ARTIFICIAL INTELLIGENCE AND REAL ESTATE SERIES | PART III

Hotels and offices: From operational upside to demand uncertainty in the age of AI

DANIEL TOMASELLI
Manager, Global Real Estate Research

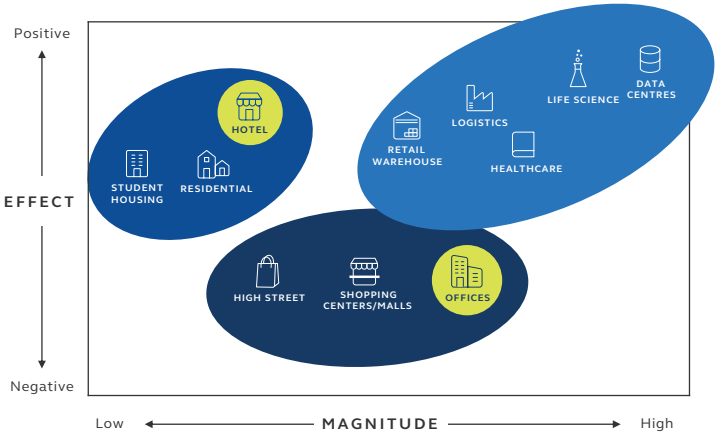
In this final installment of our artificial intelligence (AI) and real estate series, we turn our attention to two additional, yet distinct, property sectors: hotels and offices. In our view, hotels are positioned to experience positive, although marginal, gains from AI, primarily through operational efficiencies. Offices, by contrast, face a more nuanced outlook: while AI adoption in the near term may disrupt demand, over the longer term, technological advances have historically supported stronger economic growth and increased demand for commercial space.

In the previous installments of our series, we explored three key topics:

1. Introduced a framework to analyze how the growing adoption of AI technologies may affect the commercial real estate sector.
2. Examined recent developments in the AI competitive landscape, which—rather than alter— accelerate the trajectory toward the sector-specific conclusions outlined in our framework.
3. Analyzed in greater detail the group of property sectors—data centers, logistics, and life sciences—that we believe will benefit most from AI adoption.

EXHIBIT 1: AI's role in real estate: sector by sector, a different story

AI impact by property sector over the medium term (2025-2030)



Source: Principal Real Estate, 2025

Due to its transformative potential, AI is likely to disrupt several fields, with far-reaching implications for society, businesses, and real estate. Our analysis has identified three groups of properties:

Front-runners: Includes data centers, life sciences, logistics, and retail warehousing. Although in different degrees, these real estate sectors should enjoy a large and positive impact, as the adoption of AI is likely to boost occupier demand or enhance tenants' business models.

Marginal gainers: Includes the "living sector". The companies operating in this space will still benefit from the positive impact of AI. However, we believe this will be smaller in magnitude, primarily inducing efficiency gains without creating new business models or shifting demand-supply fundamentals.

Stragglers: Includes offices, shopping centres/malls, and high-street retail. We fear the widespread adoption of AI technologies may generate headwinds for these sectors.

Hotels: How technology may drive efficiencies and personalization

Hotels, along with other living sectors (including student housing, multifamily, single-family rentals, and senior living), comprise the 'marginal gainers' property group of our AI framework. This is because, in our view, companies operating in this space are set to benefit from the positive impact of AI technologies. However, we believe these benefits will primarily induce efficiency gains rather than shifting demand-supply fundamentals, as in the case of data centers, or creating entirely new business opportunities, such as for life sciences companies. Let's analyze the hospitality sector in more detail.

At first glance, hotels may not be immediately associated with AI technologies. After all, the essence of hospitality is to provide a shelter and a memorable time, rather than relying on predictive algorithms. Hotels are inherently people-centric. Without the concierge, the receptionist, the chef and the housekeeper, it would be quite a challenge to deliver outstanding guest experiences. However, AI tools are set to play an increasingly important role in the future. These technologies have the potential to enhance efficiencies and improve customisation all along the hotel's value chain, from back-office operations such as marketing and revenue management, to front-desk activities like customer experience and concierge services. A study by consulting firm McKinsey noted that AI tools can lead to significant revenue growth for hotels and improved customer satisfaction by augmenting workforce capabilities, supplementing concierge consultations or expediting check-in processes. Not surprisingly, several large hotel brands are allocating internal resources or partnering with technology companies to implement these solutions. This trend was also highlighted by a survey conducted by Deloitte, a professional services firm, that found half of all hotel executives in their sample were exploring AI technologies for their businesses.

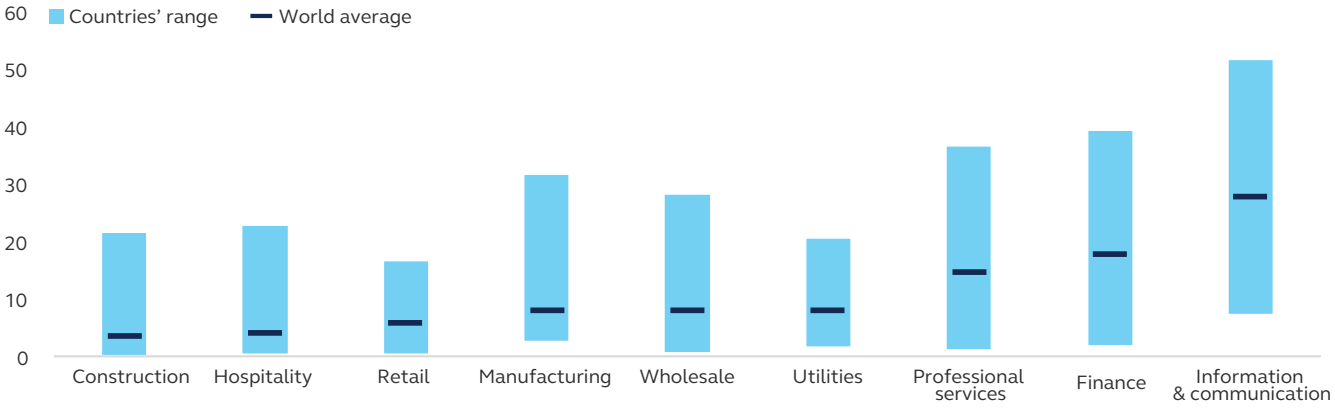
For instance, a notable global hotel franchisor and operator with presence in more than 100 countries and territories, established a generative AI incubator in 2023, which is described by the company's Chief Revenue and Technology Officer as "A space to explore various AI-driven concepts and gather feedback from both customers and associates." Since its establishment, more than 200 use cases have been submitted from across the organization, some of which are already in various stages of implementation across multiple touchpoints of the hotel customer journey. First, at the pre-arrival and booking stage, the company is testing a natural language-based search tool on its website, allowing users to describe

precisely what they want from a vacation, rather than using traditional parameters and filters. Second, upon entering the hotel's lobby, an AI-powered virtual assistant with a chat interface helps guests find the best local experiences and recommendations. Third, while dining, an AI-powered software in the hotel's kitchen provides real-time insights into food usage patterns, enabling staff to reduce food waste and CO2 emissions.

The initiatives above are just a few examples of the multiple ways operators are exploring AI-driven concepts across the hotel business. According to the Organization for Economic Co-operation and Development (OECD), the hospitality industry has one of the lowest adoption rates of AI technologies, with an average of 4.4% as of 2023, as shown in Exhibit 2 below. However, there is a vast difference between hotels' size, segment, and country. Adoption is higher among large chains, often backed by substantial IT budgets, and in upper segments that can justify the investment. By contrast, many independent hotels may not have the resources to embrace these solutions, at least for now. Indeed, the market for AI in hospitality and tourism is projected to grow at a double-digit compound annual growth rate (CAGR) over the next five years. As AI tools continue to evolve and improve, it is reasonable to assume that hotel operators will gradually integrate these tools into their business models to streamline operations, and to increase personalisation and customer satisfaction. For a more detailed analysis of the hotel sector, please refer to our '[Leveraging AI and other technologies to create value]' paper.

EXHIBIT 2: Hospitality has the lowest AI adoption rate, after the construction industry

Percentage of AI adoption by industry, 2023.



Includes enterprises with ten employees or more, grouped by International Standard Industrial Classification of All Economic Activities (ISIC) codes.

Source: OECD, Principal Real Estate, 2023.

Offices: Treading a fine line between AI-driven job creation and displacement

The travails of the office sector since the COVID-19 pandemic are well documented. Much like hotels, offices rely heavily on people to support their demand profile. Rapid enhancements in technology—even before the pandemic—have presented a headwind to office demand as well as complicated operating economics amid occupiers' altered space utilization dynamics. While the hotel sector may be able to capitalize on AI advancements for greater efficiencies within its operating model, the same shift may translate into less square footage required by corporate occupiers if they correspond to reductions in office-using occupations.

Large-scale technological changes have long created a sense of uncertainty in the labor market and its participants. Perhaps one of the earliest examples is the Luddites, who destroyed machine looms during the European Industrial Revolution in fear that the new technology would wipe out jobs. Economists today refer to this as the "Luddite Fallacy," which refers to fears that new technology will reduce the need for labor and can harm the economy. While structural shifts, such as AI, undoubtedly have significant short-term implications for certain occupations, they tend to be both productivity-enhancing and conducive to stronger job creation in newer and more innovative industries. David Autor, a leading labor economist at MIT, views AI as having the potential to automate tasks as well as human expertise.[1] While this would certainly eliminate certain commodity office jobs through automation, it also opens up opportunities for new capabilities and could improve job quality.

So why is the office sector a laggard if AI improves job quality and productivity? While technological improvements have historically enabled the emergence of new industries and occupations, they also tend to create short-term dislocations and increase structural unemployment as workers need to be retrained. As the office market comes to grips with a new normal for in-office attendance in much of the world, dislocations among certain office-using occupations cast a pall over a sector that has suffered the most severe setbacks in commercial real estate over the last five years.

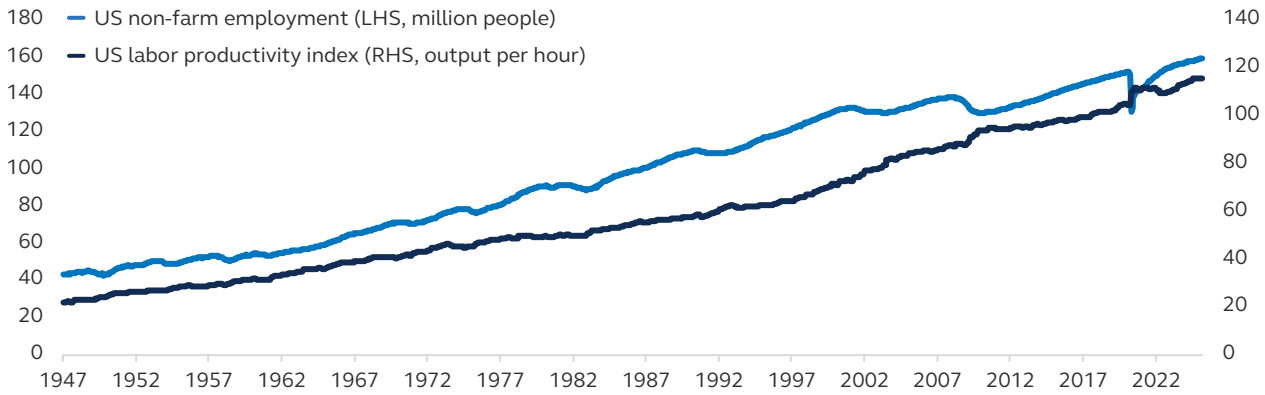
The uncertainty facing the sector in the near term is evident in most research focused on office-using employment as it relates to the shift in AI. On the demand side, some of the unknown factors include the cost of deploying these technologies, the rate of adoption across the private and public sectors, customer acceptance, and regulatory changes. Similarly, on the supply side, the speed of technological advancements and the energy supply necessary to meet increasing computing demand are also challenging to predict. Thus, depending on various assumptions, some studies are more bearish regarding future office space demand, envisioning an "agentic future" where AI tools replace humans in many white-collar jobs. Others are more optimistic, predicting that AI will complement and increase total employment in the coming year.

After all, as we mention above, technology has continually redefined and evolved the nature of work, and historical evidence suggests that innovation advancements coincide with stronger job growth over a longer horizon. For example, in the U.S., non-farm employment has broadly increased in line with labor productivity (a proxy for innovation) over the past seventy years. Thus, as the internet economy created opportunities, wealth, and office space demand, many studies argue that the AI revolution will produce a similar effect.

(1) Autor, David H. (2024). Applying AI to Rebuild Middle-Class Jobs (NBER Working Paper No. 32140). Cambridge, MA: National Bureau of Economic Research. https://doi.org/10.3386/w32140

EXHIBIT 3: Productivity growth has historically led to overall employment growth

U.S. total employment vs productivity



Source: US Bureau of Labor Statistics, Principal Real Estate, Q1 2025

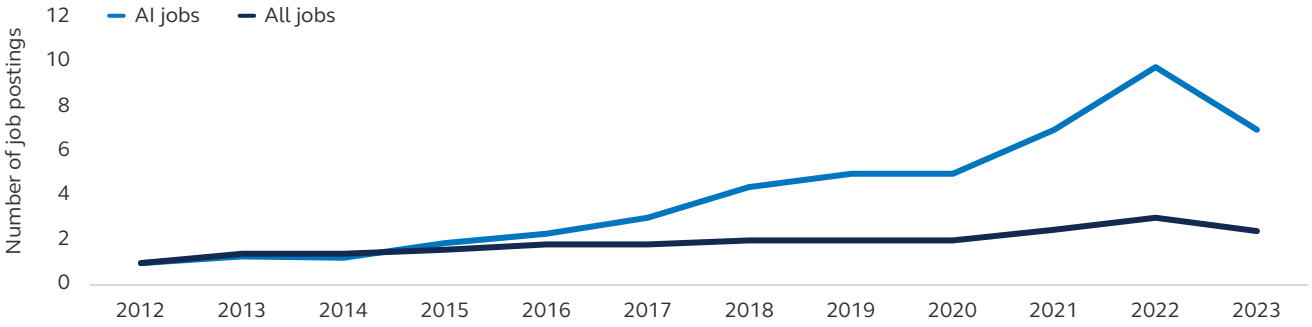
The 'Future of Jobs Report', published by the IMF last January, points in this direction. The study predicts that structural changes in the global labor market (including new technologies) could generate a net increase of 78 million jobs by 2030 globally, equivalent to 7% of total employment. Similarly, Oxford Economics, a global forecasting company, shares the same optimism. Although it warns about the disruptive potential of AI, it expects the office sector to add several million jobs across the U.S., Europe, and Asia by 2050.

Conversely, the McKinsey Global Institute is more cautious regarding the different outcomes AI could produce. Differences in automation adoption and people's redeployment rate could lead to very different scenarios, ranging from full occupation to 10 million jobless people in Europe alone. The double-edged nature of AI also emerged in a survey conducted by consulting firm BCG on 13,000 employees from 15 countries. The findings show that while AI users are reporting significant productivity gains, those who regularly use this technology are more likely than others to worry about job loss—49% of those using AI at least weekly believe that their jobs could disappear over the next ten years.

While the debate remains heated, the AI penetration rate in the white-collar sector is increasing, albeit from a low base. According to PwC, "AI has quietly exerted a growing impact on the job market in recent years, with jobs that require AI skills growing 3.5 times faster than all other jobs, while carrying a 25% wage premium in some markets". Differences across sectors are significant, with knowledge-based industries, such as information technology and financial services, experiencing the greatest demand.

EXHIBIT 4: The AI talent war gains pace

Number of job postings, index, 2012 = 1*



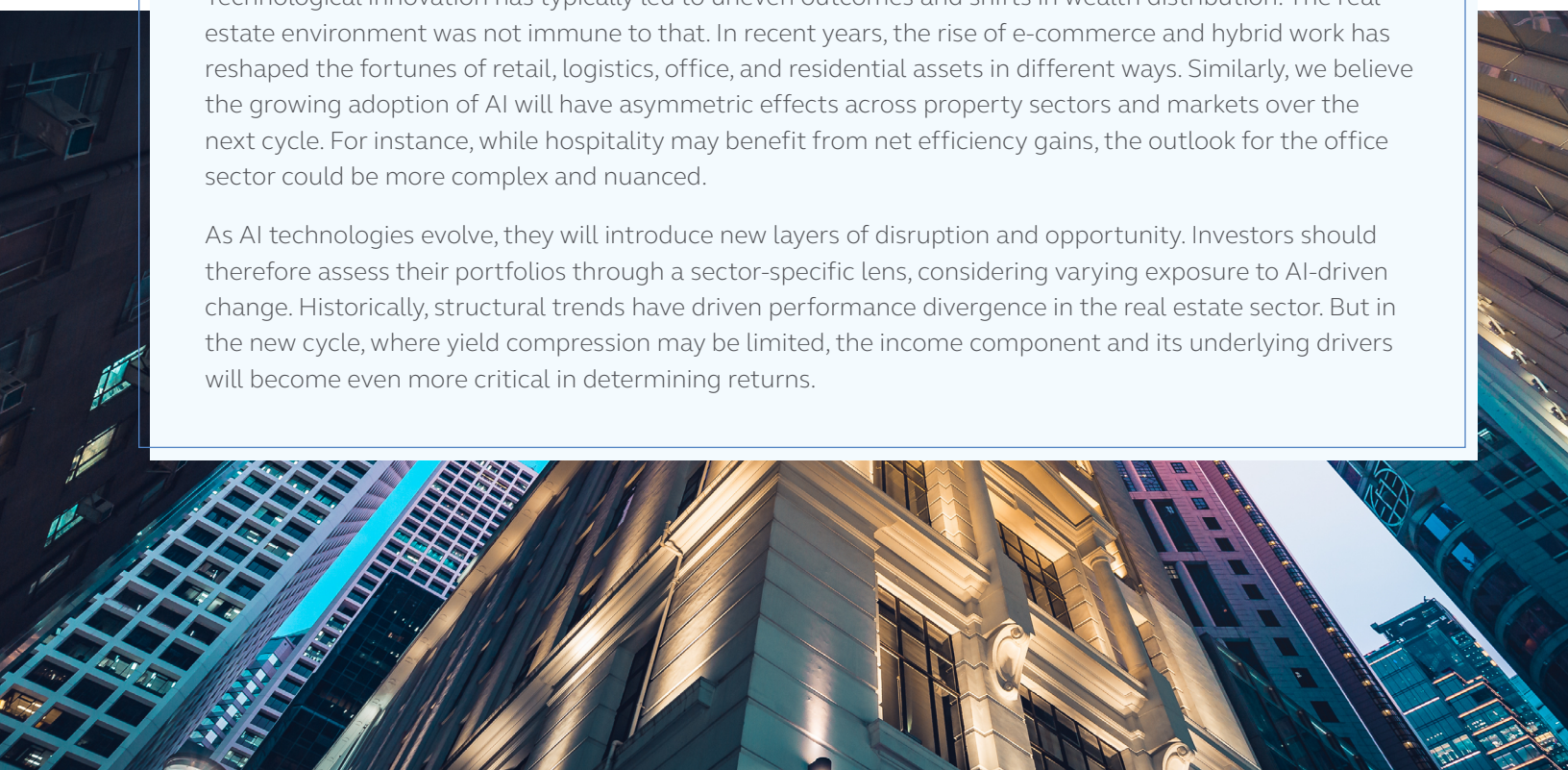
* Includes six countries: US, UK, Singapore, Australia, Canada, and New Zealand.
Source: PwC, Principal Real Estate, 2024

Despite several announcements about how firms are integrating AI into their operations, there is currently no evidence of job displacement. The unemployment rate is hovering at, or close to, record-low levels across most developed economies, and wage growth remains reasonably strong. However, as these technologies improve and become widespread, they may generate an additional layer of uncertainty for the office sector, whose outlook has already been hampered in recent years by the rise of hybrid and remote working patterns, tightening ESG requirements, and capital rotation towards alternative property sectors. In our view, AI could add to the risks that the office sector fails to return to its pre-pandemic growth trajectory or regain investor confidence in the near to medium term. However, office hubs with deep talent pools, a strong presence of knowledge-based industries (such as tech, finance, and healthcare), and a desirable environment are likely to outperform. The London West End, Paris Central Business District in Europe and the San Francisco Bay Area, Boston/Cambridge, and Manhattan in the U.S. are prime examples of markets that have remained resilient, achieving high returns over the last twelve months, despite structural shifts and broader headwinds.

Conclusion

Technological innovation has typically led to uneven outcomes and shifts in wealth distribution. The real estate environment was not immune to that. In recent years, the rise of e-commerce and hybrid work has reshaped the fortunes of retail, logistics, office, and residential assets in different ways. Similarly, we believe the growing adoption of AI will have asymmetric effects across property sectors and markets over the next cycle. For instance, while hospitality may benefit from net efficiency gains, the outlook for the office sector could be more complex and nuanced.

As AI technologies evolve, they will introduce new layers of disruption and opportunity. Investors should therefore assess their portfolios through a sector-specific lens, considering varying exposure to AI-driven change. Historically, structural trends have driven performance divergence in the real estate sector. But in the new cycle, where yield compression may be limited, the income component and its underlying drivers will become even more critical in determining returns.



For Public Distribution in the United States. For Institutional, Professional, Qualified, and/or Wholesale Investor Use Only in other Permitted Jurisdictions as defined by local laws and regulations.

Risk considerations

Investing involves risk, including possible loss of principal. Past Performance does not guarantee future return. All financial investments involve an element of risk. Therefore, the value of the investment and the income from it will vary and the initial investment amount cannot be guaranteed. Potential investors should be aware of the risks inherent to owning and investing in real estate, including value fluctuations, capital market pricing volatility, liquidity risks, leverage, credit risk, occupancy risk and legal risk. All these risks can lead to a decline in the value of the real estate, a decline in the income produced by the real estate and declines in the value or total loss in value of securities derived from investments in real estate. International investing involves greater risks such as currency fluctuations, political/social instability, and differing accounting standards.

Important information

This material covers general information only and does not take account of any investor's investment objectives or financial situation and should not be construed as specific investment advice, a recommendation, or be relied on in any way as a guarantee, promise, forecast or prediction of future events regarding an investment or the markets in general. The opinions and predictions expressed are subject to change without prior notice. The information presented has been derived from sources believed to be accurate; however, we do not independently verify or guarantee its accuracy or validity. Any reference to a specific investment or security does not constitute a recommendation to buy, sell, or hold such investment or security, nor an indication that the investment manager or its affiliates has recommended a specific security for any client account.

Subject to any contrary provisions of applicable law, the investment manager and its affiliates, and their officers, directors, employees, agents, disclaim any express or implied warranty of reliability or accuracy and any responsibility arising in any way (including by reason of negligence) for errors or omissions in the information or data provided. All figures shown in this document are in U.S. dollars unless otherwise noted.

This material may contain 'forward looking' information that is not purely historical in nature. Such information may include, among other things, projections and forecasts. There is no guarantee that any forecasts made will come to pass. Reliance upon information in this material is at the sole discretion of the reader.

This material is not intended for distribution to or use by any person or entity in any jurisdiction or country where such distribution or use would be contrary to local law or regulation.

This document is issued in:

- The **United States** by Principal Global Investors, LLC, which is regulated by the U.S. Securities and Exchange Commission.
- **Europe** by Principal Global Investors (Ireland) Limited, 70 Sir John Rogerson's Quay, Dublin 2, D02 R296, Ireland. Principal Global Investors (Ireland) Limited is regulated by the Central Bank of Ireland. Clients that do not directly contract with Principal Global Investors (Europe) Limited ("PGIE") or Principal Global Investors (Ireland) Limited ("PGII") will not benefit from the protections offered by the rules and regulations of the Financial Conduct Authority or the Central Bank of Ireland, including those enacted under MiFID II. Further, where clients do contract with PGIE or PGII, PGIE or PGII may delegate management authority to affiliates that are not authorised and regulated within Europe and in any such case, the client may not benefit from all protections offered by the rules and regulations of the Financial Conduct Authority, or the Central Bank of Ireland. In Europe, this document is directed exclusively at Professional Clients and Eligible Counterparties and should not be relied upon by Retail Clients (all as defined by the MiFID).
- **United Kingdom** by Principal Global Investors (Europe) Limited, Level 1, 1 Wood Street, London, EC2V 7 JB, registered in England, No.03819986, which is authorized and regulated by the Financial Conduct Authority ("FCA").
- **United Arab Emirates** by Principal Investor Management (DIFC) Limited, an entity registered in the Dubai International Financial Centre and authorized by the Dubai Financial Services Authority as an Authorised Firm, in its capacity as distributor / promoter of the products and services of Principal Asset Management. This document is delivered on an individual basis to the recipient and should not be passed on or otherwise distributed by the recipient to any other person or organisation.
- **Singapore** by Principal Global Investors (Singapore) Limited (ACRA Reg. No. 199603735H), which is regulated by the Monetary Authority of Singapore and is directed exclusively at institutional investors as defined by the Securities and Futures Act 2001. This advertisement or publication has not been reviewed by the Monetary Authority of Singapore.
- **Australia** by Principal Global Investors (Australia) Limited (ABN 45 102 488 068, AFS Licence No. 225385), which is regulated by the Australian Securities and Investments Commission and is only directed at wholesale clients as defined under Corporations Act 2001.
- This document is marketing material and is issued in **Switzerland** by Principal Global Investors (Switzerland) GmbH.
- **Hong Kong SAR** by Principal Asset Management Company (Asia) Limited, which is regulated by the Securities and Futures Commission. This document has not been reviewed by the Securities and Futures Commission. This document may only be distributed, circulated or issued to persons who are Professional Investors under the Securities and Futures Ordinance and any rules made under that Ordinance or as otherwise permitted by that Ordinance.
- **Other APAC Countries/Jurisdictions**, this material is issued for institutional investors only (or professional/sophisticated/qualified investors, as such term may apply in local jurisdictions) and is delivered on an individual basis to the recipient and should not be passed on, used by any person or entity in any jurisdiction or country where such distribution or use would be contrary to local law or regulation.

Principal Global Investors, LLC (PGI) is registered with the U.S. Commodity Futures Trading Commission (CFTC) as a commodity trading advisor (CTA), a commodity pool operator (CPO) and is a member of the National Futures Association (NFA). PGI advises qualified eligible persons (QEPs) under CFTC Regulation 4.7.

Principal Funds are distributed by Principal Funds Distributor, Inc.

MM14541 | 06/2025 | 4550274 - 062026