed in clean energy manufacturing and critical minerals supply in order to get on track for net zero.

Critical minerals demand within clean energy is expected to grow by up to three-and-a-half times³ through to 2030 as the world seeks to energy transition. However, whether future supply can keep up with the rapid pace of demand is a major risk.

In a bid to secure mineral supplies, automakers, battery cell makers and equipment manufacturers are increasingly getting involved in the critical minerals value chain. In the EV space there has been a notable pickup in strategic investment in lithium. For example, General Motors announced it is taking a stake in Lithium American, while Tesla is investing directly in a lithium mine. We expect to see more of these strategic decisions.

Recycling is also part of the solution and an increasing amount of battery recycling capacity is being developed⁴ – although we do not believe it is likely to be material until

post-2030. Other countries implementing national recycling requirements like those in the EU could increase wider recycling rates and benefit companies in the recycling space.

Clean technology innovation remains essential in this area. Battery technology is evolving quickly, and we heard from multiple companies that innovation around different chemistries is dramatically increasing. This includes the resurgence of less energy-dense lithium-iron phosphate chemistry (LFP), as well as quicker development of sodium-ion batteries. Battery innovation is therefore an area we believe can surprise investors on the upside.

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² IEA, World Energy Investment 2023.

³ IEA, Critical Minerals Market Review 2023.

⁴ ACS Publications, Lithium-Ion Battery Recycling – Overview of Techniques and Trends, 19 January 2022.



Labor shortage risks

The energy transition is affecting the labour market globally and will ultimately impact all sectors.

The European Commission⁵ recognises that around 40% of all jobs could be affected by the transition. The World Economic Forum and LinkedIn have also both warned of a widening green skills gap.

In our conversations companies expressed the difficulties they are experiencing in attracting sufficient electricians and installers around clean tech equipment. The flip side of this is that companies are looking to adapt through higher automation, which they see as a fundamental part of the solution to deliver the energy transition – as well as a competitive advantage.

Overall, we believe the winners will be companies that provide holistic solutions that save labour or are more automated and

reduce costs, those that use fewer materials or exhibit greater productivity through engineering manufacturing expertise, and those with tech knowledge and the capacity to scale.

The World Economic Forum has warned of a widening green skills gap

⁵ EU Commission, GREEN DEAL INDUSTRIAL PLAN – PLUGGING THE SKILLS GAP, February 2023.



The IRA's strong tailwind

The US Inflation Reduction Act (IRA) was consistently referenced as a strong tailwind for the energy transition.

Regardless of whether they directly receive tax credits, or do so indirectly via customers or the customers of customers, companies are experiencing higher demand for their products and acceleration of future projects. The positive effects of the IRA are becoming quite tangible⁶. Particularly significant is the potential effects on carbon capture, utilisation and storage (CCUS); blue hydrogen; and energy efficiency solutions.

Companies are optimistic on the growth of the CCUS market, with oil and gas companies particularly enthused by a technology that is close to its areas of expertise. However, there are still clear bottlenecks including where and how to permanently store the CO₂ and the required pipeline infrastructure.

In the US the growth of blue hydrogen, produced with gas and coupled with carbon capture and storage (CCS), is accelerating due to access to economical and abundant gas, although the main bottleneck to growth is the availability of large-scale CCS.

The growth of green hydrogen, on the other hand, is viewed as happening more slowly, with ongoing concern around the economics (although the IRA will help) and the large renewables capacity needed to make companies believe this will be a market that will grow post-2030.

Companies that play a role in both CCS and hydrogen, such as industrial gas companies, as well as equipment manufacturers for these industries, are building greater flexibility around these

technologies. Some companies shared that they follow a bottom-up approach whereby they see what their customers' plans are for the next three, five and 10 years and build their capex plans accordingly. This is in contrast to those businesses that decide to entertain big projects with uncertain demand, which is an approach that could be viewed as more risky.

Companies also discussed the strong demand they see in residential and commercial buildings for energy efficiency solutions. In this area it is not only IRA tax credits for energy renovation and heat pumps that are providing strong tailwinds; rather, energy efficiency is genuinely viewed as a strategic way for companies to reduce costs

The positive effects of the Inflation Reduction Act are becoming quite tangible

⁶ For more information on the impact of the IRA read our recent viewpoint: [Investment implications: the US Inflation Reduction Act is a wake-up call for the EU](#), May 2023.



Conclusion

From the discussions we had we gained great insight into how to invest on this developing theme.

We see strong opportunities not just in utilities and renewables, but also in those companies that are the enablers and solution providers of grid infrastructure and electrification – for example, electrical products (such as cables, wires and fuses) and equipment providers for projects across mining, grids, CCS, hydrogen and energy efficiency (transformers, inverters and compressors).

Following the discussions, we also confirmed our view that the energy transition will not be uniform. Regional differences already exist – not just between countries but also within states in the case of the US – and these differences could become more extreme depending on regulations and customers' behaviours. Growth in the transition will not be linear, with different regions and industries seeing a different pace and speed of transition. Therefore, as investors we should watch closely the changing industry dynamics, volatility in margins, technological evolution, supply-chain hurdles and policies.

Lastly, investors should be mindful of the potential unintended consequences of an environment of abundant incentives for the energy transition and a more competitive marketplace – for example, the risk of potential capital destruction on projects that are simply following the subsidies and which otherwise may not have been viable. Thus, we should continue to challenge companies on their risk/reward equation.

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Get to know the author



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Natalia joined the Thematic Research team in 2020 and focuses on analysing the investment risks and opportunities coming from climate change and the energy transition across sectors and companies. She collaborates very closely with investment teams and engages with companies exposed to these themes. Previously, she worked as a credit analyst at Goldman Sachs. She also teaches sustainable finance at business schools.

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