# CAP GEX

# Responsible Capital

**Annual Report** 

### **Editor's Letter**

Welcome to CapGen's 2025 Responsible Capital Report. In this year's edition, we are delighted to lead with a guest article by the Chair of our Responsible Capital Committee, Dimitri Zenghelis, former Head of Policy at the Grantham Research Institute at the LSE and Acting Chief Economist for the Global Commission on the Economy and Climate. In his opinion piece, 'The clean energy transition continues apace', he critiques the prevailing culture of fashionable pessimism in today's views on climate change, arguing that Al and cheap renewable electricity are already transforming the global energy system, boosting productivity and lowering costs, despite geopolitical tensions. I hope you enjoy it.

We have also included a piece about the ethics of investing in gold mining equities, a top 2025 performer. The asset carries 'safe haven' associations, but potentially at an ethical cost, as resource extraction of any kind is so often linked to conflict. We consider where a conscientious investor - CapGen included - chooses to draw the line between financial security and sustainability.

We spent some time this year evaluating the managers we use in our portfolios and were particularly pleased to note that none of them have used today's more populist political environment as an excuse to return to less sustainable ways of operating. Our annual Responsible Capital Fund Manager Survey found that ESG practices were largely similar to the 2024 responses; all the fund managers we work with have maintained the highest ethical standards in their approach to managing money, and in the way they run their businesses. Indeed, in many ways, the more cynical environment prevailing today has reduced the amount of valueless greenwashing in the broader industry. This means that those managers who were always authentically engaged in sustainable investing, and who haven't changed their stance with the changing political environment, are more easily identifiable.

We continue to see positive action and exciting innovations. As some become more cynical of the climate crisis, many more become more engaged with it. Investment continues to flow into businesses which address the crisis in myriad ways. Where money flows, successful new ideas often follow. We watch this space with cautious optimism, and with firm belief in the ingenuity of humans.

I hope you find our 2025 edition engaging and insightful.

Charlotte Thorne

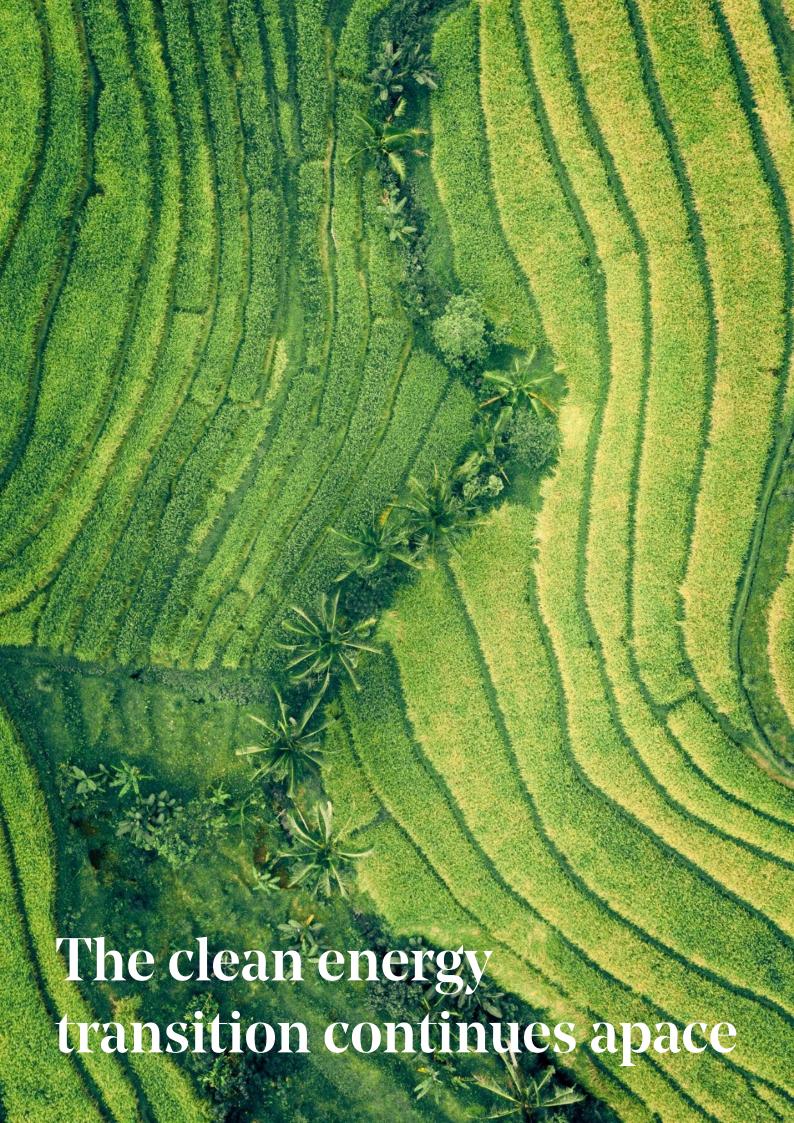
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Founding Partner, Capital Generation Partners



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### Doom, gloom...

When assessing progress on addressing climate change, it is fashionable to be pessimistic. The headlines ramp it up: Trump is back in the White House; emissions continue to climb; net-zero targets have been loosened in the EU and jettisoned in the US; renewables and EV growth has slowed; banks have withdrawn from the Net-Zero Banking Alliance and the fossil fuel industry professes renewed confidence (in public, at least).

But are things really so dire?

### ... and boom!

Despite higher interest rates taking their toll on a capital-intensive sector, global growth in annual investment in renewable energy over 2023 and 2024 remained in double digits. Last year, the world invested twice as much in clean energy for electricity, transport and buildings than it did in fossil fuels. Around 90% of global electricitygeneration investment now goes into renewables, which already generate more <u>electricity</u> worldwide than coal. Equipment costs continue to plummet, and intermittency problems are being resolved as interconnection and, most importantly, storage options become cost-effective. China is reaching (indeed, may have reached) peak fossil fuel demand and once China turns, the world will shortly follow.

### How to interpret noise from signal?

So, what explains the disparity between the accepted narrative and the underlying picture? One factor is incumbent producers who have a vested interest in playing down the speed of the transition. Another is that the transition has been so rapid that global narratives have failed to keep up. Finally, structural change causes disruption and distributional impacts which create political headwinds. While China has benefitted, in many regions the benefits have yet to show up in electricity bills or transport costs. This will change. This article discusses each of these in turn.

### Drill baby! (But they would say that)

Oil is fungible and storable, and so today's price reflects the expected value of future oil demand. In a world where EVs, heating, and power generation displace oil and gas, prices fall. It would constitute a dereliction of duty for any oil executive to talk down the sector and undermine current profits.

### Life in the fast lane remains clean

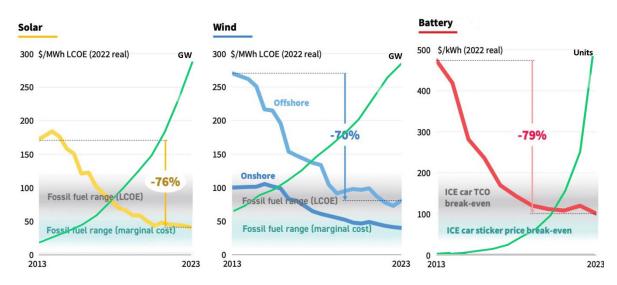
A less conspiratorial explanation is that the world has been taken by surprise by the speed of the transition. Fossil fuels feel natural to industrialised societies, yet in most sectors (aside from some transport which requires high-energy-density fuels), burning molecules is a highly inefficient way to generate energy: roughly two-thirds of primary energy is lost before anything useful comes out of it

Ten years ago, someone predicting an 80% fall in the cost of solar PV and batteries would have been dismissed as a crank. Yet clean technologies are now fully competitive with fossil fuels (Figure 1).

### Narratives have struggled to keep up

In 2014 The Economist described solar PV as "the most expensive way to reduce carbon emissions" (Figure 2). More recently it has extolled solar's exponential growth and the unprecedented opportunity for universal access to electricity. By 2020 the International Energy Agency (IEA) called solar PV "the cheapest electricity in history", yet in its annual World Energy Outlooks it systematically underestimates deployment and cost declines.

Figure 1:
Generating capacity and cost



Source: Adapted from Bond et al. (2024, p. 8); Walter et al, Ember (2025)

Figure 2:
A timeline of illustrative narratives on Solar PV



"the most expensive way to reduce carbon emissions"

The Economist, 2014

"Sun, wind and drain: Wind and solar power are even more expensive than is commonly thought"

The Economist, 2014

"the cheapest electricity in history"

International Energy Agency, World Energy
Outlook 2020

"the exponential growth in solar power will change the world"

"nobody need go without the blessings of electricity"

The Economist, 2025

Everyone got it wrong because structural change is self-reinforcing. Deployment increases as prices fall – but crucially, falling prices result from increased deployment. Learning-by-doing in labs, factories, logistics, and installation has driven rapid cost reductions, especially as massive production plants and gigafactories in China exploit scale economies.<sup>1</sup>

### Wright was right

Costs falling leads to more deployment and more deployment leads to costs falling. This reinforcing loop creates tipping points. As with putting a microphone in front of a speaker, such feedback generates rapid and unexpected change. And that is precisely what the world is seeing in the development of alternative technologies, behaviours and institutions. So rapid and unexpected is the change, that misleading and outdated narratives continue to circulate.

As consumers see cost benefits, they support political parties that favour renewable energy. As cleantech businesses grow, they start to out-lobby fossil fuel incumbents and attract the best scientists and engineers. And this in turn boosts deployment and cuts costs.

Wright's Law states that every doubling of deployment of modular, scalable and replicable manufactured technologies reduces unit costs, in the case of solar PV, wind, and batteries by 20-40%. II

The impact can be profound. The cost of final energy from solar PV has fallen by 99.9% since it was first deployed in commercial satellite technologies in the 1950s (Figure 3). By contrast, fossil fuel costs have barely shifted, not because we don't burn these fuels more efficiently, but because an extractive system relies on costly labour and logistics. Once fossil fuels are burned, more must be dug up, transported, refined and burnt.

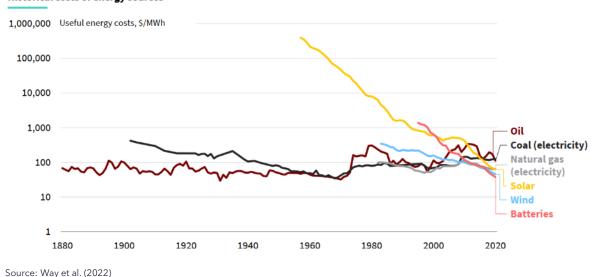
### Capital production beats extraction on cost

Extraction faces diminishing returns: getting more means tapping reserves in more remote locations employing more exotic techniques. By contrast, manufacturing enjoys increasing returns, as product and process innovation continually reduces costs.

Even intermittency is becoming manageable. Battery storage is <u>doubling yearly</u> and is <u>becoming cheaper</u> than fossil backup capacity.<sup>jii</sup> Demand response management, efficiency improvements, diversified interconnected grids, and storage options like pumped storage and hydrogen further reduce intermittency challenges.

Figure 3: Long run cost of energy

Manufactured technologies (e.g., solar and wind) enjoy cost learning curves; (fossil) commodities don't Historical costs of energy sources



Note: similar cost reductions are not being seen in less modular, bespoke capital intensive 'clean' sectors such as biomass, hydrogen, tidal, nuclear or Carbon capture and storage.

iii In what he described as 'Silos for Sunshine', Daan Walter uses a powerful analogue for the impact of batteries on electricity generation; the development of storage silos and refrigeration powered the agricultural revolution allowing humans to shift from hunter-gathering and foraging food to farming and storing food. Batteries will do the same for electricity allowing sunlight to be far med and stored giving humanity.

### Renewables are just the start

China accounts for 79% of global manufacturing capacity of solar panels, 76% of lithium-ion batteries and 64% of onshore wind generating components. Yet the opportunity from electrification is even greater than that from renewables. End-use products like batteries, EVs, and heat pumps offer higher margins than solar or wind. China, now accounts for almost a third of the world's electricity capacity (the US, only 15%) and powers almost a third of its energy use through electricity. Europe and the US lag behind at about 23% and 21%.

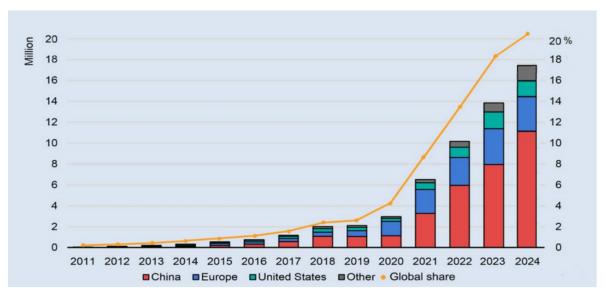
Global EV sales <u>rose 25% in 2025</u> and now account for 1 in 5 cars sold (Figure 4). In China (where half of new car sales are <u>electric</u>), and major emerging markets, EV sales rose 40%. EVs were once seen as niche and unsuitable for

emerging economies. Now they <u>outcompete</u> internal combustion engines on <u>cost</u> in even <u>sticker price</u> in <u>many markets</u>. European manufacturers long argued it was too soon to invest in EVs. Now it's too late - the Chinese have eaten their lunch.

### The clean and AI revolutions are complementary and reinforcing

Knowledge-based energy aligns naturally with Al and digitisation. Al and smart controls improve efficiency, optimise grids, and manage intermittency. Clean lab manufacturing uses the same silicon wafer fabrication techniques that underpinned chip and semiconductor innovation. Your rooftop solar panel has more in common with your laptop than with your boiler.





Source: IEA, Nov 2025

iv Moreover, batteries are on track to electrify large chunks of haulage, shipping and aviation and provide distributed storage.

### And the winner is... China

Of course, compute and storage are <u>energy</u> <u>intensive</u>. For a while, some of this addition will be powered by fossil fuels. But in the long run, the costs of Al will converge on the cost of energy. Countries that scale renewable power and battery storage gain strategic advantage. On this basis, China is poised to win the Al race.

### It's the political economy, stupid

The benefits of the transition are not yet evident in many countries' electricity bills or transport costs. This is because, being capital-intensive, costs come upfront; benefits arrive later.

This generates political tension. China's centralised system allows long-term planning, though it is worth recalling that public anger over urban air pollution was a key driver of investment in renewables.

Increasingly, self-interest and opportunity are driving change: cleaner cities, better jobs, and more efficient energy networks. Early strategic subsidies were essential to kickstart <u>clean innovation</u> in technologies that began expensive, but as sectors become competitive, subsidies are being withdrawn. Russia's invasion of Ukraine pushed energy security to the top of the agenda. More than 80% of the world relies on imported fossil fuels. Vi

### Fitting the bill

Obstacles remain. European and UK energy markets often link bills to the wholesale price of the most expensive generator (<u>usually gas</u>) while placing past subsidies and obligations, as well as grid investment costs (which should be funded by borrowing), on consumer bills.

Electricity is <u>taxed</u> two to three times <u>more</u> <u>heavily than gas</u>. By contrast, China <u>subsidises</u> <u>energy bills</u> for <u>key sectors</u>. The EU is working on speeding up permitting and grid connections, while pressure is <u>mounting in the UK</u> too. Market reform to <u>lower electricity bills</u> is likely.

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v Incumbent players know how much they stand to lose and which politician's to lobby. By contrast, the net beneficiaries of clean technologies are diffuse and have yet to see the benefits percolate through to bills.

vi Once the kit is installed, every country can become an energy superpower, utilising abundant sun and wind. Emerging markets, from Ethiopia, Kenya and Morocco are leading the way, leapfrogging advanced nations by generating a higher share of electricity from renewables than most advanced nations.

### **UK** challenges

The challenges faced by the UK are greater than most. Following the (arguably too) rapid close down of fossil supply, there is not currently a low levelised cost<sup>vii</sup> of renewable energy option available to bring wholesale prices sharply lower. This is because offshore wind is relatively expensive, and other sources, namely onshore wind and solar, have been limited in supply.

Solar is less cost effective in relatively cloudy NW Europe. By contrast, gas may or may not be expensive on any given day. But on current learning curves, solar can be expected to outcompete complex LNG (with its associated liquefaction, transport, storage and gasification costs) over the coming years. Moreover, once the renewable asset is installed, it generates cheap energy for decades making the UK less vulnerable to volatile import prices.

System costs are relatively high in the UK, a crowded country with strict planning laws were building electricity pylons is not a straightforward affair. This is compounded by the failure to maximise the use of batteries and demand-side response management from smart metering. Greater use of both would reign back the need for grid expansion, capacity payments and curtailment (where operators are paid not to supply electricity to the grid). The danger is that the UK gets caught in a vicious spiral where costs rise more than they need to, disincentivising electricity demand growth, which in turn undermines the return to grid investment.

### Summary

Political hurdles remain, but the direction of travel is clear. Two general purpose technologies, Al and cheap renewable electricity, are boosting the productivity of the energy system allowing humanity to get more out of the resources we have. Despite conflicts in fossil fuel producing regions, the World Bank expects global energy prices to fall by 12% this year, and 10% in 2026, potentially easing inflationary pressures.

The perceived horse race between emissions reduction and growth is an analytical mistake. Access to abundant cheap energy offers clear business opportunities across transport, buildings, and industry. Fossil fuel assets are set to be progressively devalued and stranded.

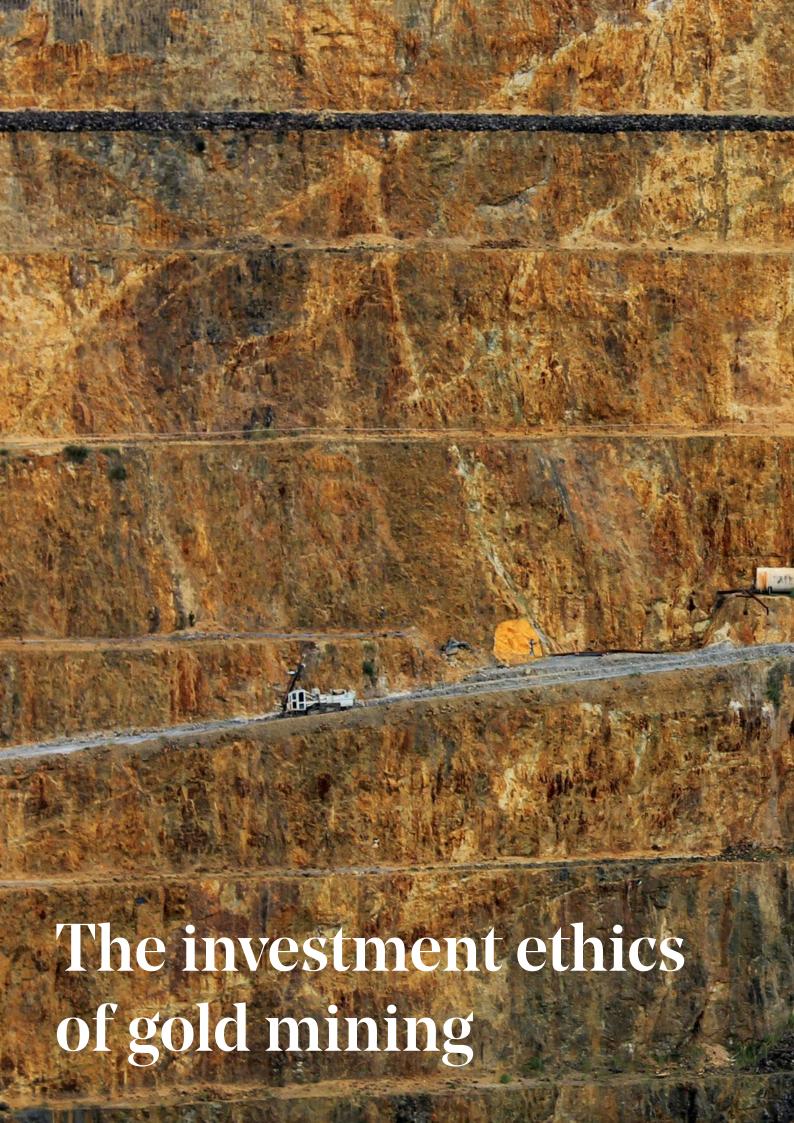
The momentum is now irreversible, and the clean transition is now driven by forces beyond climate policy. While disruption and upfront investment are unavoidable, the returns more than compensate, as China and others are discovering. The growth story of the 21st century will differ radically from that of the 20th.



Dimitri Zenghelis Chair of CapGen's Responsible Capital Committee

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vii The Levelized Cost of Energy (LCOE) is the average cost per unit of electricity over a power plant's lifetime. This allows for a like-for-like economic comparison across different energy technologies like solar, wind, geothermal, and natural gas, regardless of whether the costs come in the form of capex or opex and regardless of subsidies or financing structures. The result is expressed in as a per megawatt-hour.



Gold and gold mining equities (the latter offering leveraged exposure to the underlying metal) have been top performers for us this year, generating healthy returns for CapGen's portfolios. But while these gold stocks can provide differentiated exposure to gold, and present an opportunity for profit, they raise ethical dilemmas, as mining's environmental impact is potentially in conflict with ESG principles. Gold mining carries significant environmental consequences, from deforestation and river diversion to pollution and community displacement. Like most forms of resource extraction, it is often linked to conflict. For investors seeking differentiated returns, a pressing ethical dilemma is raised: should gold mining equities be excluded altogether, selectively avoided, or approached as an opportunity to engage with companies in driving more responsible practices? Where does the conscientious investor choose to draw the line between financial security and sustainability?

As the asset has been our biggest returner this year, these potential conflicts have been at the front of our minds. We know mining can come with challenges, so we've thought carefully about how to gain exposure, but in a way that meets our strict ethical guidelines.

#### A seat at the table

Efforts have been made to raise ethical standards across the industry. In 2019, the World Gold Council introduced the *Responsible Gold Mining Principles*, a comprehensive framework designed to set clear standards for ethical and sustainable gold mining across the entire supply chain.

The framework consists of 51 principles covering all major ESG issues in the sector, with compliance requiring independent external

assurance. By establishing these benchmarks, the initiative aims to raise industry-wide practices, ensuring that gold miners operate responsibly and that investors and consumers can have greater confidence in the integrity of the sector.

These standards support the efforts miners make to operate ethically and to be held accountable to those standards. Investors, as critical stakeholders, also wield significant influence; there is great value in being an investor and adding capital weight to the right enterprises Through stewardship and engagement, investors can drive meaningful change within their portfolio companies. Profit ultimately follows the feedback loop between businesses and consumers, and investors now scrutinise safety and sustainability as essential measures of viability. Companies that fail to meet these expectations risk divestment and declining valuations, while those that lead responsibly stand to benefit. In theory, consumer choices and investor discipline should reward ethical leadership, ensuring that businesses committed to sustainability achieve stronger, more enduring profits.

As ethical investors and consumers, we believe capital should be directed towards companies that are best in class, as well as those actively working to raise standards for themselves and their peers. Engagement of this kind is essential for challenging businesses to adopt stronger policies and more responsible practices. While divestment on ethical grounds may send a signal, it also removes the investor's ability to influence change. To drive meaningful operational improvements, investors must remain invested. Maintaining their exposure ensures they retain influence and a voice in shaping the company's future.

### CapGen's approach to gold mining equities

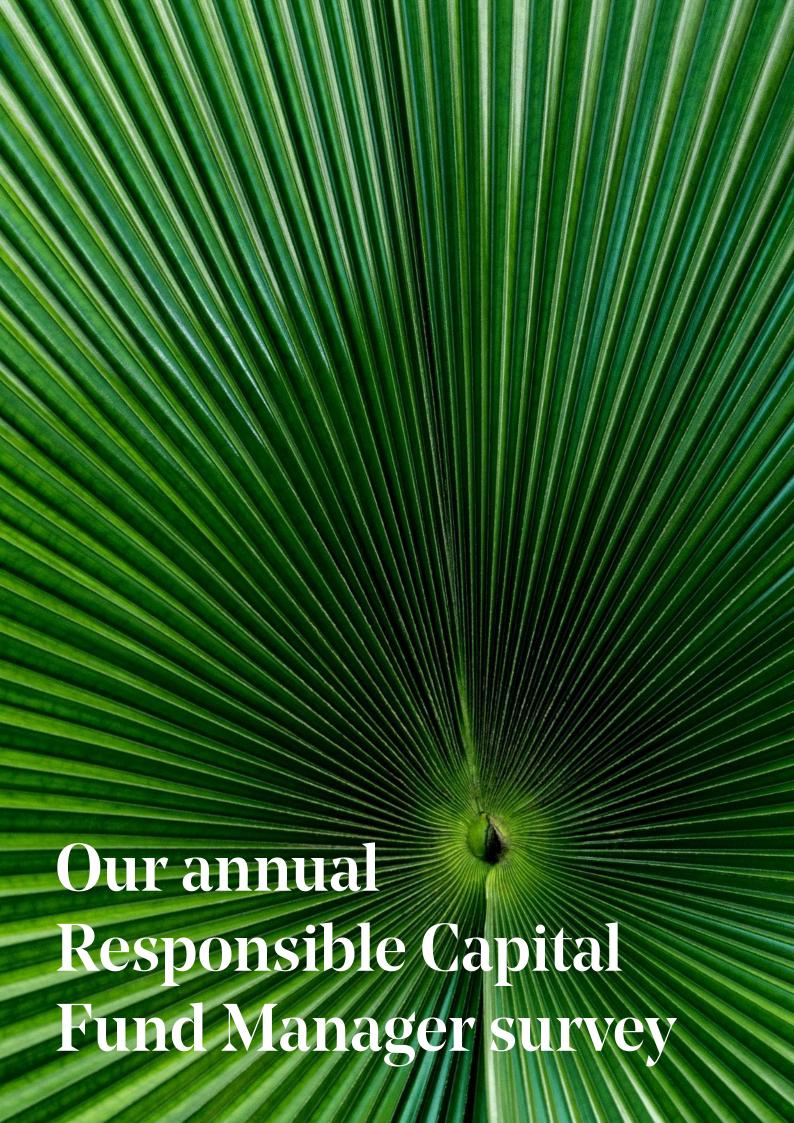
We are deeply conscious of the ethical challenges associated with mining. Over conscientious in-house discussions, we carefully considered how best to go about gaining exposure to the asset in the right way.

We are clear that all investments on our buy list and within client portfolios undergo a rigorous ESG assessment. Our process acknowledges that ESG investing involves both objective metrics and subjective judgment, combining empirical data analysis with a principled approach to capital allocation. Each fund is scored from one to four across key factors, then given an overall rating, with scores evaluated relative to sector-specific dynamics.

Within this framework, we hold a gold mining stocks ETF which, by our criteria, rates *Good* for ESG policy, *Very Good* for Active Ownership (a priority given our influence as investors in third-party funds), *Average* for strategy and asset class, and *Good* for capability, reflecting commitment and resources.

After careful debate on the ESG merits of this position, we concluded that - within the asset class - we have found a provider who represents the most suitable option for us. Our allocation focuses on larger-cap gold mining companies, which tend to operate with greater institutional discipline and oversight, and investing through a fund structure is more closely aligned with our sphere of influence. This investment selection is a choice we take seriously and monitor on an ongoing basis; it's not simply a one-off decision.

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### Results from our Annual Responsible Capital Fund Manager Survey

Every year, we send our Responsible Capital Survey to the fund managers on our buy list. This thorough survey requests information on various areas of conduct, including ESG processes and reporting, to more day-to-day business practices, such as carbon offsetting and diversity, equity, and inclusion (DEI) policies. Any weaknesses are addressed as part of our desire to elicit change for good.

This year, we found that ESG practices were largely similar to the 2024 responses, with some ongoing gradual changes across the portfolio. Some (US) managers caveated their responses that SEC guidelines around language on sustainability are fluid at the moment and so documents provided may soon be amended.

While there hasn't necessarily been an increase in ESG-dedicated professionals across the buy list, there has been a noticeable increase in allocated time focused on ESG. Committees

have become increasingly commonplace and ESG factors are considered throughout the investment process. There has also been an increase in the number of ESG initiatives the buylist managers have signed up to, including the ESG Data Convergence Initiative, Initiative Climate International and ILPA Diversity in Action Initiative.

#### Of particular note:

- We saw one firm take a step backwards in the firm's engagement with ESG more broadly.
   The manager explained that this has been in part due to the lack of LP interest in their activity here, but also the increased focus on the investment portfolio and process whilst the fund remains in drawdown.
- Another manager made a couple of notable changes, including introducing a DEI policy and internalised data collection (rather than relying on third parties).

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### Private Equity Portfolio results

ESG practices in private equity were also largely similar to the 2024 responses. Several managers have introduced DEI policies, set firm-level sustainability goals and increased the number of ESG initiatives, encouraging developments across the portfolio.

- One manager has some noticeable improvements across their underlying portfolio, with a 50% improvement across the 'portfolio / active ownership/ implementation' section of the questionnaire.
- Another manager also showed noticeable improvements, introducing a voting rights policy across the portfolio while also signing up for several ESG initiatives such as Leadership for a Diverse America, and the '30 Percent Club' in Europe.

From now on, we are planning to shift to a biennial production cycle. This is because the changes across the portfolio are expected to be implemented gradually, with several ongoing initiatives still in progress.

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