COLUMBIA THREADNEEDLE INVESTMENTS®

# THEMATIC INSIGHTS

## The skills factor: greening the workforce to deliver net zero

**Sally Springer**
Senior Thematic Research Analyst, Global Research

### At a glance

- As the world moves towards net zero, a "green skills" gap is emerging, with the number of people with skills useful in transforming the economy growing more slowly than the job vacancies requiring these skills.
- A lack of skilled workers is already having operational and financial impacts for companies and may even lead to a temperature rise of 0.1C by delaying progress on the construction of renewable assets for clean energy.
- Columbia Threadneedle Investments is engaging with sectors critical to the transition to net zero to understand how they are managing their human capital. Here we look at mining, utilities and industrials to see how they are attracting, hiring and retaining workers with appropriate green skills, as well as their plans to retrain and equip existing employees with the skills required for roles that underpin their transition strategies.

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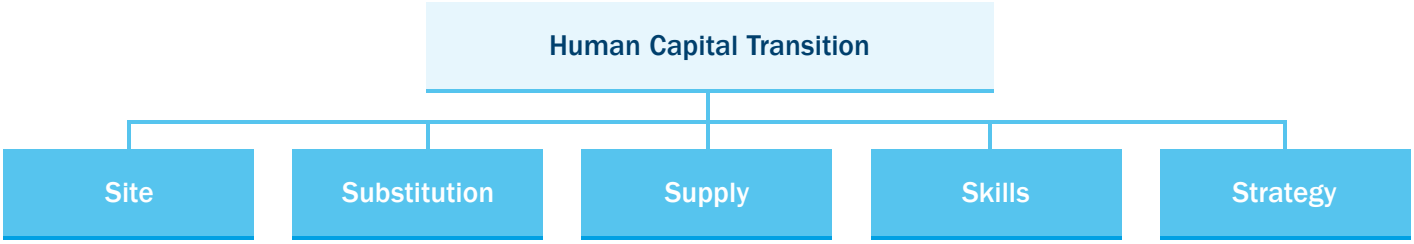
# Introduction

At Columbia Threadneedle Investments, we believe firms which recognise and manage their human capital effectively should outperform in the longer term. To help us assess how well an investee firm is doing this we created the "Five 'S' framework of human capital management". This sets out five factors a firm may consider when managing human capital (Figure 1).

In this Thematic Insight we primarily focus on "skills", specifically how businesses must consider their short-term operational and long-term skills requirements to fulfil their business strategy and growth goals.

**Figure 1: the Five 'S' framework of human capital**




## Green skills gap

With 80% of the world's energy supply still coming from fossil fuels[1], limiting global warming will require seismic changes. Governments will need to provide public financing, subsidies and an enabling policy environment to incentivise change. But the private sector must also invest and transform business models.

The companies in which Columbia Threadneedle invests will need to assess the strategic opportunities and material risks associated with an economy moving to net zero. Opportunities include new markets, new sources of finance and lower operating costs via reduced emissions; risks include the impact of extreme weather on supply chains or limited water availability.

Both governments and corporations set ambitious targets to reduce emissions and the benefits have begun to materialise. For instance, emissions in the UK have decreased by 49% since 1990[2]. However, one of the most critical barriers to accelerating this progress is the shortage of workers with "green" skills. According to LinkedIn's annual Global Green Skills Report, the number of people with skills that are useful in transforming the economy grew by a median of 12.3%, whereas the job postings requiring these skills grew at nearly twice that rate at 22.4%[3]. This shows demand is outstripping supply.

In the first year following the adoption of the US Inflation Reduction Act[4], in August 2022, more than 170,000[5] "green jobs" were created, and it is expected to create nine million clean energy and climate-related jobs over the next decade.[6] Both the EU and US legislative initiatives recognise that existing jobs will change and "green skills"[7] levels will need to be enhanced for those regulations to achieve their objectives.

[1] Environmental and Energy Study Institute (EESI), Fossil Fuels, 22 July 2021
[2] Carbon Brief, Clear on Climate: Analysis: UK emissions fall 3.4% in 2022 as coal use drops to lowest level since 1757, 6 March 2023
[3] LinkedIn, Global Green Skills Report 2023, 15 February 2023
[4] US Department of the Treasury, Inflation Reduction Act
[5] The White House, Factsheet: One Year In, President Biden's Inflation Reduction Act is Driving Historic Climate Action and Investing in America to Create Good Paying Jobs and Reduce Costs, 16 August 2023
[6] Bluegreen Alliance, 9 million jobs from climate action: The Inflation Reduction Act, 4 August 2022
[7] Green skills are the technical skills, knowledge, behaviours and capabilities required to tackle environmental challenges

### Missing opportunities?

Companies must effectively manage their human capital to ensure they have enough workers with the necessary green skills, both in the short and long term. This will help maximise the potential opportunities from climate and environmental legislation such as the European Green Deal Industrial Plan[8] and the $369 billion in green subsidies and other incentives provided by the US Inflation Reduction Act.

A lack of skilled workers is already having operational and financial impacts for companies. For example, during its Q2 2023 earnings call[9] semiconductor manufacturer TSMC[10] said a lack of specialised workers would delay production of its $40 billion plant in Arizona until 2025[11]. This is the company's first US-based plant and is being built to take advantage of the incentives in the US CHIPS and Science Act[12].

Similarly, the growth in clean energy means the sector now employs more workers than fossil fuels[13]. However, there remains a severe shortage of workers with the skills essential to further support the energy transition. Boston Consulting Group reported that a lack of seven million green energy workers required by 2030 could lead to a temperature rise of 0.1C by delaying progress on the construction of renewable assets for clean energy[14].

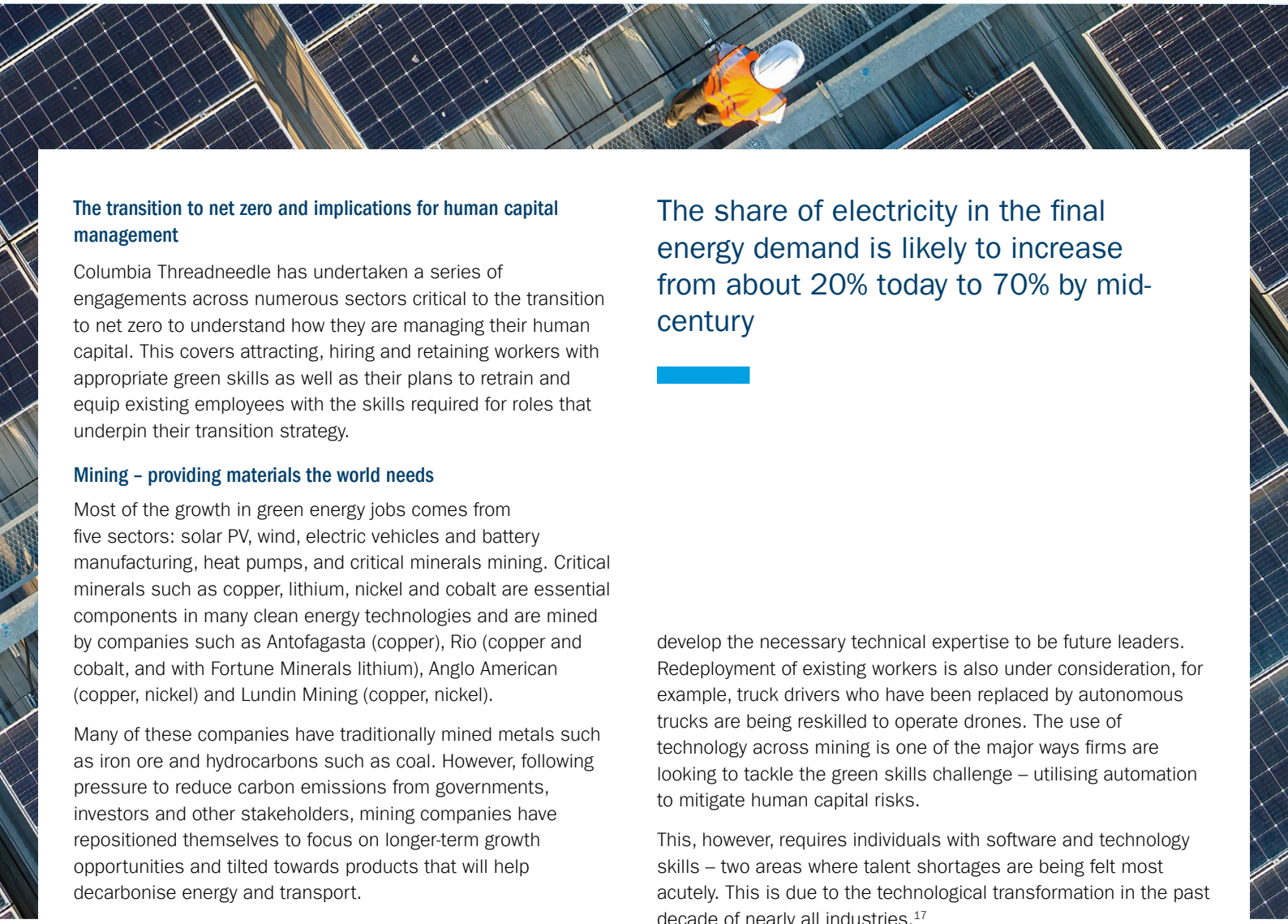
> A lack of seven million green energy workers required by 2030 could lead to a temperature rise of 0.1C

At the Columbia Threadneedle Energy Conference held in May 2023, a consistent theme that emerged from companies critical to the energy transition was labour shortages[15].

### Demographics, reskilling and purpose

Demographics are one of the key factors exacerbating global skills shortages. Baby boomers (1946-1964) account for around a third of the working population, with the majority of them due to retire over the next decade. Coupled with this are falling birth rates, with Italy, Spain and China particularly exposed to an increasing dependency ratio[16]. Given such a scarcity of workers – for example, 80% of the UK's 2030 workforce are already employed – reskilling the current workforce to support a green and digital transition will therefore be paramount.

[8] European Commission, The Green Deal Industrial Plan
[9] TSMC Investors, Financial Results 2023Q2, 20 July 2023
[10] Mention of specific companies is not a recommendation to buy or sell
[11] Reuters, TSMC talking to US about CHIPS Act 'guidance' amid subsidy concerns, 10 April 2023
[12] The White House, Fact Sheet: CHIPS and Science Act
[13] IEA: World Energy Employment 2023, 14 November 2023
[14] BCG: Will a Green Skills Gap of 7 Million Workers Put Climate Goals at Risk? 14 September 2023
[15] Columbia Threadneedle Investments, The energy transition: transformative on a global scale, September 2023
[16] Liberum, Demographics – the future has happened, 10 November 2023



### The transition to net zero and implications for human capital management

Columbia Threadneedle has undertaken a series of engagements across numerous sectors critical to the transition to net zero to understand how they are managing their human capital. This covers attracting, hiring and retaining workers with appropriate green skills as well as their plans to retrain and equip existing employees with the skills required for roles that underpin their transition strategy.

### Mining – providing materials the world needs

Most of the growth in green energy jobs comes from five sectors: solar PV, wind, electric vehicles and battery manufacturing, heat pumps, and critical minerals mining. Critical minerals such as copper, lithium, nickel and cobalt are essential components in many clean energy technologies and are mined by companies such as Antofagasta (copper), Rio (copper and cobalt, and with Fortune Minerals lithium), Anglo American (copper, nickel) and Lundin Mining (copper, nickel).

Many of these companies have traditionally mined metals such as iron ore and hydrocarbons such as coal. However, following pressure to reduce carbon emissions from governments, investors and other stakeholders, mining companies have repositioned themselves to focus on longer-term growth opportunities and tilted towards products that will help decarbonise energy and transport.

To facilitate this transition, attract capital and earn appropriate rates of return, mining companies will need to ensure they can bring in suitably skilled employees. Columbia Threadneedle undertook a series of engagements with mining companies to assess their human capital strategy.

Mining companies are particularly exposed to demographic challenges with a fifth of their workforce set to retire over the next decade, and some younger people unwilling to join an industry they see as contributing to climate change. The sector is working hard to appeal to younger people through educational support and by refocusing corporate purposes to support the energy transition.

Firms are increasingly assessing current and future skills requirements and offering internal training and career development opportunities. One miner is offering leadership programmes earlier on in people's careers so individuals can develop the necessary technical expertise to be future leaders. Redeployment of existing workers is also under consideration, for example, truck drivers who have been replaced by autonomous trucks are being reskilled to operate drones. The use of technology across mining is one of the major ways firms are looking to tackle the green skills challenge – utilising automation to mitigate human capital risks.

This, however, requires individuals with software and technology skills – two areas where talent shortages are being felt most acutely. This is due to the technological transformation in the past decade of nearly all industries.[17]

Columbia Threadneedle will continue to engage with the mining sector to assess how it is adapting and managing human capital as it attempts to adjust portfolios and corporate purposes in support of the transition.

> The share of electricity in the final energy demand is likely to increase from about 20% today to 70% by mid-century

### Utilities – the epicentre of the shift to renewable energy

Utility companies are at the heart of the energy transition. Renewable-based electrification is an effective way to decarbonise heavy emitting sectors such as industrials, transportation and buildings. As they adapt to use greener sources of energy, the share of electricity in the final energy demand is likely to increase from about 20% today to around 70% by mid-century[18].

Columbia Threadneedle has engaged with leading European electricity utilities to understand their approach to managing human capital strategies in order to maximise the growth opportunities brought about by the increase in electricity usage.

Utility companies are cognisant of the challenges they face and have introduced plans to address them. Some firms are undertaking scenario analyses to assess the different green skills

[17] Columbia Threadneedle Investments, The substitution effect: AI and the labour market, November 2023
[18] Energy Transitions Commission: Electricity 5 September 2023

requirements they are likely to need in three to five years. They will then either start hiring suitably skilled individuals earlier or develop training programmes to close the skills gap.

Other firms have created "employee taskforces" with expertise in areas such as offshore wind and will look to redeploy them across the world to ensure knowledge and expertise is shared. One firm has created a "global green employment" hub which helps it assess the availability of specific green skills across its markets and supply chain – it also provides a valuable pool of talent from which it can recruit.

Talent retention is critical to electricity companies. Employees are often monitored from the day they join, and when they leave exit interviews are carried out and patterns of behaviours observed. If turnover rates start to rise in particular areas, they will adjust human resource policy accordingly – for example, providing better parental benefits.

Like many firms critical to the transition, utility companies are supporting younger people in their pursuit of higher education and emphasising the importance of their business within the energy transition to guarantee a pool of talent from which to recruit.

### Industrials – electrical equipment

Companies in this sector support the energy transition by providing the products, infrastructure and software needed to enable buildings or industries to digitalise. This then allows firms to measure and optimise energy consumption.

Our engagements with companies within Industrials demonstrated a strong approach to green skills acquisition. This was generally led by Board members who have acknowledged the need to take a long-term strategic focus on recruitment and retention to ensure they can meet client orders.

Interestingly, companies in this sector take a regional approach to human capital allowing them to adapt to local market conditions, for example adjusting benefit offers as necessary. There are opportunities for individuals to build careers and gain opportunities both regionally and globally. Regular engagement surveys allow the identification of weak spots and ensure companies respond adeptly.

To increase the pool of talent, firms will often have very progressive diversity, equity and inclusion policies, sometimes challenging social norms within regions – for example, encouraging greater female participation in Southern Asia. One region in which firms still face a particular challenge, heightened in part by government policy initiatives, is the US where there is intense competition for labour with the necessary green skills.

Green skills shortages are particularly apparent within this sector's ecosystem – either in supply chains or customers' firms. Examples include workers with construction skills able to install the necessary software and infrastructure to build more sustainable residential or non-residential buildings and the shortage of workers who can operate data centres was repeatedly raised as a concern. Datacentres and transmission networks account for around 1%[19] of energy-related greenhouse gas emissions globally. But they are critical to the transition due to the role they will play in a future digital economy, and will soon start to look at ways to reduce their own emissions.

In response to talent shortages in their ecosystems, which could impact potential revenue opportunities, firms in this sector have created vocational training programmes in a range of areas relevant to their supply chain and customer base: electricians, data centre operatives and digital skills

## Limiting global warming to less than 2C requires large scale investments from governments and the private sector

### Conclusion

Limiting global warming to less than 2C requires large scale investments from governments and the private sector to change the way economies and businesses operate. However, without a suitably skilled workforce to deliver the required changes, achieving this goal becomes much less likely. Columbia Threadneedle Investments will continue to engage with firms across key sectors vital to the transition to ensure they are managing their human capital effectively to enable them to take advantage of potential revenue opportunities and to ensure operational risks are mitigated.

[19] IEA: Data Centres and Data Transmission Networks, 11 July 2023

## Get to know the author

**Sally Springer, Senior Thematic Research Analyst, Global Research**

Sally joined Columbia Threadneedle Investments in 2023. As part of the global research team she undertakes thematic research, engages with companies, and collaborates with investment teams on the risks and opportunities arising from the transition in human capital. She previously worked as an equity research analyst and an industry policy lead for responsible investment regulation and legislation. Sally studied at the University of Warwick (BSc Economics) and gained the CFA charter in 2003.

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